



## Structuring and Developing The Citarum River Corridor Space Based on The Wisdom And Aspirations of Local Communities

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### ABSTRACT

Citarum River is one of the rivers that is widely used for people's lives. Over time, the environmental conditions of the Citarum River have decreased in quality. Citarum has at least five segments with its own characteristics and focus on problems in each segment. Problems commonly encountered along the Citarum stream are caused by land use along the riverbank, characteristics of residents around the river, characteristics and morphology of land around the river, land ownership status and policies and law enforcement. The handling of problems that occur in the river corridor has been implemented in one of the rivers in Melbourne, Australia, namely the Yarra River. There are several things that need to be considered in handling problems in the Citarum River, namely the actual condition and use of land in the river corridor, land tenure status and social control, potential pollutants in the form of liquid and solid waste, community aspirations in the study village as well as pre-design development and utilization development land in the Citarum River Corridor. The urgency to organize the Citarum River corridors from a physical and social perspective is important to balance or make as proportional as possible.

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## 1. INTRODUCTION

Citarum has a length of approximately 270 km (Sari et al., 2020), is one of the major rivers in Indonesia, and is classified as a strategic river area that supports regional development, especially in West Java Province. Geographically, Citarum River is located at 106° 51'36" - 107° 51' East and 7° 19' - 6° 24'LS, with an area of ± 11,323 Km<sup>2</sup>, covering 13 regencies/cities in West Java Province, namely Bandung Regency, West Bandung Regency, Bekasi Regency, Cianjur Regency, Bogor Regency, Indramayu Regency, Karawang Regency, Purwakarta Regency, Subang Regency, Sumedang Regency, Bandung City, Bekasi City and Cimahi City.

Topography Citarum River watershed is described in the form of land or morphology that can be grouped into 3 parts, namely the upstream, middle and downstream. (1) Citarum watershed upstream part looks like a giant basin better known as the Bandung Basin, with elevations ranging from 625-2,600 meters above sea level. Citarum watershed in the middle morphology varies between plains (elevation 250-400 masl), weak undulating hills (elevation 200-800 masl), steep hills (elevation 1,400-2400 masl) and volcanic body morphology. Citarum watershed in the downstream part is dominated by plains, weak undulating hills and steep with elevation variations between 200-1,200 meters above sea level. All rivers in Citarum watershed flow from the south upstream in Mt. Burangrang, Bukit Tunggul, and Canggih to the north and empty into the north coast (Java Sea).

The Citarum watershed has 12 types of land cover or land use, namely agriculture, plantations, ponds, grass, horticultural crops, rice fields, forests, urban, secondary forests, the garden, rural, and water bodies. The largest land use in the Citarum watershed in 2000 was rice fields followed by agriculture, secondary forest, primary forest, rural, agroforestry, horticultural crops, urban, water body, ponds, tea gardens and grass. (Ridwan et al., 2017)

Citarum River is one of the rivers that is widely utilized for the lives of people along the watershed, including being used for agriculture, livestock, hydropower, industry and household needs and providing clean water for at least 25 million people in West Java Province and DKI Jakarta (Ruyani & Herlambang, 2017). The significant role of the Citarum River for the people of West Java is unfortunately not accompanied by a sense of belonging from the people of West Java themselves to love and protect the Citarum River. This is evidenced by the ongoing forest degradation or reduction of forest land as water catchment, for example the destruction of Mount Gambung in 2015. Not to mention agricultural waste that is directly dumped into the river. Not only that, livestock waste in the form of animal manure is often disposed of directly into the river. Not to mention the household waste that fills the Citarum River every day. This results in water pollution and even damage to water resources. Domestic pollution carried out by large industries, livestock and agriculture along the Citarum River has resulted in the Citarum's water quality not entering the quality class, even in the upper reaches it has entered the heavily polluted class (Affandi et al., 2018).

Over time, the environmental condition of Citarum River has decreased in quality, both due to pollution and the identification of many harmful heavy metal contents in it (Sudarningsih et al., 2017) as well as siltation due to sedimentation, and flooding.

Increased population growth and bad behavior of people who do not care about the environment exacerbate the problem along the river corridor (Fadjarajani & Indrianeu, 2021). Citarum watershed has an area of about 6,614 m<sup>2</sup> with a total population along the river flow of 15.3 million people. The distribution of population around Citarum River is centered on the locations of activities and industries, especially in densely populated areas such as Bandung Regency, Bandung City, Karawang Regency, Bekasi Regency, and Bekasi City (Kristanto et al., 2021). About 60 percent of the total national textile producers or companies are located in West Java or along the Citarum watershed. Textile factories in Citarum River are also the most dominant compared to other sectors, representing 46 percent of the entire industry (Putra, 2017).

Population growth in areas traversed by the Citarum River or located entirely within the Citarum watershed will have an impact either directly or indirectly on the condition of the river. The impact can be both positive and negative, but unfortunately so far the dominant impact that can be seen is the damage done to the river due to pollution and overexploitation of land around the Citarum river.

Citarum has at least five segments with its own characteristics and focus of problems in each segment. Problems commonly encountered along the Citarum flow are caused by land use in the riverbank, characteristics of the population around the river, characteristics and morphology of the land around the river, land ownership status and policy and law enforcement. Land use around the river or later called the Citarum River Corridor (0-500 meters to the left and right of the river) has a significant effect on the type and intensity of river pollution (Rohmat, 2019).

A heavily polluted river indicates poor river water quality (Setiacahyandari et al., 2022). The decline in the water quality of the Citarum River is caused by the high level of pollution entering the river, which can come from human activities in the form of agricultural, livestock, industrial and domestic activities (Utami, 2019).

Pollution and damage to the Citarum River include industrial pollution, agricultural waste, livestock waste, fishery waste, and domestic waste, both domestic liquid waste and domestic waste. The waste problem is caused by poor waste management. Waste generated, especially in areas other than big cities, usually ends up in simple waste disposal sites (TPS) which usually end up with landfilling (Juniarti, 2020).

The Citarum River, which is a river that passes through several cities and provinces, has areas around the river with a fairly high density as residential and industrial areas. Of course, the amount of waste generated is quite large, as seen from the amount of waste capacity transported to the landfill every day. In a waste system, there are many related activities ranging from containerization, transportation and collection to landfill, so problems may arise that can reduce the effectiveness of the system that has been running (N. Paramita & Ningrum, 2020).

Handling for any problems that arise should be based on the characteristics and problems of the watershed / Citarum River which are locally specific, prioritized in the Citarum River corridor and handling problems should position local communities as subjects and main stakeholders.

The acceleration of environmental damage management in Citarum watershed has been tried to be overcome by the government through Citarum Harum program in 2012 (Darwis et al., 2022). Local governments have made various efforts to address the problems of the Citarum River. In 2013, the West Java Government established the Citarum Watershed Forum to improve water quality in the river that empties into Situ Cisanti. In 2014, the Watershed Forum changed its name to Citarum Bestari. The Ministry of Public Works and Housing also established the Citarum River Basin Agency to implement the revitalization program for the 12,000 square kilometer river. Over a period of 30 years, around Rp 4.5 trillion has been spent on projects to improve the Citarum watershed, but to date it has not yielded significant results (Zakia et al., 2019).

But in its implementation, the program has not been able to improve the problems that occur in Citarum River optimally and comprehensively due to the program and management are partial, unsustainable, and not integrated between various stakeholders (government, community, and other parties) well. With various problems that occur in the Citarum watershed, it is necessary to develop a management standard that is able to overcome the problems optimally, thoroughly, sustainably, and integrated. An activity/project that is standardized, easily applied to various areas, and easily integrated into ideas that need to be studied to accelerate the management of damage prevention in Citarum River basin.

Handling problems that occur in the river corridor has been applied in one of the rivers in Melbourne, Australia, namely the Yarra River. Transformation of the development of the Yarra River utilization is done by changing the agricultural, industrial and domestic water supply into a

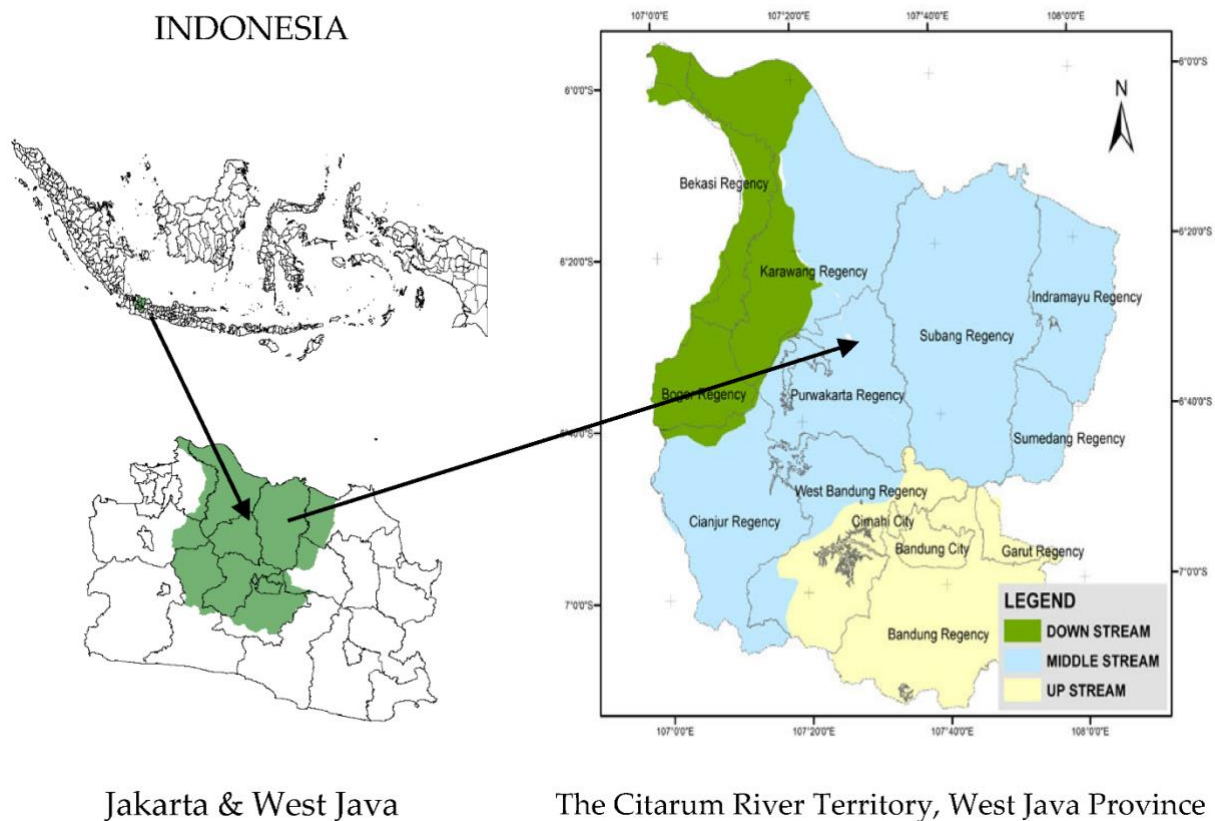
watershed that is very important for Victoria's water supply. The second step is to provide public facilities in the heart of Melbourne that can be enjoyed by locals and tourists, managing water catchment areas to meet domestic, agricultural and commercial needs. These efforts are further enhanced by studies of waste production, waste collection and reuse and studies of appropriate technological and social interventions for solid waste management.

There are several things that need to be considered in handling problems in the Citarum River, namely the condition and actual land use in the river corridor, land tenure status and social control, potential pollutants in the form of liquid and solid waste, community aspirations in the study village and pre-design of development arrangements and land use development in the Citarum River Corridor.

Water resources management must be adapted to local conditions and local wisdom in each region because each region has different characteristics (Mulyadi & Widiawaty, 2022). In a particular community, local wisdom related to natural resource management can be found as a local regulatory system that has existed since the past with a long history and adaptation. Local wisdom not only functions as a characteristic of a community, but also functions as an effort to preserve the ecological environment of a community (Aulia & Dharmawan, 2010).

The approach to handling problems in the Yarra River can be used as a basic role model for handling pollution in Citarum River in a sustainable manner. Each program launched is not only partial and sectoral but holistic and integrated with local wisdom and community aspirations as a foundation. The ideas above will be formulated through this research entitled "Spatial Planning and Development of the Citarum River Corridor based on Local Wisdom and Community Aspirations."

## 2. METHODS



**Figure 1.** Map of Citarum River Territory (Nahib et al., 2021)

The Citarum watershed covers 10 regencies and 2 municipalities, with the largest percentage of regency and municipality area in the watershed being in Bandung Regency and

Cimahi Municipality with 100% of their area in the Citarum watershed, followed by Bandung City at 90.02%. Due to the current limited resources, the research is conducted by taking a case in one of the villages directly adjacent to the Citarum River. The research will be conducted in a location that is the intersection between the Citarum River Corridor (the left and right sides of the river, with a width of 0 - 500 meters measured from the riverbank) and the village administrative boundary.

This research is conducted qualitatively, which is research to explore and understand the meaning that some individuals or groups of people ascribe to social or humanitarian problems (Creswell & Creswell, 2018) by guided by research steps. Researchers ask questions and procedures, collect specific data from participants, analyse data inductively from specific themes to general themes and interpret the meaning of the data. This research subjectively assesses the attitudes, opinions, behaviours and social processes of people who are specific and regular but not strictly bound in terms of quantity, number, intensity and frequency (Kusumastuti & Khoiron, 2019).

Referring to the review of research locations indirectly, namely through images, the research locations were obtained in three villages in two sub-districts, namely Baleendah Village, Bojongsorang Village and Bojongsari Village. The selection of this location is based on the consideration of the magnitude of the impact felt by the community around Citarum, one of which is flooding. This is certainly due to direct and indirect causal relationships. Given the density of the population along the river, it is important for the local government to organize the environment to create a liveable and habitable environment without ignoring environmental functions.

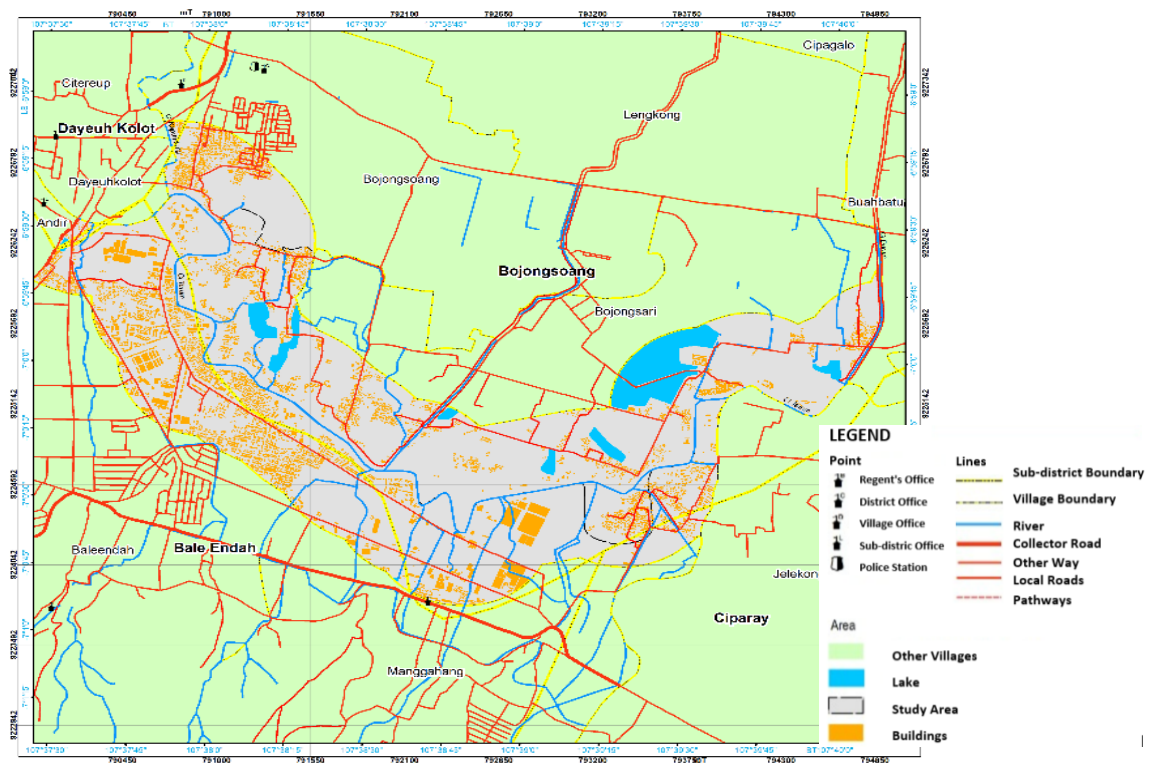
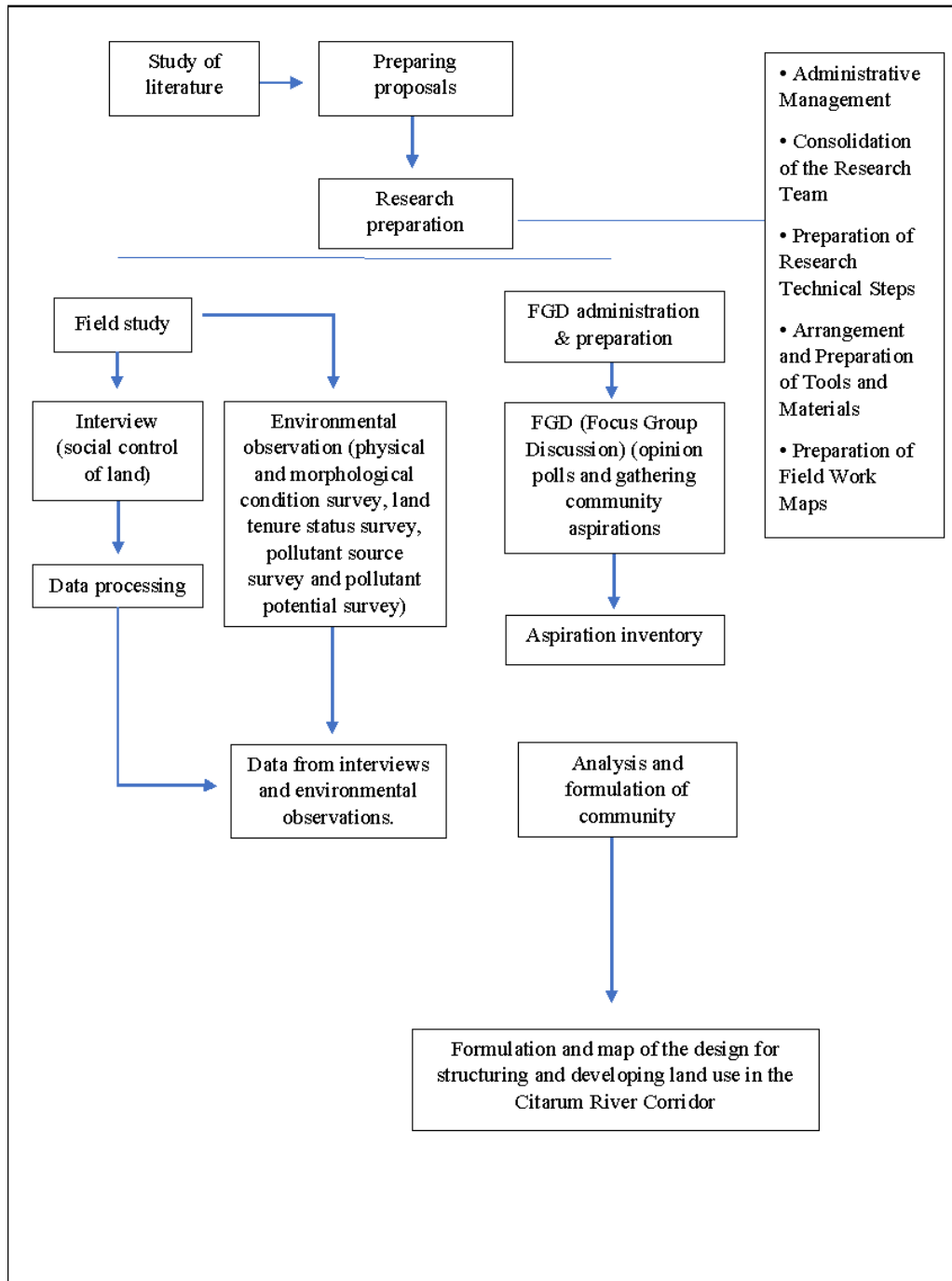


Figure 2. Study Location

Technically, the research implementation stage can be seen in the research flow chart as follows:



**Figure 3.** Flow Chart of Research

In order to collect data on local wisdom and community aspirations, data collection in this research was carried out using the Focus Group Discussion (FGD) technique. This technique was chosen because the ongoing research requires data with special characteristics in the form of perceptions, opinions, beliefs and attitudes towards a concept. The FGD technique is relatively faster to complete and cheaper, besides this technique can help researchers in understanding the reasons that are not revealed behind the participants' responses (A. Paramita & Kristiana, 2013).

For the purpose of interview data, this research involved 30 residents of Baleendah Village, Baleendah Urban Village, and representatives of residents from Bojongsari and Bojongsoang Villages to participate in focus group discussions.

### 3. RESULTS AND DISCUSSION

The population of WS Citarum is distributed in 10 regencies and 2 cities in West Java, with the largest number of people in Bandung Regency 3,307,396 people or 21% and Bandung City 2,461,931 people or 15% of the total population in WS Citarum. Bandung Regency and Cimahi City have 100% of their area in Citarum watershed, while Bandung City has 90.02%. The district that has a very large influence in terms of area in the watershed is Bandung Regency, which is 40.10%.

Citarum River is one of the rivers that is widely utilized for the lives of people along the watershed, including those used for agriculture, livestock, hydropower, industry and household needs. The high level of community activity and massive population growth has worsened the condition of Citarum directly or indirectly. This can trigger complex interrelated problems, such as poverty in the Citarum flow area triggered by the large number of labor force whose energy is not channeled properly.

Of the thirty respondents, 13 were migrants with varying lengths of stay. This is associated with a sense of belonging to the living environment, respondents with status as local residents are assumed to have a high sense of belonging so that they are more likely to maintain and protect their living environment. One respondent said that the residential building near the river corridor is a building that does not have a legal permit because he built it on the basis of utilizing vacant and unoccupied land.

Physically, the appearance of the neighborhood is shabbier with packaging waste scattered along the road, this is exacerbated by the location of the garbage dump close to the residence. Domestic waste is indeed one of the main sources of pollutants in the Citarum River. Limited sanitation infrastructure, both in terms of quantity and quality, causes domestic waste to reach water bodies without prior treatment. The growth of the population, which is characterized by the construction of more and more residential houses, is not accompanied by the improvement of sanitation infrastructure. Meanwhile, sewage network facilities in the Bandung Basin are only found in the city of Bandung (Marganingrum et al., 2013; Sugandi et al, 2021).

This assumption is still provisional because if seen from other parameters such as land and house ownership, most respondents are land and building owners under private names.

Citarum is a river whose surrounding land has been massively utilized by humans, both as settlements, agricultural land and plantations as well as industrial areas and factories. Forms/types of land use in the upper Citarum watershed include land use: moor, grass shrubs, rice fields, forests, shrubs, plantations, urban, sub urban, open land, lakes, public facilities and industry (Haryanto et al., 2007). Industrial and factory activities are also one of the land utilization efforts around the Citarum River, factories such as textile and food product factories are widely established around the Citarum River. The existence of this industrial center is also one of the causes of the decline in the number of people in the land around the Citarum River. Unfortunately, 17 out of 30 residents do not have environmental awareness and knowledge about polluting industries, and 14 people do not know how to distinguish between types of waste.

Agricultural, livestock and fishery activities of the community around the Citarum River produce waste in the form of residual feed, residual production and animal waste that has not been processed through a good waste management installation system, so that the waste

is discharged into the waterways that flow into the Citarum River and result in polluting the Citarum River. There is a horse stable right in the river corridor, which has the potential to pollute the river. In addition, out of thirty respondents, six people did not have personal sanitation, so they flowed their waste directly into the river.

In addition to the physical appearance, the aspirations and responses of the community are important to study. Most respondents felt the significant changes shown by Citarum River, ranging from the appearance of the water that began to improve to the decrease in the amount of garbage floating along the river. The installation of earth spikes and erosion retaining walls also brought improvements to the Citarum River corridor, because the intensity of flooding began to decrease and even if the flood came, it did not inundate the floodplain for a long time. All the improvements that have been implemented and the plans that have been prepared in the Citarum River corridor have the support of the community, this can be seen from the level of participation of most of the community.

The form of community participation in maintaining Citarum is by instilling awareness of the obligation to maintain the health and cleanliness of the environment. Especially starting from the smallest unit, namely the house, which can be characterized by the ownership of a personal sanitation system, the habit of managing waste and routinely following briefings related to movements to protect the environment.

Pollution and damage escalation in Citarum watershed has been tried to be addressed by the government through Citarum Harum program in 2012. A management activity/project will run well if all stakeholders have the same view of the problem and have the same vision and work together towards that vision.

In the research on Spatial Planning and Development of Citarum River Corridor Based on Wisdom and Aspirations of Local Communities, the research team's efforts to accommodate the aspirations of local communities were carried out through FGD or Focus Group Discussion activities. This activity brought together the research team, local communities and local government, each of whom had a part in the FGD activities. The research team came up with a number of ideas regarding the arrangement and development of the Citarum River corridor, ideas that were inspired by the arrangement of the Yarra river in Australia. Researchers have the view that the concept of river arrangement based on the aspirations of local communities and local wisdom that exists in it, can be applied in Citarum River corridor.

The arrangement and development of the Citarum river corridor should not only focus on physical environmental improvements, but the existence of community layers that characterize the social sector is also very important to be considered and accommodated for their aspirations. This is because the community around the Citarum River corridor is the first party who will feel the impact of various programs, activities and phenomena that occur in the Citarum River area. Therefore, the urgency to organize the Citarum River corridor area from the physical and social sides is important to be balanced or made as proportional as possible.

The potential for the development and arrangement of the Citarum River corridor area to support people's lives and livelihoods is enormous, as many city models have implemented the concept of a water front city or a city that makes the river a front yard and open space for community activities within it. Many social, cultural and economic activities can be carried out, if the river corridor area is well organized and sustainable. People who have lived around the river corridor area since the beginning can certainly benefit from the results of the arrangement and development of the river corridor area, both economically and in a more organized environmental impact.



In an effort to accommodate the aspirations of the community through FGDs and direct field observations, there are several points of community aspirations that can be collected as follows:

1. Completion of public facilities such as pedestrians and street lighting along the Citarum river corridor area.
2. A closer bridge, to facilitate accessibility between villages that are separated by the Citarum River.
3. To reduce the discharge of liquid waste from domestic households into the river, it is recommended that communal sanitation facilities or communal septic tanks be established so that management can be easier and monitored.

#### 4. CONCLUSIONS

Each segment of the Citarum River is affected by a number of interrelated problems, including incompatible land use along the river corridor, heterogeneous population characteristics and activities, variations in river morphology, uncertainty in land ownership and management status around the river, and the need for improved policies and law enforcement. The utilization of the river corridor within a radius of 500 meters is a key factor in determining the quality of the Citarum River. The area is still home to people who build illegal settlements. This is at odds with the government's stated objective of achieving Citarum Harum. The study revealed a lack of public awareness of the river's condition, which has become a significant contributor to pollution. The three villages that were the focus of the research, namely Bojongsari, Bojongoang, and Baleendah, are also affected by pollution caused by the behavior of the people around the river corridor. For instance, some residents dispose of household waste directly into the river, and owners of horse stables and tofu factories still dispose of the residue of their activities into the river. Such conditions require addressing to enhance the sense of ownership and awareness of the community towards the preservation of the Citarum River. To emulate the success of Melbourne's Yarra River in addressing pollution sustainably, the villagers of Bojongsari, Bojongoang and Baleendah were engaged in group discussions to articulate their aspirations for the river corridor arrangement. These aspirations included improvements to the aesthetic value of the river and an enhanced awareness of sustainable conservation practices. In addition to these aspirations, the local community identified several other needs, including pedestrianization, lighting, inter-village access, education systems, and improved sanitation. The success of this program can be attributed to the adoption of local wisdom in community-based pollution management. The Citarum corridor is a highly populated area, and the community is therefore the most proximate element to the environment. The initiative of policy makers at the neighborhood level in managing household waste, regular community service, and education from experts has contributed to the sustainability of the Citarum corridor management program.

#### 5. REFERENCES

- Affandi, N. R. D., Preynia, T., Wartono, W., & Hartawan, Y. (2018). Kampanye Sosial Sungai Citarum Guna Sukses Program Citarum Harum. *Prosiding Seminar Hasil Pengabdian Kepada Masyarakat*, 1(1), 1–7. <https://conference.upnvj.ac.id/index.php/pkm/article/view/64>. ISBN: 978-602-73114-5-9
- Aulia, T. O. S., & Dharmawan, dan A. H. (2010). Local Wisdom of Water Resource Management in Kampung Kuta. *Sodality: Jurnal Transdisiplin Sosiologi, Komunikasi*,

*Dan Ekologi Manusia*, 04(03), 345–355. <https://d1wqtxts1xzle7.cloudfront.net>. ISSN: 1978-4333

- Creswell, J. W., & Creswell, J. D. (2018). *Mixed Methods Procedures*. In H. Salmon (Ed.), *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (Fifth Edit)*. SAGE Publications, Inc. ISBN: 9781506386706
- Darwis, R. S., Resnawati, R., & Hidayat, E. N. (2022). Institutional Network Structure in Citarum Watershed Management. *Sosiohumaniora*, 24(2), 263. <https://doi.org/10.24198/sosiohumaniora.v24i2.38395>
- Fadjarajani, S., & Indrianeu, T. (2021). The Role of Housewife to Improve the Sustainability of the Cipatani River (Study in Nangewer Village, Pagerageung District, Tasikmalaya Regency). *Jurnal Geografi Gea*, 21(1), 72–83. <https://doi.org/10.17509/gea.v21i1.32602>
- Haryanto, E. T., Herwanto, T., & Kendarto, D. R. (2007). Perubahan Bentuk Penggunaan Lahan dan Implikasinya Terhadap Koefisien Air Larian DAS Citarum Hulu Jawa-Barat [Land-use Change and the Implication to Runoff Coefficient in the Upper Citarum Catchment West Java]. *Jurnal Bionatura*, 9(1), 1–15. E-ISSN: 2443-2679
- Juniarti, N. (2020). Penanggulangan Lahan Kritis, Konservasi Air, Mitigasi Bencana, Sanitasi Lingkungan Dan Pengelolaan Sampah Di Desa Cilengkrang Kabupaten Bandung. Kumawula: *Jurnal Pengabdian Kepada Masyarakat*, 3(2), 256. <https://doi.org/10.24198/kumawula.v3i2.27348>
- Kristanto, G. A., Pratama, M. A., Nandhita, P. A. C., Kemala, D., Munif, A., & Ahmad, D. A. (2021). The Citarum River as our front yard: A case of community engagement in Bintang Alam, Indonesia. IOP Conference Series: Earth and Environmental Science, 716(1). <https://doi.org/10.1088/1755-1315/716/1/012003>
- Kurniasih, N. (2002). Pengelolaan DAS Citarum berkelanjutan. *Jurnal Teknologi Lingkungan*, 3(2), 82–91. <https://doi.org/10.29122/jtl.v3i2.240>
- Kusumastuti, A., & Khoiron, A. M. (2019). *Metode penelitian kualitatif*. Lembaga Pendidikan Sukarno Pressindo (LPSP). ISBN 978-623-7253-64-8
- Marganingrum, D., Roosmini, D., Pradono, P., & Sabar, A. (2013). Diferensiasi Sumber Pencemar Sungai Menggunakan Pendekatan Metode Indeks Pencemaran (IP) (Studi Kasus: Hulu DAS Citarum). *Jurnal Riset Geologi Dan Pertambangan*, 23(1), 41. <https://doi.org/10.14203/risetgeotam2013.v23.68>
- Mulyadi, A., & Widiawaty, M. A. (2022). The Role of Traditional Beliefs Andlocal Wisdom in Forest Conservation. *Jurnal Geografi Gea*, 22(1), 55–66. <https://doi.org/https://doi.org/10.17509/gea.v22i1.43702.g18949>
- Nahib, I., Ambarwulan, W., Rahadiati, A., Munajati, S. L., Prihanto, Y., Suryanta, J., Turmudi, T., & Nuswantoro, A. C. (2021). Assessment of the impacts of climate and LULC changes on the water yield in the citarum River Basin, West Java Province, Indonesia. *Sustainability (Switzerland)*, 13(7), 1–20. <https://doi.org/10.3390/su13073919>

- Paramita, N., & Ningrum, S. S. (2020). Pengelolaan Lingkungan Sungai Berdasarkan Sumber Pencemaran di Sungai Citarum Studi Kasus Kelurahan Tanjung Mekar. *JUARA: Jurnal Wahana Abdimas Sejahtera*, 1(1), 38. <https://doi.org/10.25105/juara.v1i1.5912>
- Paramita, A., & Kristiana, L. (2013). Teknik focus group discussion dalam penelitian kualitatif. *Buletin Penelitian Sistem Kesehatan*, 16(2), 117-127. doi: 10.22435/bpsk.v16i2 Apr.3301
- Putra, D. M. (2017). Kontribusi industri tekstil dalam penggunaan bahan berbahaya dan beracun terhadap rusaknya sungai Citarum. *Jurnal Hukum Lingkungan Indonesia*, 3(1), 133-152. <https://doi.org/10.38011/jhli.v3i1.37>
- Ridwan, F., Ardiansyah, M., & Gandasmita, K. (2017). Pemodelan Perubahan Penutupan/Penggunaan Lahan dengan Pendekatan Artificial Neural Network dan Logistic Regression (Studi Kasus: DAS Citarum, Jawa Barat). *Buletin Tanah Dan Lahan*, 1(1), 30–36. <http://repository.ipb.ac.id/handle/123456789/72176>
- Rohmat, D., (2019). Verifikasi Zonasi: Kualitas Air Citarum Menurut Karakteristik Pemnafaatan Lahan Sekitar (Kiri-Kanan) Sungai. Presented for Citarum Workshop in Melbourne, Wednesday 4 March 2020.
- Ruyani, R., & Herlambang, A. (2017). *PENELITIAN PRODUK TERAPAN Model Kebijakan Lingkungan yang Holistik bagi Upaya Normalisasi Sungai Citarum (Issue April)*. Universitas Pasundan.
- Sari, G. L., Hadining, A. F., & Sudarjat, H. (2020). Analisis Karakteristik Fisik-Kimiawi Air Daerah Aliran Sungai Citarum di Waduk Jatiluhur. *Jukung (Jurnal Teknik Lingkungan)*, 6(1), 1–9. <https://doi.org/10.20527/jukung.v6i1.8232>
- Setiacahyandari, H. K., Rachmawati, A. A., Sumunar, A. A. K., Khairunnisa, A. T., Anindita, L. C., Udzkhiyati, N. L., & Suprayogi, S. (2022). Analysis of Surface Water Potential for Domestic Water Use in Gunungkidul Ecoregion. *Jurnal Geografi Gea*, 22(2), 165–175. <https://doi.org/https://doi.org/10.17509/gea.v22i2.48209.g20488>
- Sudarningsih, S., Bijaksana, S., Ramdani, R., Hafidz, A., Pratama, A., Widodo, W., ... & Agus Santoso, N. (2017). Variations in the concentration of magnetic minerals and heavy metals in suspended sediments from Citarum river and its tributaries, West Java, Indonesia. *Geosciences*, 7(3), 66. <https://doi.org/10.3390/geosciences7030066>
- Sugandi, D., Ridwana, R., Ismail, A., Ismail, J. R., & Sephana, R. I. D. (2021). Surface Runoff Management Model of Bandung Regency Through Remote Sensing Analysis. *Jurnal Geografi Gea*, 21(2), 123-134.
- Utami, A. W. (2019). Kualitas Air Sungai Citarum. *Jurnal Teknik Lingkungan*, 11(7), 1–6. <https://doi.org/https://doi.org/10.31227/osf.io/m3ha2>
- Zakia, Z., Agustina, D., Dewi, M. P., Ismowati, M., Vikaliana, R., & Saputra, M. (2019). Mewujudkan Sistem Pengelolaan Sampah Melalui Program Citarum Harum. *Jurnal Komunitas: Jurnal Pengabdian Kepada Masyarakat*, 1(2), 38–43. <https://doi.org/10.31334/jks.v2i1.291>