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# 3 River Arrangement and Unique Boat Water 4 Transportation could Interested Tourist to 5 Yogyakarta Indonesia

6

7

8 **Abstract**

9

Arrangement areas for water transportation of rivers in the Special Region of Yogyakarta Province will increase tourist interest because of the short distance, unique ornamentals. The objective was to utilize the Code, Gajah Wong, and Winongo rivers in the city of Yogyakarta as unique water transportation, reduce traffic, reduce pollution, recreational short distances. Based on the survey, holidays are very crowded in tourist place. If some land activities are distributed to the river, it will provide comfort to tourists, traders and the public. Apart from that, the arrangement of the river area improves environmental sustainability and increases health because it is beautiful, fresh oxygen. The conclusion of engineering completion was comfort, short mileage, reduce pollution in land transportation.

*Keyword Preserve the environment, transportation, cultural sustainability, tourism, community participation*

10

## 11 INTRODUCTION AND PRINCIPAL HEADINGS

12

13 The urban area that crossed by the river was a great gift as a source of life; it was beautiful if  
14 it was arranged and cared for properly. The river was a community activity for transportation,  
15 entertainment centers, tourist activity centers, and a source of a healthy life, oxygen, water, and  
16 trade for the people around the river. Of course, this had to be created and analyzed properly,  
17 the positive and negative impacts, so that the negative impacts had to be eliminated. Safety and  
18 security during the peak of activity, also during the peak of the rainy season, and Mount Merapi  
19 lava. When analyzed and continued with integrated solutions, all negative impacts can be  
20 eliminated during engineer team surveys and tests when improvements and construction are  
21 implemented in all areas during operations. Maintenance should be taken care of after activities  
22 around the river.

23 This paper is a concept of river improvement in the province of the Special Region of  
24 Yogyakarta, of course, it needs to be followed up by both experts and the local government.

25

26 Stakeholders in a tourist destination should be committed to greater compliance with  
27 environmental regulations to limit the risk factors that said activity represents for the  
28 potential for future growth and its environment. According to Government Regulation No  
29 38/2011, the river is a natural container or artificial water supply or in the form of a water  
30 drainage network along with the water inside, from upstream to estuary, with a right line  
31 border and left boundary. As the main central city, the river had an essential role in its  
32 survival. In the city of Jogja, there are five major rivers in the city center, such as Kali  
33 GajahWong and Kali Winongo. Kali Opak, Kali Progo, and Kali Code. Of the 5 rivers very  
34 close to the city center are the Code, Gajah Wong, and Winongo Rivers. The author did a  
35 direct survey of the three rivers and did not conduct interviews with the community for the  
36 two Opak and Progo rivers, but the author visited the two rivers. One of the rivers that  
37 deserve attention is the Gajah Wong River; initially, it was not maintained, and a lot of  
38 garbage was behind the beauty and splendor of the City of Jogja. Tourism experience and  
39 well-being influence destination attachment to tourism.

40

41 The potential of rivers in the urban areas of the Special Region of Yogyakarta had to be  
42 utilized for transportation in dense urban areas. Currently, Yogyakarta is a tourist city, and if  
43 it is equipped with water transportation. it will provide a multiplier effect on tourism and  
44 society. There were many other benefits, namely. river management so that the river  
45 remained healthy and clean. Increasing the catchment area to maintain sufficient water for  
46 water transportation, maintaining a healthy, clean environment, and improving health with  
47 many plants. due to oxygen, and greenery for eye health. In addition, the local community  
48 was empowered to manage water transportation, culinary in rest areas, management of  
49 cultural attractions, and management of rivers, including catchment areas. The major impact  
50 of land traffic congestion was reduced (such as figure 3 of traffic jams near shopping areas)  
51 due to the division of long-distance transportation, and medium-distance transportation is  
52 mostly through water, so land traffic chaos decreased. This makes it easy for tourists to make  
53 shopping transactions, see locations, and have culinary delights on the mainland. There are  
54 many culinary activities, and most of the shopping tours are moved near the pier or ship stop  
55

56 Based on Figure 1, tourist locations are close to three rivers by water first transportation, and  
57 the Gajah Wong River, Winongo, and Code Rivers need to be fixed so that water  
58 transportation supports very close tourist attractions. Code River was not far from Prawiro ST  
59 park, Vredenburg fortress museum, Beringharjo Market and Sultan Palace. The Gajah Wong  
60 River was not far from Temple of Sambisari, Plason, Ijo and Prambanan, RatuBoko Palace,  
61 Karst Sone Breaksi, Museum of Dirgantara and Affandi, Silver industries Kotagede and  
62 Makam Kotagede. The Winongo River is not far from Malioboro ST, Taman Sari, and  
63 Borobudur. Water transportation with groups of tourists uses unique boats, and tourists are  
64 also provided to rent water bicycles. Wheelchair (bikes and wheelchairs can be rented)

65

66 Figure 1 shows the river route in downtown Yogyakarta, which was very strategic for tourist  
67 attractions, shopping areas, and lodging so that it could reduce the density of land  
68 transportation, which was quite significant if water transportation was realized. Tourists used  
69 unique boat transportation, a unique cultural atmosphere, Yogyakarta art, the art of  
70 Yogyakarta, and entertainment along the river path so that it was refreshing while looking at  
71 attractions at temporary stops, apart from shopping for Yogyakarta cultural handicrafts and  
72 Yogyakarta special dry food. Land transportation close market or souvenir shopping is

73 crowded, but if separate, it will be comfortable.

74

75 The optimism stated in the future growth in demand for cultural tourism in the UNWTO report  
76 (2018) makes it almost certain that this field will continue to grow. Richard G, (2018) [17,12-  
77 21]

78 Cultural tourism has recently been re-affirmed by the UNWTO (UN World Tourism  
79 Organization) as a significant element of international tourism consumption, accounting for  
80 over 39% of tourism arrivals. Cultural tourism research has also snowballed, particularly in  
81 fields such as cultural consumption, cultural motivations, heritage conservation, cultural  
82 tourism economics, anthropology, and the relationship with the creative economy. It has  
83 great potential as a means of recreation. Transportation, clean river, preserve the  
84 environment, and green living. The potential of the five rivers had to be explored and  
85 minimized by the engineering approach. The Special Region of Yogyakarta Province was  
86 exciting tourism. Data 2019 [11] show 4.280.604 people in 2019, with most tourism in July,  
87 August, and December, with the number of foreign tourists still low, only 11.6% of all  
88 tourist

89

90 The objective . was to organize the city by exploiting the potential of the 3rivers so that it was  
91 not jammed, and had short mileage, a beautiful boat with art, and culture, artistic as the icon  
92 Jogyakarta will interest tourist Novelty: Tourist activities are divided between land and river  
93 areas, environmentally friendly areas, and mileage near water transportation. With a  
94 comfortable, healthy environment, the potential of the river area was arranged beautifully to  
95 interest foreign tourism in Yogyakarta. Sustainably. Sustainably improving the environment,  
96 building community awareness to clean up environmental rivers, and motivating people to  
97 live healthily by increasing O2 and beautiful views as well as community income

98

99 This unique boat took ornaments from the palace and the palace environment (sultan Palace)  
100 in Yogyakarta Province. Unique Boat of culture Yogyakarta for water transportation  
101 operational. Along the river route, it is always made to show local wisdom in art, culture,  
102 handicrafts, and durable food to be brought out of the special area of Yogyakarta. Pictures...  
103 were just examples so that the function of the river was optimal, and all local wisdom was  
104 shown, especially art, and culture. By using water transportation with unique boats, tourists  
105 spoiled their eyes, hearts, and minds so that they were happy; and entertained, and tourists  
106 took shorter trips, with no traffic jams. The government of DIY and the people of DIY will  
107 benefit from the natural environment, which will be maintained by operating water  
108 transportation and increasing income for the community/people and the government. In  
109 addition, the river environment was beautiful, and the river environment was a concern of the  
110 community. Three rivers will be created along the river with local art, culture, and wisdom

111

112 Getting to the unique boat stopover had to be facilitated by the regional government with a  
113 group, at least with a vehicle with a capacity of 8 people, so not with private vehicles which  
114 need very large parking spaces and could be obstacles when getting in and out of vehicles,  
115 chaos had to be avoided because the comfort of water transportation users had to on guard.

116

117 Engineering solutions had to support transportation, including when there was high rainfall,  
118 the river water will not overflow because infiltration was made in many places on the  
119 riverbank so that until deep groundwater but it had to be treated and closed so that it was safe  
120 if there were activities around the infiltration, but during the dry season, there were water

121 reserves from folders scattered along the river. The principles of management of overall  
122 surface water in the river catchment area are made in folders. Throughout the river, the water  
123 had to be beautiful, and clean, the water clear, and the river water level maintained by  
124 properly managed and monitored catchment areas and arrangements. Currently, high rainfall  
125 had to be stored along the river with folders and infiltration, preferably not discharged into  
126 the sea. It will be necessary to maintain water reserves during the dry season so that it is  
127 expected that the dry season and the rainy season with the highest water quality and water  
128 quantity are the same, at least almost the same. Which should not be careless. The eruption of  
129 Mount Merapi did not pollute the Winongo, Code, and Gajah Wong rivers. This was still  
130 anticipated during the Merapi eruption, although the main impact that had an impact on the  
131 Merapi eruption was the Progo River, river sediments had to be directed to the banks, and  
132 existing folders so that the sediment results were easily retrieved. Maintenance and  
133 management of rivers had to be carried out naturally by taking into account the nature of the  
134 river, currents, and river morphology so that it was easy, efficient, and effective. Along the  
135 river, the placement for the maintenance and management of the river is as attractive as  
136 possible, safe, and well managed  
137

138 The people around the river sighted a common pile of garbage, mainly plastic food packaging  
139 waste. The Pemerti Code has cooperated with clean river activities since mid-2015 and  
140 continues today. Many participants jumped directly into the river Winongo with a start at the  
141 finish in Tegal Rejo. Someone used tires and used rubber boats. However, all participants had  
142 ever previously combed the river with helmets and life jackets while tracing the river.  
143

144 This was an example of the river remaining clean, and it became a beautiful sight. All rivers  
145 in the province of Yogyakarta and the city of Yogyakarta had to always be kept clean so that  
146 water transportation became an attraction for tourists, because of short distances, beautiful  
147 scenery, and unique, artistic, and tourism activities divided into river and land routes.  
148

149 As a place that had good tourism potential, the government should contribute more attention  
150 to the area to develop optimally. With attention to the government that provided counseling  
151 to the surrounding community, the government could also assist in the form of additional  
152 facilities to support the formation of a tourism city.  
153

154 Authors and friends visited the province of DI Yogyakarta during the three- or four-day  
155 holiday everywhere where traffic jumped, and tourist sites were filled with tourism buses.  
156 This drove the author to research based on visited and secondary data.  
157

158 Land transportation had to be made another alternative that will water transportation first  
159 created, win onto the river, Code river, and Gajah Wong river, after that Opak river, Progo  
160 river. The potential of the Progo and Opak Rivers is developed for water transportation but  
161 after the three rivers in the city center of Yogyakarta.  
162

## 163 METHODOLOGY

164

165 **Research Method**

166 A qualitative approach based on the need to reduce traffic in Yogyakarta during holidays,  
167 short distances to tourist attractions, and as daily transportation to the city of Yogyakarta.  
168 Methodologically, the approach is aimed at water transportation in demand by tourists, and  
169 residents as functional water transportation, high aesthetic value, and preserving Yogyakarta  
170 culture. A qualitative approach is used in this exploratory study of water transportation needs,  
171 cultural richness, especially the interest of foreign and domestic tourists during holidays  
172

173 **Site Analysis**

174 **1.A Geografi Yogyakarta**

175 DI Yogyakarta is located in the central-southern part of Java Island, geographically located at  
176 109°40' - 111° 0' East Longitude, 8° 30' - 7° 20' South Latitude. Based on the land area, the  
177 DIY region is grouped into four physiographic units, namely the physiographic unit of Seribu  
178 or Sewu Mountain, Merapi Volcano, the Kulon Progo Mountain physiographic unit, the  
179 Mountain physiographic unit, and the Lowland physiographic unit. Two major watersheds in  
180 Yogyakarta Province were the Opak-Oya watershed in the east and the Progo waters in the  
181 west. The famous rivers in the province of Yogyakarta include the Boyong-Code River Gajah  
182 Wong River, Winongo River Serang River, Progo River, Bedog River, Oya River, and Opak  
183 River. The potential to be studied in the first river engineering yang were Code, Gajah Wong,  
184 and Winongo. Next Opak and Progo river. The Gajah Wong Jogja River is predominantly  
185 located in the east.  
186

187 **IA.1. River for nature tourism outside the city of Yogyakarta**

188 **The** Progo River comes from Mount Merapi and continues to flow into the southern sea,  
189 having various potentials that can be developed. One of its potentials was in the field of  
190 tourism. The Progo River was a potential tourist attraction, especially for rafting. This  
191 supported large currents and long streams, rocky. The potential of arum rafting in this area  
192 started there for a long time but did not develop optimally.

193 Urban development generally originated from a small settlement (urban embryo), which  
194 spatially had a strategic location for economic activity. Over time, the city grew as a result of  
195 population growth. and socioeconomic and cultural changes, and it interacted with other  
196 cities and surrounding areas. One of them used the riverbank area as a place of economic  
197 activity. This was due to the increasingly limited vacant land or other resources that could be  
198 utilized as a source of economic activity.

199 Physically, the development of a city could be characterized by its increasingly crowded and  
200 dense population, the inter buildings getting closer, and the area being built, especially the  
201 settlement that tends to be wider, as well as the more complete city facilities that support  
202 activities in urban space. However, the increase in the population and the expansion of the  
203 region where a city was built were not always followed by an increase in the region of  
204 influence. Not every part of the city had increased but instead experienced environmental  
205 degradation. This indicated that the city experiences a dynamic phenomenon concerning  
206 urban development. Therefore, the development of riverbanks still merits the environmental  
207 balance so that people's lives and the environment remain harmonious.

208 *As a place that had good tourism potential, the government should contribute more attention*  
209 *to the area, to develop optimally. With attention to the government that provided counseling*  
210 *to the surrounding community, the government could also assist in the form of additional*  
211 *facilities to support the formation of a tourism city.*

212 Authors and friends visited the province of DI Yogyakarta during the three- or four-day  
213 holiday everywhere where traffic jumped, and tourist sites were filled with tourism buses.

214 This drove the author to research based on visited and secondary  
 215

216 **FIGURES, MULTIMEDIA, AND SUPPLEMENTARY FILES**

217 **Table**

218  
 219 **Table 1:**

220 A description caption (not a title) should be used above each table.

221

	Foreign Star	Non Star	Domestic Star	Non Star
Amount	187,795	311,071	1,473,804	2,307,934
Total (F+D)Tourist	498,866 <sup>a</sup>	4,280,604	3.781.738 <sup>b</sup>	

222

Total of Foreign Tourists to Table I b Total of Domestic Tourists to Table I  
 Figures



223

224 **Figure 1**

225 Code, GajahWong, Winongo river flow tourism place in Yogyakarta city.



226  
228

229 **Figure 2**

230 Gajah Wong River, An example of an amphitheater for an attractive short performance when boat  
231 users stop by while enjoying attractions or gamelan or traditional music/music and shopping for  
232 handicrafts, This unique boat took ornaments from the palace and the palace environment (sultan  
233 Palace) in Yogyakarta Province

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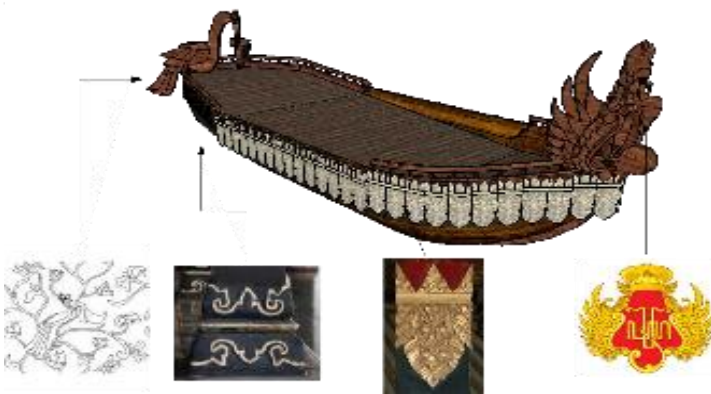
241

242

243

244

245



247 Figure 2A. This unique boat took ornaments from the palace. From left to right the symbol on  
248 the boat: a couple of birds at Tamansari ornament lower pole ( pedestal) in the palace hall.  
249 Praba & tlapcan ornament palace hall Praja China ornament on the upper sign-board terrace  
250 at the palace

251

252



253

254

255

256

257

258

**Figure 3**

**Land transportation: Traffic jams near shopping areas**

**Supplementary files for publication**

Number of Tourists to Province Yogyakarta Year 2019 (per month and type of

259 accommodation)  
 260 Tourism statistics, Tourism Yogyakarta Province 2019. Refer table 1  
 261 **C. Supplementary files for publication**

262 Table 2. Number of Tourists to Province Yogyakarta Year 2019 (per month and type of  
 263 accommodation)

264 Tourism statistics, Tourism Yogyakarta Province 2019. Refer table 1

NO	Tourist	Jan	Feb	Mar	Apr	May	June	July	August	Sept	Oct	Nov	Dec	Total
I	Foreigner Tourists													
	Sub Total	33,533	30,611	36,736	43,398	42,278	42,600	49,852	55,400	40,356	42,692	37,876	43,534	498,866
II	Local Tourists													
	Sub Total	390,152	331,17	382,553	400,291	498,505	425,812	287,50	341,345	365,041	34,126	8,947	17,910	3,781,738
264	Grand Total	423,685	361,781	419,289	443,689	540,783	468,412	328,602	396,745	405,397	383,954	46,823	61,444	4,280,604



266  
 267 **Figure 4**  
 268 Multilevel Stages(Source: Internet)

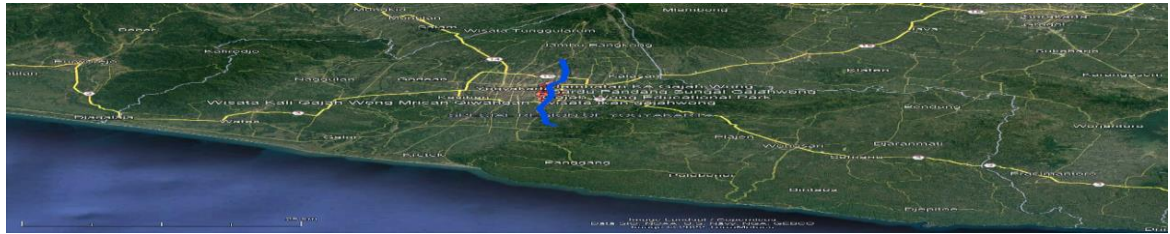
269  
 270 If stopover limited space preferable: A multilevel stage in the free space area on the river for  
 271 performances or exhibitions of traditional cloth products and traditional music/gamelan. Land  
 272 limited that the stage was multilevel in that it took advantage of the narrow/small space but  
 273 the lower part of the gamelan for traditional performances. A multilevel stage in the free  
 274 space area on the river for performances or exhibitions of traditional cloth products and  
 275 traditional music/gamelan. Land limited that the stage was multilevel in that it took advantage  
 276 of the narrow/small space but the lower part of the gamelan for traditional performances. For  
 277 performances when water transportation passed a lot/meeting, especially at the end of a trip  
 278 by a unique boat.



279  
 280  
 281 **Figure 5**

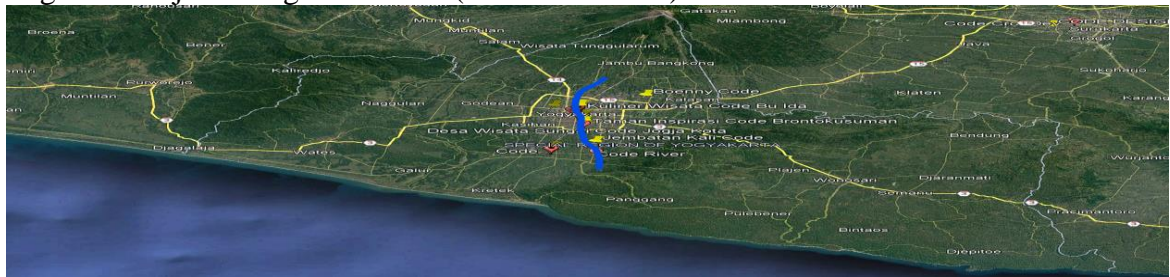


282 Gajah Wong River gazebo along the water transportation (Source: Internet)  
 283 This was just an example of making use of riverside space so that it had multiple functions  
 284 for tourists and the community.  
 285 This was just an example of making use of riverside space so that it had multiple functions  
 286 for tourists and the community.  
 287



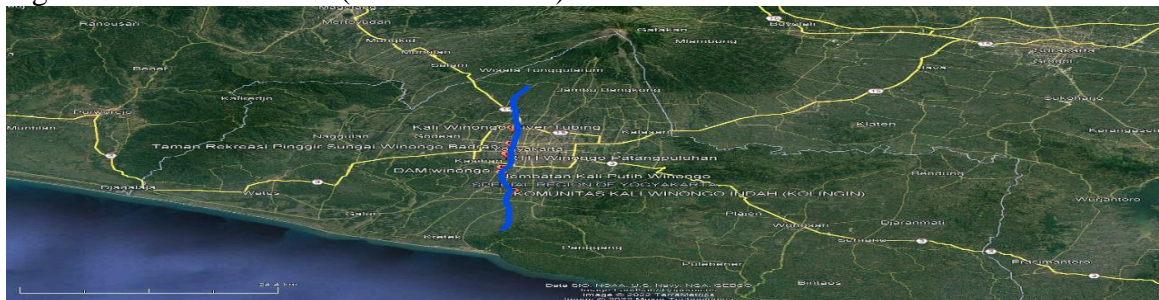
288

289 Figure 6. Gajah Wong River flow (Source: Internet)



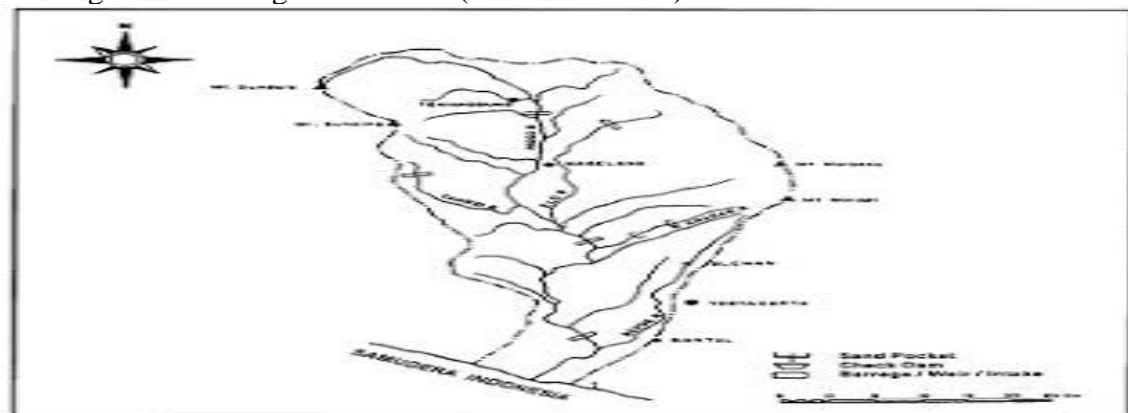
290

291 Figure 7. Code river flow (Source: Internet)



292

293 Figure 8. Winongo River flow (Source: Internet)



294

295 Figure 9. Progo Riverwatersheds (DAS) (Source: Internet)

297 The Progo River was an area of 2380 km<sup>2</sup> province and passes through the provinces of  
298 Central Java and Yogyakarta. ProgoRiver is a large river that passes Yogyakarta city. River  
299 basin with a length of 140 km, but 75% flow in Yogyakarta. The Progo River was one of the  
300 great rivers that crosses the city of Yogyakarta. In the river's estuary, Progo was famous as a  
301 sand mining area.

302 The upper river Opak is 65 km long; the mountain Merapi flows to the south with the estuary  
303 overlooking the Indian Ocean on the coast of Samas. This river passes the west side of  
304 Taman Wisata Prambanan Temple. Watershed 638.89 km<sup>2</sup>. The average monthly water flow  
305 of the Opak River is approximately 12.35 m<sup>3</sup>/sec, with a maximum of 83.2 m<sup>3</sup>/sec and a  
306 minimum of 1.89 m<sup>3</sup>/sec. The Gajah Wong Jogja River is predominantly located in the east.  
307 In general, Progo had good tourism potential but had not been developed optimally. The use  
308 of space on the riverbanks is regulated in the spatial regulations of each region, but it was the  
309 development of the main function of the river basin area as the area of "buffer" was fading  
310 and replaced into a container for community activities. These more flexible patterns of space  
311 use trigger spatial conflicts in some urban rivers in Indonesia.

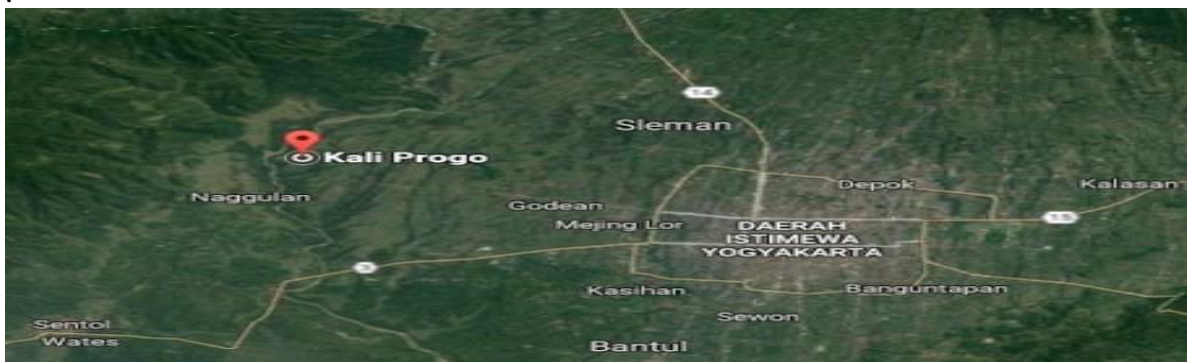
312 flew into the southern sea, dividing the plains of Sleman District with Kulon Progo District.

313 In general, the Progo River was very familiar to the citizens of the Yogyakarta Special  
314 Region because the water of the Progo River was very meritorious in irrigating rice fields.

315 In general, the physical condition of settlements in the watershed was quite feasible, and the  
316 development of riverbanks was still relatively low so that the naturalness was maintained.

317 Some of the inhabitants work as farmers. The river flow of Kali Progo used the people as an  
318 irrigation stream to irrigate their fields

319 .



320

322 **Figure 10**

323 Progo River divides the Sleman and Kulon Progo Districts (Source: Internet)

324

325 As a place that had good tourism potential, the government should contribute more attention  
326 to the area, to develop optimally. With attention to the government that provided counseling  
327 to the surrounding community, the government could also assist in the form of additional  
328 facilities to support the formation of a tourism city.

329 Cycling tourists tend to travel with their community. Cyclists prefer to stay in tourist  
330 apartments (44%) and 4-star hotels (32%), mostly traveling with friends or acquaintances and  
331 those with moderate to high levels of purchasing power Next, 17% of star hotels stay at 3-star  
332 hotels, 5% stay at 5-star hotels and 2% choose hostels. Using a rented bicycle, 80% of those  
333 surveyed answered that they had rented one of their bikes from Bike Breaks, whereas 14%  
334 travel on their bike and 6% rent from another company in town. Girona is a city in Spain.  
335 Girona families with medium to high incomes indicate that there is much room... The results  
336 of this study need to be used as a reference for Yogyakarta. With an increase in foreign  
337 tourists need the required stay facilities and other facilities to provide comfort, safety, and

338 happiness so that foreign tourists as marketing will convey to friends in their countries  
339 Mundet L, Marin J, Figueroa, A, 2022 [13,39] [3]

340 This paper shows that using information and communication technologies, contemporary  
341 urban public spaces will represent the place of many people as learners, and provide an  
342 environment for lifelong informal learning. Nour Z, Rafieian M, Ghasemi K (2019)[15,91-  
343 98] [5]

344 This study proposes to use this technique in cutting loop meanders to shorten the channel  
345 length, for safe navigation inland first-class cargo transportation. Suitability of the Nile the  
346 meander Damietta branch. Fahmy W. A, Hekal N (2021) [12]

347 Improving sewage networks can enhance the quality of surface water resources and livestock  
348 farming in the study area. the rainy season, especially in August. PCA/FA identified five  
349 factors causing the decline in river water quality, a valuable 85.3% of the total variance. The  
350 APCS–MLR model was used to quantitatively evaluate each source on water quality  
351 parameter contributions. The average contribution rates from geogenic processes, sources of  
352 poultry farming, household pollution, agricultural activities, and transportation pollution were  
353 24%, 17%, 9%, 21%, and 5%, respectively, Liu Q-m, Peng W-h, Liu Y, Wang Z-t (2022) [2]

354 . Information about crust formation, surface roughness, and sediment availability. How this  
355 factor might affect the prediction of the direction of sand transport using the Friberger  
356 method. is considered important Kolesar K.R. Mavko M, Burgess (2022) [11,58][13]

357 The results of this study suggest the application of more efficient alternatives to attract green  
358 tourism, including clean energy for land transportation, and even carbon-neutral transport  
359 solutions, such as hybrid machines.

360 The sustainable development of a tourism model will not only help preserve Australia's  
361 natural environment but will also ensure the continued arrival of international tourists, as  
362 maintaining and improving the environment, biodiversity, and ecosystem is the key to the  
363 future of tourism. Adventure-based dives such as hiking and scuba diving are promoted to  
364 reduce energy consumption. Khanal A, Rahman M. M, Khanam R, Velayutham. E  
365 (2022) [10]

366 This study has several limitations for opportunities for future research. First, people may  
367 mix their satisfaction/like with the destination, the attributes of the destination, or the activities  
368 performed at the destination (people are happy with their trip because they are enjoyable or are  
369 going to a recreational destination) (see De Vos, 2019). Second whole loyalty and satisfaction  
370 are mediated, and mediation is investigated by an understanding of the role of travel satisfaction  
371 in tourism and goal image. Third, the relationship between destination satisfaction, trip  
372 satisfaction, and return visit intentions is estimated to mostly impact short-term representation.  
373 Estimating based on long-term relationships and recalled experiences can help better  
374 understand phenomena appropriately. Fourth, future studies measure destination satisfaction  
375 and can consider destination satisfaction measured through several attributes (such as people  
376 and culture, such as nature, transportation, infrastructure, hospitality, food, accommodation,  
377 etc.) Fifth, these inclusion criteria achieve some of the same auditing objective relationship  
378 (i.e., the impact of trip satisfaction on loyalty and destination satisfaction). National park  
379 visitors use different modes of travel (e.g., air travel, public transit, etc.) Acharya S, Mekker  
380 M, De Vos J (2023) [1,7]

381 Adequate services supported and collective transport infrastructure by appropriate and  
382 effective information can ensure a highly satisfying visit to the mobility of urban tourists  
383 while contributing to Barcelona's developed highly collective transport network, consisting of  
384 an extensive subway line, equipped with trams and buses, with appropriate intermodal

385 connections, also with suburban or regional networks (including rail). The lack of prior  
386 knowledge of the city and highly satisfactory expectations of the visit are matched by the use  
387 of collective means of transport. It is also possible to show large numbers of tourists in local  
388 collective transport networks that presence can have negative implications for this congestion  
389 of infrastructure and services, thereby negatively affecting the daily mobility of residents.  
390 Romão, Bi Y (2021) [8]

391 Isolation-focused analysis line or network in the early stages of consolidation. Other  
392 complements can be drawn. The number of passengers did not increase significantly at the  
393 destination associated with HSR when compared to the control group. This strengthens what  
394 other studies have noted: that the connection changes the offer of transportation without  
395 leading to a large increase in the number of passengers, above conditions gains more  
396 technologically advanced high-speed transport networks and in competitiveness associated  
397 with investing in new. It is that hit Spain has had a seasonal level also important to highlight  
398 the past economic effects of the crisis. Domestic tourist consumption capacity reduces the  
399 number of annual trips, increasing seasonally. The results should be considered by public  
400 policy programs because they offer compelling evidence to justify the investment and plan a  
401 new HS line. Martín J.M. M. Fernandez J.A. S (2022)

402

403 Empirical studies on the transport-economy link integrate the factors of transport  
404 accessibility, but studies on the transport-tourism link do not include these factors at all. First,  
405 the theoretical framework supporting the use of transport accessibility factors in CGE models  
406 to estimate the impact of transport on tourism is nothing, and it may be difficult to factor in.  
407 Second, since the empirical CGE model was first formulated by Johansen (1960), the CGE  
408 model has been applied in tourism economics and transport economics studies, but not  
409 extensively in tourism-transportation studies. Third, accessibility factors such as  
410 infrastructure, improvements in travel costs, and provision of information are partially  
411 considered in several works, while other accessibility factors are not recognized at all. This  
412 may be due to the difficulty of integrating these factors and measuring them. Truong N. V,  
413 Shimizu T(2017)

414

415 The influence of the context of airport research on service quality has received limited  
416 attention. This study related to airport and destination choice investigates airport service  
417 quality. Specifically, the study examines the relationship between behavioral intentions,  
418 including airport reuse airport, service quality, passenger satisfaction, and destination revisit.  
419 The major Australian airports in the sample consist of departure passengers. The results  
420 confirm that overall airport service quality and destination revisit are significantly related to  
421 airport reuse. Passenger reuse airports exert significant mediation effects and satisfaction  
422 between intended outcome variables and airport service quality. Implications of these  
423 findings and discussion conclude this paper Prentice C, Kadan M(2019)

424

425 Transparency of tariff information can reduce dissatisfaction with tariff modulation through  
426 negative direct effects and negative moderating of tariff modulation effects Zrelli I. Demnati  
427 H, Yedder M (2018)

428

429 Memorable travel experiences significantly influence place attachment, and hedonic and  
430 eudaimonic well-being fully mediate this relationship. The frequency of visits did not affect

431 the relationship. Vada S, Prentice C, Hsiao A (2019)  
432

433 Increasing environmental sustainability is not carried out at the expense of the variable  
434 principles of tourism growth, Fernández J.I.P, García P.J.C, Pulido J.A.E (2019) [7,9]  
435

436 Land vehicles that need to be provided by the tourism service for rent to visitors. Horse-craft,  
437 pedicab, bicycle. Water bikes that can be used by tourists in addition to unique and artistic  
438 boats are also water bikes (not for groups)



439  
440 Figure. 11, 12 Water bike for water transportation, environmentally friendly, nonpolluting.  
441 (Source: Internet)

443 Activities around the jetty continued with traditional vehicles because the distance was  
444 relatively close. The traditional transportation without pollution is called the Pedicab adjust,  
445 as shown in figure 13, and the short-distance transportation around the jetty is shown in  
446 figure 14. Horse carriage



447  
448 **Figure 13**  
449 Pedicab. (Source: Internet)



451  
452 **Figure 14**  
453 Horse carriage can carry up to 5 adults(Source: Internet)



454  
456

457 **Figure 15**  
458 Water traffic patrol, for the safety of water transport (Source: Internet)

459  
460 **Mathematical equations Nothing RESULT and DISCUSS**  
461 **Results and Discussion**

462 Site Analysis menunjukkan potensi water transportation di Yogyakarta city and District  
463 sangat banyak, selain itu potensi rekreasi aliran sungai.

464 If it is carried out with good planning and supported by local authorities (local government  
465 and central government), it will certainly produce water transportation near mileage, land,  
466 and river activities separated (reduced traffic density ) that is of interest to tourists, residents  
467 use water transportation. Many tourist attractions are not far if the three rivers' water  
468 transportation Code River needs to be fixed so that water transportation supports very close  
469 tourist attractions. Code River needs to be fixed so that water transportation supports very  
470 close tourist attractions

471  
472 Many tourist attractions were not far if the three rivers' water transportation Code River needs  
473 to be fixed so that water transportation supports very close tourist attractions. Code River needs  
474 to be fixed so that water transportation supports very close tourist attractions  
475

476 . Code River needs to be fixed so that water transportation supports very close tourist attractions.  
477 Code River was not far from 4 tourist attractions ie Prawiro ST park, Vredenburg fortress  
478 museum, Beringharjo Market and Sultan Palace. The Gajah Wong River was not far from many  
479 tourist attractions from Temple of Sambisari, Plason, Ijo and Prambanan, RatuBoko Palace,  
480 Karst Sone Breaksi, Museum of Dirgantara and Affandi, Silver industries Kotagede and  
481 Makam Kotagede. The Winongo River is not far from 3 tourist attractions Malioboro ST,  
482 Taman Sari, and Borobudur.  
483

484 **DISCUSSION**  
485

486 This water transportation is still an idea, a concept, and needs planning that will provide a  
487 solution for Yogyakarta. With a thorough analysis of Yogyakarta. These solutions included  
488 the traffic load in the distribution of land and water traffic so that it was not chaotic, not  
489 congested, and provided convenience for transportation users, increasing the interest of  
490 tourists visiting Yogyakarta. Yogyakarta's activities were very developed towards a city. If  
491 that provides comfort, not concentrated on the mainland, the calm flow of water and the  
492 comfortable, sophisticated, artistic, and clean environment have an impact on health. It is  
493 necessary to pay attention to safety in the water with water patrols and external medicines in  
494 health boxes at temporary stopover locations.  
495

496 Should follow up initial solutions with more detailed, more mature research and review:

- 497 1. Culture is a selling and enhanced value for tourism, unique, exciting water transport
- 498 2. Local wisdom from home, accessories, batik cloth, and performance on water transport  
499 should be attractive, organize the social environment with the community and use batik  
500 uniforms
- 501 3. River meandering there is an eroded site, side settles, it needs to be determined to avoid

- 502 and resolve and should be utilized to be beautiful and unique
- 503 4. Sediment ponds in one place if you want to dredge, easy and cheap. The structure comes
- 504 from the surrounding material by recognizing the behavior of the river from the laboratory
- 505 results.
- 506 5. Boulder is a natural material that is very useful for the structure of jetties and the safety of
- 507 the cruise line and river walls.
- 508 6. Boat with an engine that analyzes strength and speed and minimizes contamination,
- 509 7. Transportation to the location without a machine that is Andong and Pedicab, bicycle, or
- 510 wheelchair to get to the tourist location distance of 2 km.
- 511 8. Riverbanks are arranged with rock structures that are potential for the river, the depth of
- 512 the stream should keep stable so that maintenance is necessary, the transport convenience is
- 513 not subject to rain, heat, environmentally friendly machinery, cleanliness of the river, ships
- 514 and tourist sites must be maintained boats and tourism locations
- 515 9. Reforestation includes five river catchment areas, increasing the volume of water and
- 516 beautiful scenery along the water transport. Information technology resources help develop
- 517 the capabilities necessary for creating an intelligent tourism ecosystem.
- 518 10. The social environment needs to be organized and improved, with on-the-job training,
- 519 karmic arrangements, a healthy serving of food or drink with hospitality, Indonesian and
- 520 English skills, and expertise in caring for and running water transportation.
- 521 11. The manager of water and land transportation, payment system with e-money and directly
- 522 when using water transportation and tourist attractions,
- 523 12. Management of river areas by the community, namely, the marketing of regional
- 524 products, water transportation, space rental, tent (place to sell) room for merchandise, and
- 525 culinary sales. get income
- 526

527 In addition, there had to be a water traffic patrol so that transportation users felt safe and

528 prevented the adverse effects of water traffic opportunities for water transportation in the

529 Yogyakarta Province Code, GajahWong, and Winongo rivers, in addition to the Progo and

530 Opak rivers.

531

532 in Yogyakarta Province and Yogyakarta City because of the dense traffic that passed through

533 the city center. In addition, the distance traveled by water transportation is shorter compared

534 to crossing the land. In addition to the unique water transportation, a new friendly

535 environment, and a beautiful green environment. Of the five rivers, of course, it had to be

536 made on a potential scale with ten appropriate criteria designed. Reforestation in the water

537 catchment area increases the volume of water and green scenery that provides cool eyes and

538 oxygen. Relatively small ship engines produce CO<sub>2</sub>, and an electrical machine for the ship

539 should be tried. Management of water transportation and accessibility tourism had to be

540 community-based; it hoped that the community protected and cared for the environment and

541 became the people's dream for the welfare of people's lives, sustainable services, and

542 increasingly satisfying tourists because of a friendly and healthy, comfortable environment.

543

544 For transportation to tourist sites, it is necessary to continue with nonfuel vehicles, namely,

545 bicycles, land and water bicycles, horse carriages, pedicabs, and wheelchairs. To increase the

546 speed, an electric drive must be used. For rickshaws, bicycles, and wheelchairs, but

547 hopefully, not all of them use electricity so that the environment is more natural.

548

549 In the area of temporary stops or early and final stops, there were facilities for exhibitions or  
550 performances with limited stages. The stage was made of 2 floors: the lower part was for  
551 exhibitions, and the upper part was for traditional dance or music performances. Traditional  
552 music throughout the operational hours of water transportation. The water transportation  
553 route created an artistic and cultural atmosphere because gamelan provides calm and  
554 introduces traditional arts. Likewise, at the bottom of the stage, there is a showcase for  
555 handicrafts, shadow puppets, miniature Yogyakarta provincial gamelan, and traditional batik  
556 cloth with a list of the types and motifs of batik meaning and usage, miniature Yogyakarta  
557 traditional houses, and provincial dried food ranging from the snack market to those served in  
558 the palace area.

559

560 The main impact is that foreign tourists will increase significantly, but had to be equipped  
561 with lodging, and land transportation facilities to tourist attractions. Attention to security, and  
562 comfort, as well as shopping centers that were safe, comfortable, artistic, clean, and tidy, all  
563 of which had to involve the community, business people, Yogyakarta authorities, and the  
564 central government. If all of them synergize fantastically as icons of foreign tourists

565

566 The main obstacles and problems are understanding the culture and local wisdom of the river  
567 and the environment. Obstacles and problems can be the strength of the sales value for  
568 tourism, especially from abroad. The value forces that appeal to tourism included the  
569 following:

570

571 1. The people who still cult the mystical areas care for and protect the area-provided facilities  
572 so that they are localized and attractive to other regions or countries.

573

574 2. River meandering impacts some sides settled and eroded. The eroded part gave strength,  
575 while the residue installed strengthened into a sediment pond so that it allocated dredging—  
576 the meandering river when arranged as beautiful. Meandering avoids very heavy currents  
577 carrying large materials that endangered humans.

578

579 3. Sediment ponds could be used for localized sand mining

580

581 4. Big stone as a place to step down and ride passengers and cultural attraction

582

583 5. The transportation of water increased tourism interest because of the close distance, unique  
584 transportation, unique customs, and crafts. In addition to environmental uniqueness and  
585 beauty

586

587 6. The social environment supported a better life by engaging in water transport and green  
588 transportation management.

589

590 7. A touch of engineering that considered the environment and uniqueness added to the  
591 attraction of tourism.'



592

593 8. Rivers provided prosperity, a source of life, and a healthy environment\

594

595 9/River centralized activity tourism and the community tried to improve the environment and  
596 welfare

597

598 The author continued researching sediment laboratory research, soil structure, rainfall, river  
599 volume, river water level, and river flow. Engineering analysis should be comprehensive,  
600 with appropriate solutions supported by primary data, sediment samples, soil investigation,  
601 flow survey, flow rate, slope river, vomit lava, wide watershed, catchment area, and river  
602 wall material.

603

604 Analysis needed:

605

606 1. Approach to society, adapted to the culture

607 2. local wisdom should be explored to increase the added value of tourism

608 3. the meandering river should be utilized to make it beautiful and unique by placing  
609 Yogyakarta cultural ornaments on transparent boxes or racks

610 4. River was easily shallow, with engineering needed made sediment ponds and lava pond  
611 exploration before the sediment was into the river.

612 5. Boulder was a valuable material to be placed in Jetty, where tourism goes up, down river  
613 transportation

614 6. Needs to be arranged by the riverside, provide transportation convenience, clean river,  
615 and no garbage. Each boat or ship had an available small garbage pocket for temporary  
616 garbage during the operation. River concrete walls are not easily eroded compared to rock  
617 plastering.

618 7. Transportation to tourist sites without machines, e.g., bicycle, Pedicab, Andong,  
619 wheelchair. Wheelchairs need to connect to the electrical power

620 8. River transport by boat was used to minimize environmental damage

621 9. Social environment arranged, managed, friendly service, Indonesian and English  
622 language skills, expertise in caring for and running water transportation.

623 10. Analyze the success of other countries that had sophisticated tourist locations and  
624 successful water transport sustainable tourists visited.

625 11. Organize the entire transportation of the river, vehicle, jetty, boat, or ship, transportation  
626 managers, and payment systems, and organize the social and natural environment.

627 12. Community involvement with skills, expertise, and welfare Implementation of sustainable  
628 river area activities

629 13. Engineering solutions such as overcoming the river were quickly shallow, and the river  
630 water security decreased because of rocks and sliding. The data and completely surveyed had  
631 to be analyzed and integrated

632

## 633 CONCLUSION

634 Preliminary surveys and secondary data on the analysis of the concept manuscript,  
635 Arrangement of water transportation in Yogyakarta show that if water transportation on three  
636 rivers is realized, 17 tourist attractions with short distances avoid land traffic jams in the city

637 of Yogyakarta, besides water transportation users enjoy the beauty of nature, culture,  
638 environmental freshness  
639

640 Conclusion :the potential of the 3 rivers had short mileage, no crowded, beautiful boat with  
641 art, and culture, artistic as the icon Jogjakarta  
642

643 Integrated and deep analysis and support from various stakeholders will realize water  
644 transportation that has a comprehensive impact, among others, foreign tourists and  
645 Indonesian tourists, health, comfort, beauty, artistic, cultural, community economic, business  
646 and increase income Yogyakarta and central government  
647

648 Additional information on Urban planning had to be thoroughly analyzed, such as potential  
649 analysis, solution plans, and positive and negative impacts. The negative impact had to be  
650 removed or even eliminated. All experts, people who understand the history of the province  
651 of Yogyakarta, the local government prepared a design and operational team with the  
652 complete person in charge, budget preparation, and the central government gave policies,  
653 involving relations with other countries, especially in terms of foreign tourists. If water  
654 transportation is realized in an integrated manner, it will reduce environmental damage,  
655 especially air pollution, traffic congestion, reduced fuel wastage due to reduced congestion,  
656 air pollution and a healthy environment full of O<sub>2</sub> in areas around rivers and catchment areas;  
657 of course, it has a positive impact not only in Indonesia but also in surrounding countries. In  
658 addition, tree plantations provide income for the community for wood products. Rotational  
659 cutting and well-managed replanting certainly have a positive impact not only on Indonesia  
660 but also on nearby countries. Air transportation needs to be analyzed in an integrated way  
661 with the natural environment, social environment, engineering, operation, and maintenance of  
662 water transportation.  
663

664 The advantages of water transportation are along the river, seeing the calm flow of the river  
665 soothes the soul, you can hear the strains of gamelan and you can see the art, culture, and  
666 local wisdom of the province of Yogyakarta which is artistic, beautiful, entertai ning, calming  
667 and hones creativity.  
668

669 Recommendations. River arrangement by considering the first existing engineering  
670 conditions of three rivers, soil structures around the river, water management during the rainy  
671 and dry seasons, and the environment to increase the sold value of foreign tourists. Water  
672 transportation is expected to be well-realized so that the Special Region of Yogyakarta  
673 Province became a tourist province used as an example in Indonesia and the world because of  
674 the sustainable tourist rides area and the short distance to effective and comfort. The unique  
675 ship shape and Yogyakarta ornaments art heritage preserved created the river location that  
676 attracts tourists, with Yogyakarta culture and a unique sustainable tourism province. It was  
677 still a concept design; funding had to be available to continue the survey needed, and the  
678 local government implemented it.  
679

680 The author publishes a Planning and concept manuscript so that the world community  
681 attracted to investment to realize this integrated water transportation so that it became an icon  
682 of Yogyakarta and becomes a world example for the use of water transportation by ships that  
683 were unique, artistic along the river equipped with art, culture, gamelan or sound strains

684 which give peace, coolness and sharpens the right brain. In addition, Indonesian investors  
685 support the Indonesian government in realizing unique, artistic water transportation.  
686

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691 realized. and became an icon of tourism in Yogyakarta in particular and all provinces in  
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693 paper  
694

#### 695 **CONFLICT OF INTEREST**

696 No conflict of Interest  
697

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702 Author Location Survey, Collection of Primer data (interview local community). Local of  
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704

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