

DEVELOPING TOURING PLAN USING GEOGRAPHIC INFORMATION SYSTEM BASED ON VISUAL, NATURAL, AND CULTURAL QUALITIES IN PARANGTRITIS COASTAL AREA, YOGYAKARTA, INDONESIA

The objectives of this study is studying on developing touring plan in coastal area of Parangtritis based on its visual, natural, and cultural quality assessment. Those three aspects of quality are used as the basic consideration for site assessment in acquiring the potential tourism area, which is subsequently used in developing a touring system.

Scenic Beauty Estimation (SBE) method and visual character variables assessment are used in assessing the visual quality of the study area. The technique of potential zones mapping applied by Gunn (1994) combined with cartographic regionalization (Smith, 1989) are used in assessing both natural and cultural quality of the area.

In general, Parangtritis is dominated with high to medium quality of potential area for tourism, which includes beach, sand dunes, woodlands, and a big part of agriculture area. Based on potential area and existing tourism objects, there are three track alternatives that have been developed in this study by using the concept of developing an interpretive track, as adopted from Damayanti (2003).

According to the prioritizing process using Analytical Hierarchy Process (AHP), the third alternative of touring plan, which has the highest priority for the criteria of educational benefits, is perceived to be the most preferable alternative as the potential tourism network in Parangtritis Coastal Area.

Keyword: *Tourism, Touring Plan, Visual Quality, Natural Quality, Cultural Quality, GIS, Interpretation, AHP.*

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ABSTRACT

INTRODUCTION

Background

Indonesia is enriched with varied landscape forms and tropical natural beauty as well as the diversity of cultural that have become its basis of tourism development. Indonesia is also known as one of the biggest tropical tourism destinations with the second longest shoreline than any other countries in the world. It has plenty of beaches that become the famous tourist destination places. One of the most famous beaches is the one that is located on south coast of Java Island, namely Parangtritis Beach.

Parangtritis is one of tourist destination place in Indonesia that is visited by plenty of visitors from other places since years ago. It has already known because of its local legend of Kanjeng Ratu Kidul, besides of its beautiful landscape and scenery of beach. In fact, this area still has many other varieties of tourism objects, but it is rarely including in a touring system that serves the visitors with

informative and recreative interpretation within the current tourism management.

Concerning that issue, it is important to plan a touring system for tourism network integrated with the interpretation of its local quality of visual, natural, and cultural factors in order to enrich visitors' experiences by provoking them about the significance values of the tourism objects and attractions of Parangtritis Coastal Area.

Objectives

The main objectives of this study is studying on developing touring plan in coastal area of Parangtritis based on its visual, natural, and cultural quality assessment. More specifically, this study has several objectives as following:

- To perform a visual quality assessment using scenic beauty estimation (SBE) integrated with visual character consideration.

- To analyze the natural and cultural quality of the coastal area of Parangtritis.
- To make an integration among the visual quality assessment result and the natural quality as well as the cultural quality to obtain a potential tourism area and potential stops within the coastal area of Parangtritis.
- To prioritize the most preferable touring plan that will be the linkage among the potential stops or tourism objects within the coastal area of Parangtritis.

LITERATURE REVIEW

Coastal Zones

Sains and Knecht (1998) defined coastal zone as the place where the waters of the seas meets the land, which is indeed the unique place in global geography. Besides its economic sense as sites for port and harbor facilities, as well as the most productive and richest habitats on earth as resulting bounty in fishes and other marine life, the coasts are

also highly valued and greatly attractive as sites for resorts and as vacation destinations.

Tourism

Gunn (1994) has cited that tourism is defined as all travel with the exception of commuting. Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business or other purposes (Holden 2000).

The main reason of why people visiting one place is that there is such certain magnetism about that place. Gunn (1994) noted that the reasons are grounded in the destination's resources, natural and cultural, and the attractions that relate to them. The attractions of a destination constitute the most powerful component of the supply side of tourism. Kelly (1998) concurs that the primary type of the attractions in a tourist destination is the one that is mostly emphasized in tourism product which is being marketed and delivered, such as ecotourism, nature tourism, cultural tourism, and adventure tourism.

Visual Quality

Visual quality is clearly of vital importance to the human sense of well-being and it involves the art of discrimination of making judgements (Porteous 1996). Daniel and Boster (1976) used scenic beauty in expressing human judgment of the environment visually in response to his perception of a landscape. Moreover, they cited that landscape scenic beauty is one of the most important of our natural resources.

Interpretation

Veverka implied definition of interpretation that is defined as a communication process designed to reveal meanings and relationships of our cultural and natural resources to the public, through first hand experiences with objects, artifacts, landscapes, or sites. Knudson *et.al.* (1995) emphasized this definition by arguing that interpretation helps people to gain a sense of place, to respond to the beauty of their environment, and the significance of their

cultural surroundings. How well the visitor understands the important meanings and relationships of the site become the final product of the in-terpretive effort.

Geographic Information System (GIS)

Geographic information system (GIS) is a science of spatial information that acts as an inventory tool, analysis tool, and management tool. It essentially helps in transformation of the discrete raw data via overlays into information for decision making process (Krishna *et al.*, 2000). Gunn (1994) concurs that GIS is a very helpful tools in tourism planning process, as it can assure that the speed and accuracy of performing computer mapping and spatial analysis are improved greatly.

METHODOLOGY

Time and Location of Study

This study was carried out from April until September 2006. It is conducted in Parangtritis Village in Bantul District, Province of Yogyakarta, which is located from 110° 16'40" to 110°20'20" East Longitude and from 07°59'15" to 08°01' 10" South Latitude. Parangtritis Village is located within Kretek Sub-district which covers an area of 967, 201 acres. Figure 1 shows the Parangtritis Village inside of Yogyakarta Province.

Method of Study

The process of this study is diagrammatically illustrated in Figure 2.

Data

The list of required data and what method used for collecting the data can be seen in the following of Table 1.

Hardware and Software

There are hardware and software used to assist this research as listed in Table 2.

Analysis

Visual Quality Assessment

In this stage, visual resources were analyzed based on visual preferences and visual character variables. The assessments are conducted on recorded landscapes of study area that are represented by colored photos. The study area stratified into approximately equal sub areas based on certain characteristics. For this study, land covering is used as the main classifier for the area's diversity, which is classified into 7 classes: (1) beach, (2) sand dune, (3) rivers, (4) bushes (scrubland), (5) woodland, (6) agriculture area, and (7) settlement area.

Visual preferences are assessed from the judgment of 60 observers, while visual character variables are assessed based on expert judgments. There are 9 experts who are invited to give their judgment to this research, which come from landscape architecture as well as mapping and survey environments.

Scenic Beauty Estimation (SBE) method (Daniel and Boster 1976) is used in assessing the visual preferences, where the preferences are represented quantitatively with SBE values that are calculated for each photo. Meanwhile, the visual character of the landscapes are assessed based on their visual character variables that are adopted from ASLA (1979), which consist of: (1) form; (2) line; (3) color; (4) dominance; (5) scale; (6) diversity; (7) continuity. The expert judgment of the study area considering those variables are presented as scores that can be classified in a range from 1 (low quality) to 3 (high quality).

Natural and Cultural Elements Assessment

For both of natural and cultural elements assessment, the method is adopted from the technique of potential zones mapping adopted from Gunn (1994) and Roslita (2001) combined with cartographic regionalization by Smith (1989) that have been modified based on the site condition of this research. Any important or 'critical' features are being identified and assessed spatially in this analysis

stage. Table 3 shows the scoring and measurement criteria of categorization, while Table 4 shows the weighting factors of the resources.

Synthesis

Acquiring Potential Tourism Area

Spatial analysis is used in this stage by overlaying the map of Visual Quality with Natural Quality, as well as with Cultural Quality. These maps overlay produce the Map of Potential Tourism Area derived from visual, natural, and cultural resources assessment.

Developing Tourism Track Alternatives

Tourism track alternatives are developed to sequence the movement pattern to be followed as a basic for tourists' movement within the site that can also provide a logical story and flow of thought with clearly defined themes, purposes, and objectives (Gunn, 1994). An interpretation network is considered for satisfying the development process using the 10 steps applied by Damayanti (2003):

1. Develop the vision that states what interpretation should be on site based on site inventory,
2. Define the main theme and objective (s) of interpretation network,
3. Identify the potential stops, which in this research it would be based on the existing tourism objects with also considering the acquired tourism potential area,
4. Determine the theme and objectives of each stop;
5. Study the sequence of stops that provides a logical story and flow of thought or viewing with also considering the existing site infrastructure in order to link the stops and decide the route; by con-sidering the start and end points of the network, making the loop track that bring the visitor back to a clearly identifiable starting point, and interpreting about 10-20 stops varying with the length of the track, where it is the number that most visitors can remember for interpretive stops (Pillely in Knudson *et.al.*, 1995),



Figure 1. Location of Study

Table 1. Data Inventory and Collecting Methods

Aspect	Factor	Collecting Methods	
		Survey	Literature
Natural/ Physical	Hydrology	✓	✓
	Vegetation	✓	✓
	Landform and Topographic	✓	✓
Cultural	Legend/Myth	✓	✓
	Architectural	✓	✓
	Ethnicity	✓	✓
	Tourism Economic	✓	✓
Visual	Vantage/viewpoint assessment	✓	✓
	Landscape inventory	✓	✓
Supporting	Infrastructure	✓	✓
	Accessibility	✓	✓
	Administrative Boundary	✓	✓
	Law and regulation	✓	✓

Table 2. Hardware and Software that assisted the research process

Hardware	Software	Function
PC Windows Pentium IV Processor, 512 MB RAM, 40 GB HD	Arc View ver. 3.3	Spatial analysis
	MS Excel 2000	Statistical and tabular analysis
	MS Word 2000	Reporting
	MS Power Point	Presentation
Printer EPSON CX3100		Printing maps and report
GPS Garmin 12XL		Coordinate acquiring
Camera Digital Nikon Coolpix 7600		Photographs acquiring
LCD Projector		Photographs presentation

Table 3. Measurement Criteria of Natural, Cultural, Supporting Features Scoring

Factor	Categories	Score	Factor	Categories	Score
Landform and Topography	Unique	3	Legend/Historic	Dominant	3
	Dominant	2		Good	2
	Fair	1	Fair	1	
Hydrology	Beach	3	Tourism Economic	Tourism Service	3
	River/Stream	2		Fishery	2
Vegetation	Sensitive environment	3	Ethnicity	Agricultural	1
	Woodland	2		Authentic	2
	Cultivated plants (crop)	1		Less authentic	1
Infrastructure	Collector Road	3	Architectural	Unique	3
	Local road	2		Dominant	2
	Driveways	1		Fair	1

Source: Gunn, 1994 and Roslita, 2001 (modified)

Table 4. Weighted Factors in Parangtritis Coastal Area

Natural Factors	Weight	Cultural Factors	Weight
Landform and Topography	35	Legend/Myth	33
Vegetation	28	Tourism Economic	26
Hydrology	27	Ethnicity	21
Infrastructure	10	Architectural	10
	100	Infrastructure	10
			100

Source: Gunn, 1994 and Roslita, 2001 (modified)

6. Analyze the trail restriction and opportunities to plan service and transportation program,
7. Select the interpretive media for the trail as well as the individual stops,
8. Programming information and promotion,

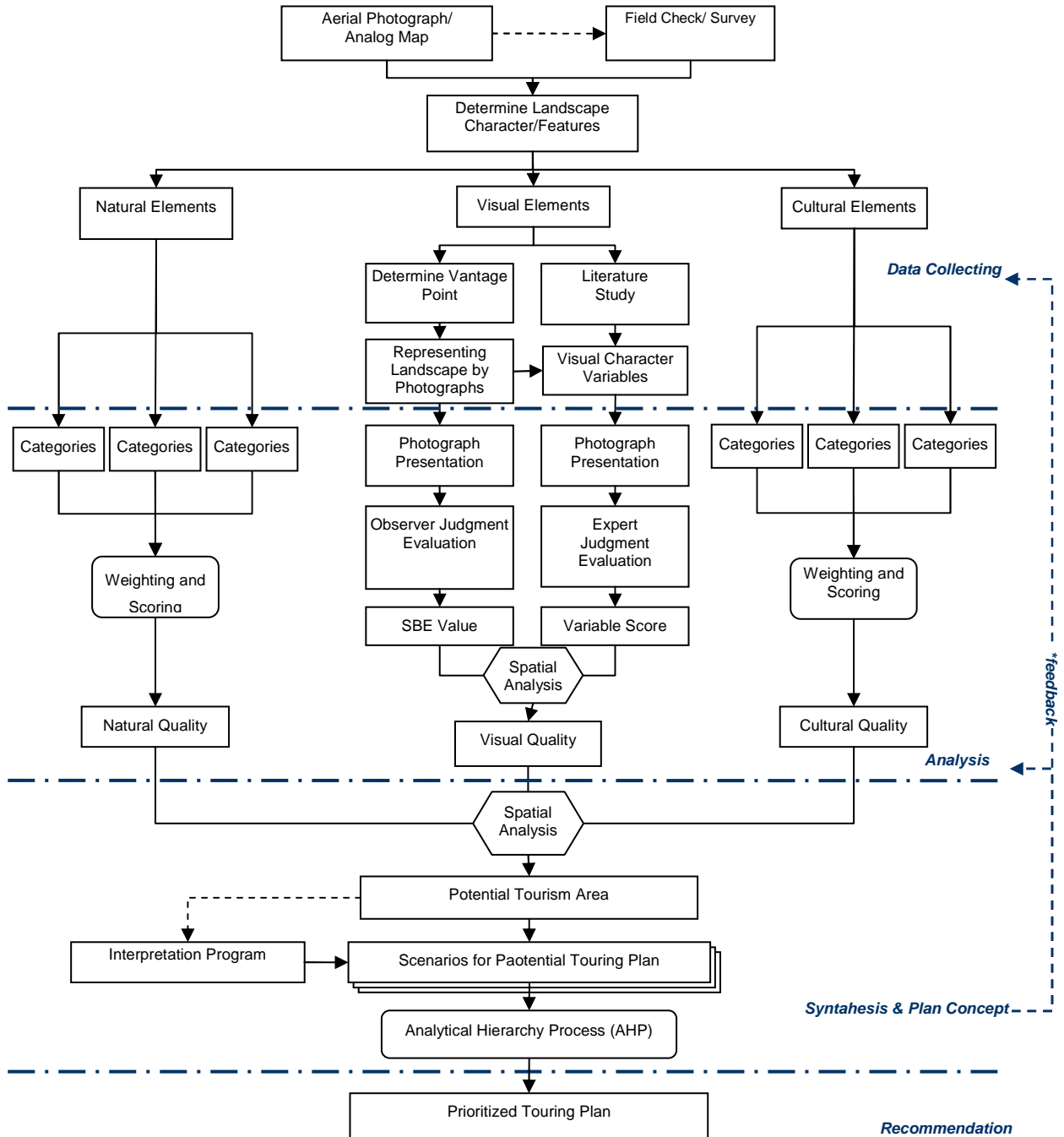


Figure 2. Flowchart of Study

9. implement and operate,
10. Evaluate the effectiveness of the interpretation network in achieving the objectives.

Those steps are used in this study in developing the alternatives of touring plan within the Parangtritis Coastal Area. There would be three alternatives developed that are differentiated by the main theme of each touring in step 2, but would have the same vision of interpretation. The developing process would be only performed as far as the touring routes are defined (step 1-5). It will not extend to analyze the trail

restriction and opportunities to plan service and transportation program.

Analytical Hierarchy Process (AHP)

AHP method is used to select the most preferable alternative of touring plan by setting some relevant and required criteria in weighting the priority factors of defined alternatives in pairwise comparisons. A hierarchical structure illustrating the problem that need to be solved can be seen in Figure 3. The criteria used in this study are adopted from the perspectives of benefits of interpretation received by individuals concurred by Knudson *et.al.*(1995).

These priority weights are obtained by capturing some experts perception towards the most preferable touring alternative based on certain considerations. In this regard, 5 experts that come from different professional background, such as landscape architects, tourism planner and expert, and coastal planner or expert, would be asked to give their judgement to rank the alternatives in order to determine one of the most appropriate touring plan.

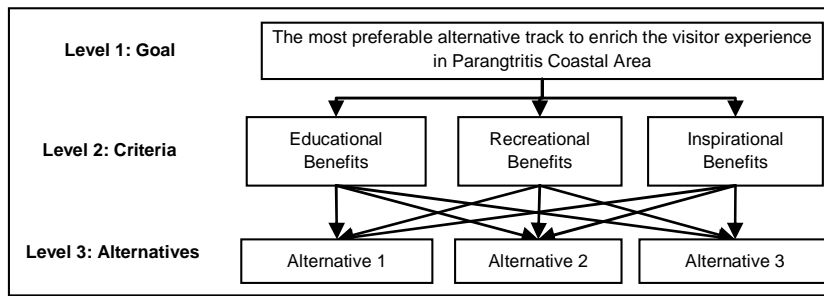


Figure 3. Hierarchy Structure of AHP Method

Table 5. Landscape Characters in Parangtritis Area with Their Visual Quality

No.	Landscape Character	Visual Preferences		Visual Character		Visual Quality
		SBE Value	Rank	Total Score	Rank	
1.	Sand Dune	144.272	I	18.185	I	Very High
2.	Agriculture Land	141.247	II	16.926	II	High
3.	Beach	131.691	III	16.259	III	Medium
4.	Woodland	100.864	IV	15.000	VI	Low
5.	River	90.173	V	15.778	V	Low
6.	Scrubland	86.741	VI	16.074	IV	Low
7.	Settlement Area	48.000	VII	13.148	VII	Very Low

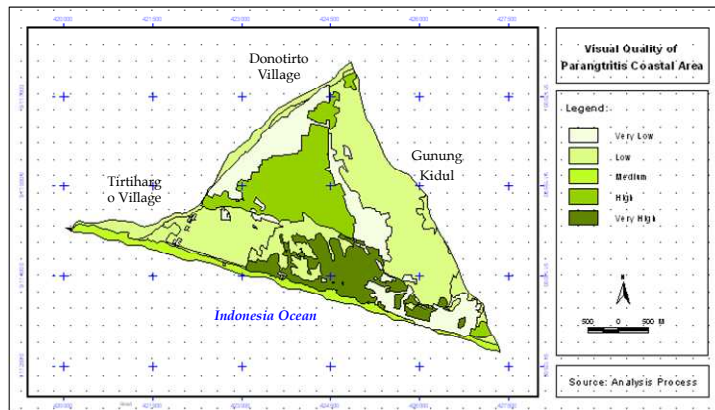


Figure 4. Map of Visual Quality of Parangtritis Coastal Area

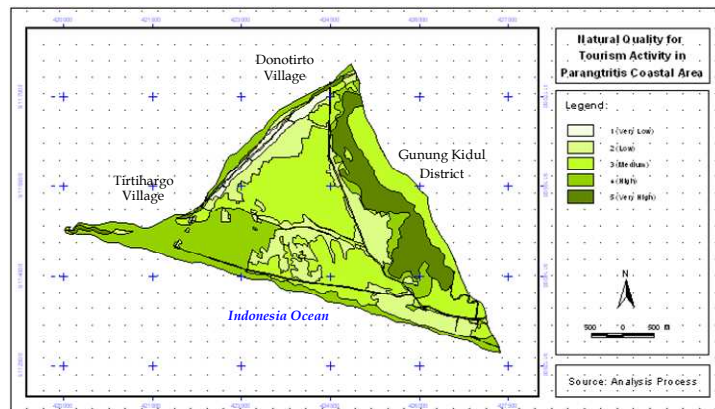


Figure 5. Natural Resources Quality Map of Parangtritis Coastal Area

RESULT AND DISCUSSION

Visual Quality Assessment

Table 5 lists the landscape characters within the Parangtritis Coastal Area with their result assessment of visual preferences and visual character, as well as their visual quality. The assessment of visual preferences and visual character show the similar result, except the scrubland that was

assessed to have better quality than woodland in visual character assessment based on the expert judgment, though it does not really affect the overall result of visual quality. Figure 4 shows the spatial distribution of visual quality of Parangtritis Coastal Area.

Natural Quality Assessment

There are three main factors and a supporting factor being assessed for acquiring natural quality of the study area. They are landform, hydrology, and vegetation for the main factors of natural resources and infrastructure for the supporting factor. By using the concept of weighting process of spatial analysis, those four factors are overlaid in acquiring a composite map of natural resources quality, as shown in Figure 5.

Cultural Quality Assessment

Based on the result of weighting process of four cultural factors: legend and historical, architectural, ethnical, and tourism economic, integrated with supporting factor, a composite map of cultural resources quality were obtained as shown in Figure 6. The overlay result shows that Mancingan neighborhood has the highest quality of cultural resources; Depok and Grogol X have the medium quality, while the rest area mostly is considered as low quality area. Only small area found with high and very low quality, which can be neglected in consideration for future development as cultural tourism attractions.

Potential Tourism Area

The composite map is acquired by overlaying those three maps of visual, natural, and cultural quality. According to the acquired result, the study area is dominated with high to medium quality of potential area for tourism, which includes beach, sand dunes, woodlands, and a big part of agriculture area. The very high quality can be found within Mancingan Neighborhood, especially around Cepuri Parangkusumo, and within the agricultural area in the west and north of Parangtritis area. The rest of the area is covered with low to very low quality of tourism potency, which includes settlement area and part of scrubland area. The map of those potential areas can be seen in Figure 7.

Developing Touring Plan Alternatives with Interpretation Concept

There are three touring alternatives that are developed in this study by using the concept of developing interpretation track. Those track alternatives are developed based on the same vision of interpretation that is try to explore and communicate the resources with visual, natural, and cultural qualities within coastal area of Parangtritis. But each touring alternative is developed with its own specific main theme based on that vision, as follows:

Touring Alternative 1

- The main theme of the alternative is that Parangtritis Coastal Area is enriched with varied tourism resources and attractions, not just its well known beach (Figure 8).
- The objective of this alternative is that the visitors can obtain the information and the knowledge of the values about the varied tourism resources and attractions within the area, besides the recreational experiences along the track.
- The potential stops are determined with considering the potential area result from previous analysis, especially the very high to medium potential area, together with the existing tourism objects.
- The touring track is developed by linking all the potential stops in one big loop simultaneously, which starts from the location of the existing entrance of Parangtritis Area and end in the same location.

Touring Alternative 2

- The main theme is that Parangtritis Coastal Area is enriched with both natural tourism resources, and cultural tourism resources (Figure 9).
- The objective of this alternative is that the visitors can earn many kinds of tourism objects based on two different approaches, which are natural based tourism objects and cultural based tourism objects.
- Potential stops are defined considering the potential tourism area together with the existing tourism objects, and are classified into 2 main group based on the tourism resources, whether they are based on natural or cultural resources.
- The touring track is divided into two looping tracks that linked two

different groups of potential stops, and start at the same point.

Touring Alternative 3

- The main theme is defined that Parangtritis Coastal Area has a great values for conserving the natural factors of coastal environment, the spiritually cultural resources, as well as its traditional livelihood of the local community in order to maintain the sustainable tourism of this area (Figure 10).
- The objective of the alternative is that the visitors are mainly expected to gain the knowledge of physical characteristics of natural resources, as well as social and cultural characteristic of the area, and try to understand the important values of their existences for the tourism sustainability of the area.
- The potential stops are classified into three groups of potential stops based on different resources conservation, i.e.: group of traditional livelihood, group of natural factors of coastal environment, and group of spiritually cultural resources.

- There are 3 tracks developed, where each track is a linear track that link several stops within one group. One track is connected to another track which eventually creating one big loop as the main track, which starts with traditional livelihood conservation track, continues to the track of natural conservation track, and end with the track of spiritually cultural conservation.

The number and detail information of visited stops in each track alternative can be seen in Table 6. The stops are listed from the first stops until the last stops that are visited in every track.

Prioritize Touring Plan Alternatives Using Analytical Hierarchy Process (AHP)

Those three touring alternatives are then prioritized using AHP method based on three criteria of benefits of interpretation received by individuals. The result of global calculation of priorities is shown in Table 7.

The result table shows that edu-

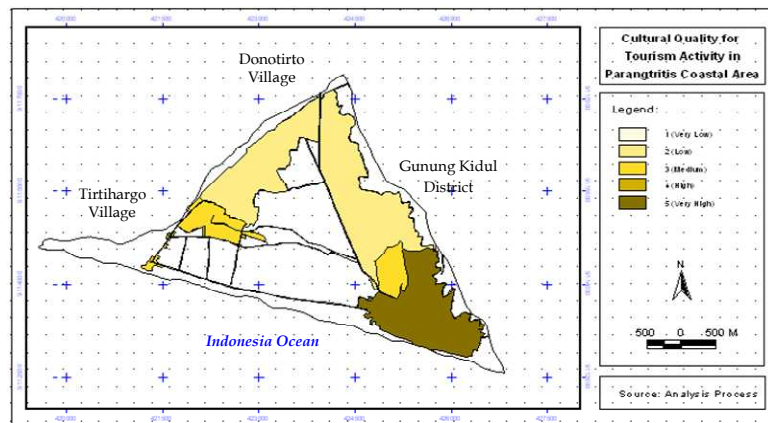


Figure 6. Cultural Resources Quality Map of Parangtritis Coastal Area

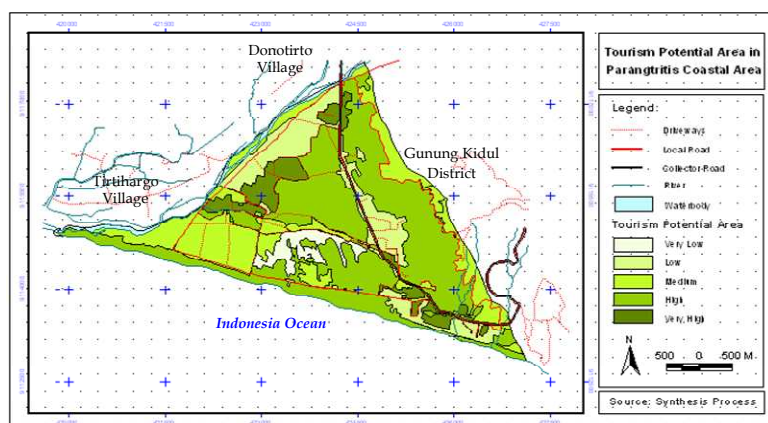


Figure 7. Map of Potential Tourism Area

cational benefit is perceived by the experts to be the most important criteria as the main consideration in selecting the most preferable alternative, with the priority of 0.6727. It is far more important than inspirational benefit that become the second important criteria with the priority of 0.2887, and the recreational benefits as the lowest priority of 0.0845 contributing to the goal. The outcome of the global priority calculation for the touring alternatives shows that Touring Alternative 3 which is more focusing on the conservation values of the natural factors, spiritual cultural resources, and the traditional livelihood of the local community, becomes the most preferable alternative. It pertains to be more beneficial in educational and inspirational purposes. So, it can be said that the potential tourism network within Parangtritis Coastal Area appropriately should be developed as an educational touring network.

CONCLUSION AND RECOMMENDATION

Conclusion

After performing the analysis and synthesis process, a potential tourism network within Parangtritis Coastal Area has been acquired, which is developed based on the visual, natural, and cultural potential qualities of the area, and also prioritized to assist the visitors in obtaining the important values of those qualities. Visually, sand dunes within the study area have very high quality, while the settlement areas have very low quality of visual. The best natural quality can be found in the hilly banks area, while the beach and riverbanks area are considered with high quality of natural resources. The lowest quality of natural resources can be found in the flood plain area near the riverbanks. Considering the cultural resources, it is obvious that in general Parangtritis area is covered by low quality of cultural resources, except the area of Mancing-an neighborhood with the very high quality, while Depok and

Grogol X neighborhoods that are considered with medium quality of

Table 6. Potential Stops Visiting in Every Track Alternative

Touring Alternative 1		Touring Alternative 2		Touring Alternative 3	
No.	Stops	No.	Stops	No.	Stops
1.	Syeh Bela Belu Funeral	Track 1: Natural Tourism Resources		Track 1: Conservation on Traditional Livelihood of Local Community	
2.	Syeh Maulana Maghribi Funeral	i.	Hilly Landscape	i.	Hilly Woodland
3.	Parang Wedang Hot Spring	ii.	Sand Dunes	ii.	Fruits and Vegetables Farming
4.	Ki Ageng Selohening Funeral	iii.	Marine and Fishery Center	iii.	Paddy Field and Red Onion Farming
5.	Dipokusumo Funeral	iv.	Geospatial Laboratory of Parangtritis	iii.	Marine and Fishery Center
6.	Parangtritis Swimming Pool b. Panepen Cave	v.	Woodlands	v.	Woodlands
7.	Panglima Sudirman Monument	vi.	River Ecosystem of Opak River	Track 2: Conservation on Natural Factors of the Coastal Area	
8.	View Point from Hill Side	vii.	Paddy Field and Red Onion Farming	a.	Geospatial Laboratory of Parangtritis
9.	Dry Rice Field	Track 2: Cultural Tourism Resources		b.	Beach
10.	Parangendog Swimming Pool	1.	Syeh Bela Belu Funeral	c.	Sand dunes and beach vegetations
11.	Parangtritis Beach	2.	Syeh Maulana Maghribi Funeral	d.	Sand Dunes
12.	Parangkusumo Beach	3.	Parang Wedang Hot Spring	Track 2: Conservation on Spiritually Cultural Resources	
13.	Cepuri Parangkusumo	4.	Ki Ageng Selohening Funeral	1.	Syeh Bela Belu Funeral
14.	Sand Dunes	5.	Dipokusumo Funeral	2.	Syeh Maulana Maghribi Funeral
15.	Marine and Fishery Center	6.	a. Parangtritis Swimming Pool b. Panepen Cave	3.	Parang Wedang Hot Spring
16.	Geospatial Laboratory of Parangtritis	7.	Panglima Sudirman Monument	4.	Ki Ageng Selohening Funeral
17.	Glinggansari	8.	Dry Rice Field	5.	Dipokusumo Funeral
18.	River Ecosystem of Opak River	9.	Parangendog Swimming Pool	6.	a. Parangtritis Swimming Pool b. Panepen Cave
19.	Paddy Field and Red Onion Farming	10.	Parangtritis Beach	7.	Panglima Sudirman Monument
		11.	Parangkusumo Beach	8.	Parangendog Swimming Pool
		12.	Cepuri Parangkusumo	9.	Parangtritis Beach
				10.	Parangkusumo Beach
				11.	Cepuri Parangkusumo

Table 7. The Composite or Global Priorities of the Alternatives

Alternatives	Educational Benefit (0.6268)	Recreational Benefit (0.0845)	Inspirational Benefit (0.2887)	Global P
1	0.0660	0.0722	0.0835	0.07
2	0.2231	0.6581	0.2089	0.25
3	0.7109	0.2697	0.7077	0.67

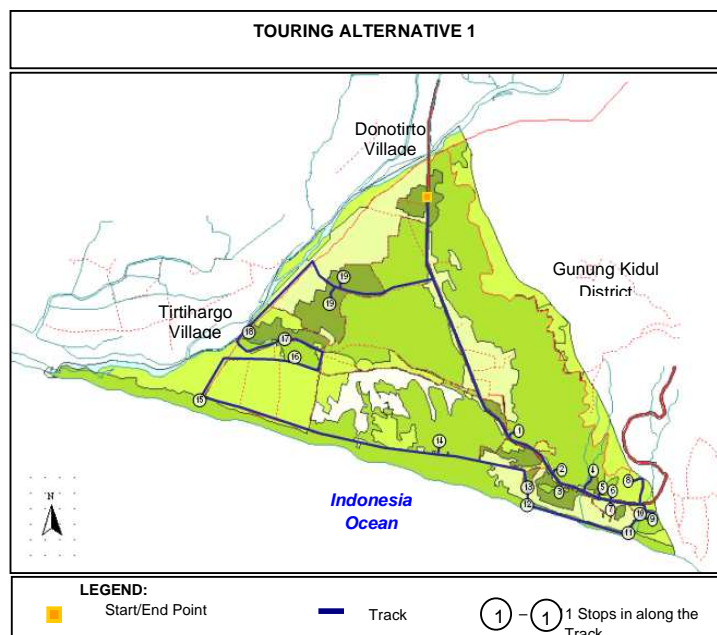


Figure 8. The Map of Touring Alternative 1

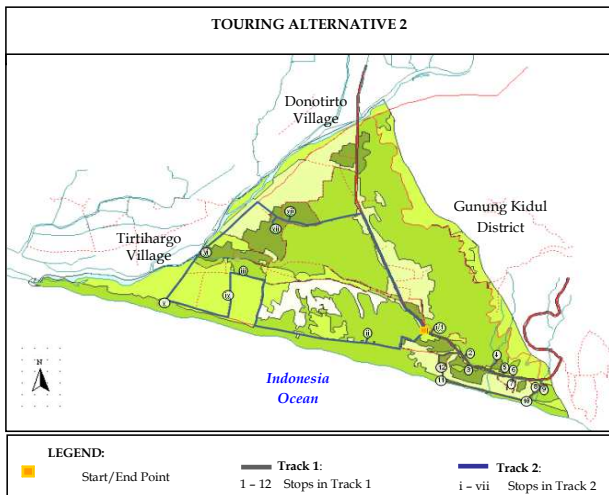


Figure 9. The Map of Touring Alternative 2

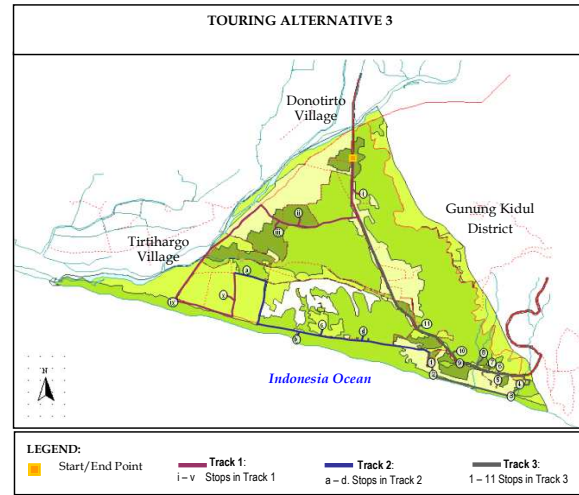


Figure 10. The Map of Touring Alternative 3

cultural resources. By using geographic information system, a composite result integrating those three resources assessment can be easily performed. As the result, the study area is dominated with high to medium quality of potential area for tourism, which includes beach, sand dunes, woodlands, and a big part of agriculture area. There are also some areas with very high quality that are found especially around Cepuri Parangku-sumo and in some part of agricultural area. The rest part of the area is covered with low to very low quality of tourism potency, which includes settlement area and part of scrubland area. In general, it can be concluded that Parangtritis Area has a good quality of visual, natural, and cultural resources that are potential to be developed as tourism resources and attractions.

Based on those potential areas, especially considering the area with medium until very high potential quality of tourism, as well as the existing tourism objects, there are three alternatives of touring plan that have been developed in this study by using the concept of developing an interpretive track, as adopted from Damayanti (2003), in order to communicate all the potential resources within the Parangtritis Coastal Area to the visitors through their first hand experiences. The first touring alternative is developed by visiting all the potential stops without classifying the tourism resources. The second one is developed by classifying the visited stops based on

natural and cultural tourism resources, and the last alternative is developed by focusing on the conservation values of the natural factors of coastal environment, spiritual cultural resources, and the traditional livelihood of the local community.

According to the prioritizing process using the Analytical Hierarchy Process (AHP) method, Touring Alternative 3 is perceived to be the most preferable alternative as the potential tourism network in Parangtritis Coastal Area. It also has the highest priority for the criteria of educational benefits, thus it can be said that the potential tourism network within Parangtritis Coastal Area should be developed appropriately as an educational touring network.

Recommendation

Based on the results acquiring from this study, there are some recommendations that are needed to support the study:

- In order to support and maintain the sustainability of tourism resources in Parangtritis Coastal Area, local government need to give high priorities and considerations to conserve the potential tourism area with high values in visual, natural, and cultural qualities, especially for those resources with low carrying capacity to be developed as a tourism attraction, such as sand dunes, which have very high visual quality and preferences as one of the most considerable factors of a tourism attraction, but on the other hand they are

also easily threatened by the rapid landscape changes.

- Further stages of developing the interpretive network in the area of study, starting with analyzing the touring track restriction and opportunities to plan service and transportation program, need to carry out in order to obtain an appropriate touring network system that can provide a logical story and flow of thought with a clearly defined themes, purposes, and objectives of interpretation, which is to enrich the recreational experiences of the visitors.
- Further study need to be carried out to develop a comprehensive tourism plan involving the five main aspects of tourism *i.e.*: attraction, transportation, services, information, and promotion, in order to support the application of this study result to the area of study.
- Need a comprehensive feasibility study, especially in economical aspects in order to make a review about any possibility in applying the result of study to Parangtritis Coastal Area.

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