

# Sustainable City Landscape Asset Management: Case Study in Magelang City

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**Abstract**—The city is a composition between natural landscape elements of origin and manmade landscape elements as a consequence of the way humans adapt the environment to meet their life needs. The town of Magelang is an attractive landscaping city with Mount Tidar as the landmark and slogan of the Million Flower City. The city of Magelang is developing with very limited land. The limitation of urban land refers to the linear form supported by the existence of two rivers, namely Progo and Elo Rivers as administrative boundaries in the East and West. This condition becomes a challenge for land management in Magelang city, especially the management of the landscape. In this study, landscape management is done by looking at landscape elements as "assets". When landscaping is considered an asset, landscaping is both a direct and indirect benefit to the Community social factors so that the landscape of a city is no longer neglected but a priority, including in its management budget.

**Keywords**—urban landscape management; city landscape asset management; assets

## I. INTRODUCTION

The landscape of the city is the face of the city landscape, not merely a landscape environment in a narrow sense, but includes all things natural (exterior), both natural and artificial with all its elements, both hard materials and soft materials [1].

The city of Magelang is a city with attractive landscapes with Mount Tidar as a landmark and slogan of the City of Million Flowers. Second. The city of Magelang developed on strategic routes namely Purworejo, Semarang Yogyakarta and Temanggung, so that in the course of time the City of Magelang could not avoid any changes between the city spaces. The city of Magelang develops with very limited land. The limitations of the city land refer to the linear form supported by the existence of two rivers, namely the River Progo and Elo as the administrative boundary in the East and West. This condition is a challenge for land management in the city of Magelang, especially the management of the landscape.

There is not much literature regarding the operational principles of landscape management that see landscapes as assets so that costs and benefits can be calculated and

accounted for by the public. Following Pramono which defines assets as material (money, goods, infrastructure or non-material (health, knowledge, skills, expertise, relations, organization, social environment, political situation, property rights, usufructuary rights) and sources that can generate profits, this study will look at the landscape as an object of management, namely as a "green infrastructure" whose procurement and maintenance requires public costs so that its utilization must be calculated as a public benefit [2].

Both in Pramono and other studies, there have not been found examples of sustainable landscape management studies using asset theory [2].

If the landscape is considered as an asset then landscape is something that can provide benefits both directly and indirectly to the community so that the landscape of a city is no longer a neglected thing but a priority included in its management budget, so that sustainable urban landscape asset management is achieved. Therefore this research is expected to fill this gap.

## II. METHOD, DATA AND ANALYSIS

### A. Method and Data

This research was conducted in the city of Magelang with an area of 18.12 km<sup>2</sup>. The quantitative approach in this study was carried out by analyzing data perceptions and preferences, while qualitatively by analyzing survey results, open questions on the questionnaire and literature review.

1) *Primary data*: The primary data of this study was obtained by the method of observation, interviews and surveys through the questionnaire instrument. Observations in the form of observations of the object of research, namely elements of urban landscape in the city of Magelang; interviews were conducted to obtain data on urban landscape asset management at the relevant institutions in the City Government of Magelang and a questionnaire used to identify the landscape of the city of Magelang which is an asset and community opinion on the management of the current assets of the landscape of the city of Magelang.

2) *Secondary data:* Secondary data in this study were obtained from government agencies as managers of urban landscape assets. The data taken is in the form of inventory data on the landscape of the city and its management organizations.

**B. Magelang City**

1) *General condition:* Magelang City is also located on the Semarang-Yogyakarta-Purworejo economic route and Yogyakarta-Borobudur-Kopeng tourist route and Dieng Plateau. Geographically, the City of Magelang is located at position 70 26'18 " - 70 30'9" LS and 1100 12'30 " - 1100 12 '52" BT. with an altitude of 400 m below the sea level which is precisely located in the trough of seven mountains, especially two twin hills which are in the East and West, namely Sumbing - Sindoro and Merapi - Merbabu.

Besides being in the trough of several mountains, Magelang is also on the East side of the Menoreh Mountains which supports the city of Magelang as a valley city and as a cool city with Tidar Hill on the south side of the city. There are two large rivers flowing as a barrier to the administration of the City of Magelang, namely the Progo River and Elo River and several small rivers scattered in several flow points.

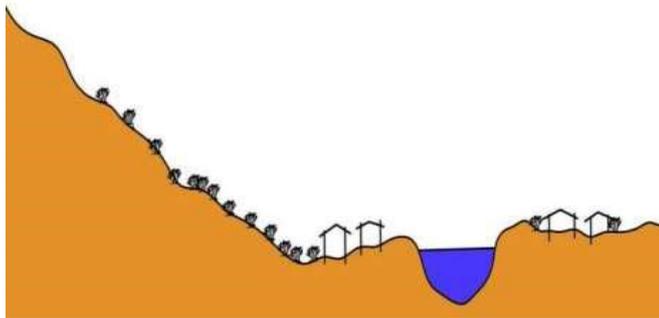


Fig. 1. One-side pieces of the City of Magelang and the surrounding area.

The administrative area of Magelang City, which is divided into three sub-districts, namely North Magelang, South Magelang and Central Magelang, is divided into 17 sub-districts with different areas. The largest area of the Kelurahan is South Jurangombo, namely 226 Ha (12.49%) and the smallest is Kelurahan Panjang, which is 35 Ha (1.9%). Some kelurahan on the East and West side are directly adjacent to the Elo and Progo rivers and / or directly adjacent to several sub-districts / sub-districts in Magelang Regency. The detailed regional boundaries are as follows:

- North: Secang District, Magelang Regency;
- East: Elo River / Tegalrejo District, Magelang Regency;
- Selatan: Mertoyudan District, Magelang Regency; and
- West: Progo River / Bandongan District, Magelang Regency

The area of Magelang City is 1,812 Ha which is divided into three (3) sub-districts with 17 villages.

2) *Overview of the landscape of the City of Magelang:* The city of Magelang is a city with a unique landscape. Seven

mountains surrounding the City of Magelang, Bukit Tidar, which is on the South side of the city and mountains on the West side of the city, two large rivers flowing on the East and West and a number of small rivers have formed the physical city of Magelang as a valley city, mountain city and garden city [3].

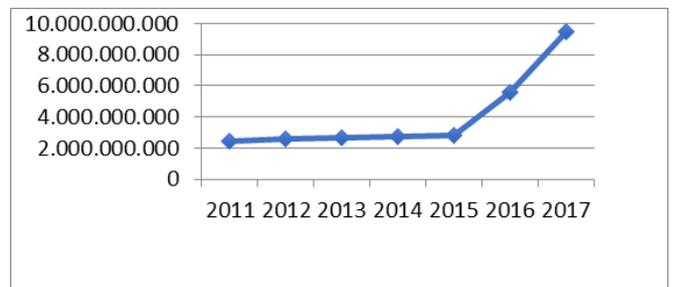
The uniqueness of the city apart from its cool weather, is also due to its physical formation which is contoured in some places irregularly. The downtown area and the one in line, namely Jalan Ahmad Yani to Jalan Urip Sumoharjo are categorized as flat areas, but the road lane is flanked by contoured land.



(Survey author, 2017)

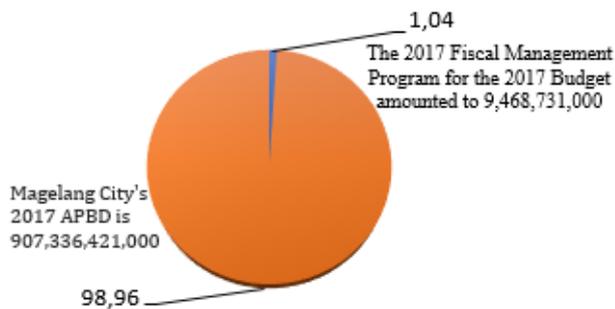
Fig. 2. View of the landscape of the City of Magelang.

The landscape of the City of Magelang, especially the management of the Green City Open Space, received considerable attention in accordance with the city brand of Magelang City as a City of Million Flowers which has been declared since 2011. The amount of the Green Open Space Management budget from 2011 to 2017 can be seen in the following picture:



(Office of the Environment, 2017)

Fig. 3. Magelang City green open space management budget from 2011-2017.



(Office of the Environment, 2017)

Fig. 4. Magelang City green open space management budget from 2011-2017.

From the graph in figure 3 that the budget increase for the Green Open Space Management Program experienced a significant increase in 2015 then 2016 and 2017. This is because in 2015 the launch of Ayo Ke Magelang was launched and in 2017 a dancing fountain will be planned at Aloon aloon. From Figure 4 on the Environmental Service, it can be described that the percentage of the Green Open Space Management budget is very large at 46.4% while the remaining percentage of 53.6% is divided into 11 (eleven) programs. This shows that the Green Open Space Management Program is gaining attention and is included in budget priorities.

3) *Object of observation*: In the research of the landscape assets of the city of Magelang which is the object of observation of indicators of the existence and usefulness of assets, including 33 (thirty three) objects which are soft elements and hard elements of the landscape in various locations in the city of Magelang with details as in the following:

1. Plants in the Tidar Slope Park
2. Plants in Shoothing Park
3. Plants in Tidar Monument Park (near RSU)
4. Plants in the Student Army Park (Home BRI Gladiool)
5. Garden Aloon Plants
6. Plants in Kwarasan Field
7. Plants in Trunan Park (in front of Hotel Atria)
8. Plants in the Pentiferi Park
9. Plants in the Badaan Intersection Park (Bank Jateng Logo)
10. Plants in East Badaan Park (children's toys)
11. Plants in the Western Badaan Park (A. Yani Statue)
12. Plants in Taman Tuguran (in front of SMP 13)
13. Plants on Vertical Garden Jalan A. Yani (Menowo Plane form)

14. Plants in the Front Garden of the Kupatan Estate Fleet
15. Plants in the Armed Front Hospital
16. Plants in the City River
17. Embankment Park (Menowo - in front of the Kodim)
18. Plants in the Elderly Park
19. Plants in Chinatown
20. Plants at Vertical Garden Jalan Sudirman (in front of Suzuki Motor)
21. Plants in Jalan Sudirman Park
22. Fountain Shoothing
23. Decorative Lights in the Tidar Monument Park (Kartika Sari Culinary)
24. Plants at Vertical Garden Jalan Sudirman (in front of Suzuki Motor)
25. Plants in Jalan Sudirman Park
26. Fountain Shoothing
27. Decorative Lights in the Tidar Monument Park (Kartika Sari Culinary)
28. Lanterns in Trunan Park in front of Hotel Atria
29. Butterfly and Flower Decorative Lights at BRI Gladiool Front Park and Pentiferi Park
30. Toys in the park
31. City Shading Trees
32. Paths to City Park
33. Reflections on the Elderly Park
34. Gymnastics Areas in Kwarasan Field
35. Park Benches
36. Garden fences
37. Statues
38. Garden Ornaments (miniature rickshaws, bicycles)

4) *Population determination method and questionnaire sample*: Population is a set of elements or elements that become the object of research [4]. While the research sample is a sample is a portion of the population to represent the entire population [5].

In this study the population is the entire population of the City of Magelang which is 131,703 people with the number of KK 41,803 (DDA of Magelang City, 2015). Questionnaire samples were determined using the multi-stage random sampling technique. Multi-stage random sampling is the use of various random sampling methods together as efficiently and effectively as possible [5].

The application of multi-stage random sampling techniques in this study are:

- The city of Magelang as a population consists of 3 sub-districts and 17 sub-districts
- The first sampling is Kelurahan in these sub-districts. Several kelurahan in each sub-district were taken randomly and then taken as the first sample
- The second sampling is the RW (RW) in the selected Kelurahan in the first side
- The third sampling is the Neighborhood Unit (RT) in the RW chosen in the second side
- The fourth sampling is the Head of Family (KK) on the selected RT in the third side
- Accumulation of each sampling is the number of samples in this study.

Based on the sample list then 144 people were chosen as respondents and various characteristics of age, sex, age group, origin, length of stay and type of work.

#### 5) Data analysis method

a) *Descriptive statistics analysis*: Data analysis was carried out with the aim of testing hypotheses in order to draw conclusions. In this study the method used is as shown in Table 3.1 and can be explained as follows:

- Test Validity and Reliability of the Questionnaire, The validity and reliability test of the questionnaire was used to determine the accuracy of the questionnaire to be used as a research instrument in measuring research variables. A research instrument is said to have high validity if it is able to provide results that are in accordance with the purpose of the study. The high and low validity of the instrument is determined based on the results of the correlation calculation in this study using Pearson correlation, namely:

$$r_{xy} = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \cdot \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

with:

rx: correlation coefficient

X: item value

Y: total score

N: lots of samples

Validity is determined by comparing rxy with table. If the value of rxy > rtable then it is said that the item is valid. Reliability measures the consistency or level of reliability of the questionnaire in measuring the same variables in a study. The method used in reliability testing is Cronbach's Alpha statistics. The Cronbach's Alpha calculation is done by

calculating the intercorrelation average among the items in the questionnaire. Based on the criteria of Guilford (1956) reliability classification is as follows:

Less than 0.20: A very small relationship

- 0.21 - 0.40: A weak relationship
- 0.41 - 0.70: A fairly close relationship
- 0.71 - 0.90: Close relationship (reliable)
- 0.91 - 1.00: Very close relationship (very reliable)

b) *Descriptive statistics analysis*: The method of data analysis in this study was used to answer existing research questions through analysis of quantitative questionnaire data.

#### C. Analysis

1) *Landscape assets of the City of Magelang*: This section aims to identify the landscape elements that can be categorized by respondents who have a substantial impact on their capabilities and welfare. The main data were obtained from perceptual surveys through questionnaire instruments which were checked by observation data in the form of observations of the landscape element categories that were questioned in the questionnaire, as well as interviews regarding the management of urban landscape elements in related institutions in the City Government of Magelang. Analysis of the results of the questionnaire to identify the landscape of the city of Magelang which is an asset was carried out by descriptive statistical analysis. Whereas as well as the way the community assesses landscape elements as assets and opinions of the community towards the management of the current landscape assets of the City of Magelang.

2) *Evaluation of acceptance of the existence of landscape elements*: The identification of the elements of assets that are considered as assets is based on the degree of acceptance of the respondents which is reflected in the answers are better, just the same, or worse as the attitude of evaluating the landscape elements Landscape elements in the form of a garden fence, plants in plants in the Tidar Slope Garden, Plants in the City River Embankment Park, Decorative Lights in the Tidar Monument Park, Reflection Stones on the Old Gardens and Butterfly and Decorative Flowers in the BRI Front Garden Gladiol and Pentiferi Park are perceived better and have a high degree of acceptance by the community. This is related to the existence of the landscape elements mentioned above are landscape elements that have been rearranged by the Government of the City of Magelang in the past 5 (five) years.

Whereas for the Kwarasan and Pecinan fields, the community has a low degree of acceptance, this is related to the existence of the Kwarasan field which has not been optimally recorded, for the Chinatown area because there are still many people who dispose of waste improperly.

The percentage of indicators of the quality of the presence of landscape elements can be illustrated in Figure 5 below:

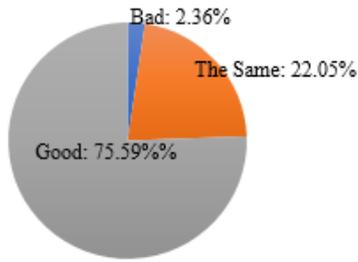


Fig. 5. Percentage of quality indicators for 33 (thirty three) landscape elements.

3) *Evaluation of the benefits of landscape elements:* The results showed that most of the questionable landscape elements in the questionnaire were perceived as useful and very useful by the respondents (Figure 6). There are only a few elements that are considered to be disturbing. The average attitude score of respondents is 0.8 on the Likert scale between 0-1, the score indicates that respondents agree that landscape objects in the city of Magelang benefit the community. Based on the classification of the total score of respondents, it can be said that respondents consider that landscape elements are useful.

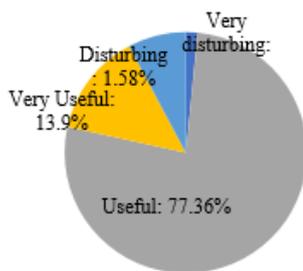


Fig. 6. Percentage of perception of use of landscape element.

The results showed that most of the questionable landscape elements in the questionnaire were perceived as useful and very useful by the respondents. There are only a few elements that are considered to be disturbing.

4) *Indicator of the quality of the existence of landscape elements*

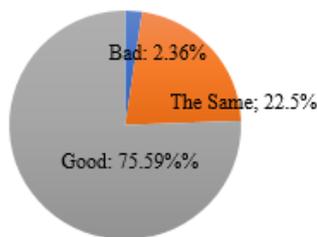


Fig. 7. Percentage of quality of the existence of landscape elements.

Objects of landscape observation as many as 33 (thirty-three) objects there are 31 (thirty-one) objects that have harmony between the budget issued, and the intensity of governance with the benefits felt by the community, 2 (two)

objects, namely plants in the Chinatown area and areas Gymnastics at Kwarasan Park has a harmony between the budget spent, and the intensity of governance but is not in harmony with the benefits felt by the community.

5) *Management of landscape elements of the city of Magelang*

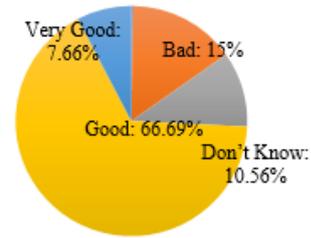


Fig. 8. Percentage of quality of the management of landscape elements.

Based on the perceptions of respondents the landscape elements in the city of Magelang have been managed well. This can be seen from the results of the research questionnaire on the landscape elements of the city of Magelang which is the object of observation of management indicators. From the results of the study it can be concluded that the assets represented by 10 (ten) aspects are well managed.

6) *Community Satisfaction with the management of landscape elements of the City of Magelang:* The community has until now been satisfied with the management of landscape elements in the city of Magelang. As many as 51.39% gave the attitude that they were happy and 50% were satisfied with the asset management in this Million Flowers City. However, there are still quite a large percentage of unhappy people (21.53%) and dissatisfied (36.11%).

### III. RESULTS

Factors that Support and Inhibit the Management of Sustainable Landscape assets as below:

TABLE I. FACTORS THAT SUPPORT AND INHIBIT THE MANAGEMENT OF SUSTAINABLE LANDSCAPE

Factor Group 1: Management of Human Resources and Basic Assets	Group Factor 2: Geographical and Government	Group Factor 3: Institutional and Infrastructure	Group Factor 4: Community Social Factors
Quality and quantity of human resources	Topography, soil contour, soil type	Organizational capacity	Community Behaviour
Types of flora and fauna	Role of Regional Government	Availability of facilities and infrastructure	
The existence of a management organization	Climate	Planning and strategy	
Adequacy of water resources			

#### IV. DISCUSSION

In research with case studies in the city of Magelang from the results of data analysis with factor analysis methods from the results of the community questionnaire and the Regional Organizations Organization as respondents; the factors that can support and hinder the realization of sustainable landscape asset management are as follows:

##### A. Supporting Factors

###### 1) *Management of human resources and basic assets*

a) *Quality and quantity of human resources*: Is the quality and quantity of Human Resources managing landscape assets. High quality and sufficient quantity of Human Resources support the management of sustainable landscape assets.

b) *Types of flora and fauna*: The types of flora and fauna that are in accordance with the climate support sustainable landscape asset management.

c) *Existence of a management organization*: The existence of an organization that is poor in structure and rich in effective functions in carrying out its main tasks and functions in urban landscape management is a supporter in realizing sustainable landscape asset management.

d) *Adequacy of water resources*: Water Resources are an important factor in managing landscape assets, adequate water resources support sustainable management of landscape assets.

###### 2) *Geographical conditions and government*

a) *Topography, contour and type of soil*: Topographical conditions and supporting contours in arrangement and transportation support the management of sustainable landscape assets as well as types of land that are easily processed for plants.

b) *Planning and strategy*: Well structured and planned planning and landscape asset management strategies support sustainable landscape asset management.

c) *Role of regional government*: The Government, in this case the Regional Government through policies, both in the form of regulation and budget policies, supports the management of sustainable landscape assets.

d) *Climate*: Climate conditions greatly affect plant growth as a landscape element so climate conditions are a factor that supports sustainable landscape asset management.

###### 3) *Institutional and infrastructure*:

a) *Organizational capacity*: Organizational capacity in this case is the organization's ability to manage the urban landscape well.

b) *Availability of facilities and infrastructure*: The availability of adequate facilities and infrastructure in landscape maintenance, effectively supporting sustainable landscape management.

##### B. Factors that Inhibit

###### 1) *Community social factors*

Community Behaviour, namely the absence of response and the participation of the public and the private sector in the management of urban landscape assets. The management of landscape assets in the City of Magelang is currently carried out by the City Government, while the response and participation of the public and the private sector are still not significant. This is in accordance with the survey results that all landscape asset management has not involved the community or the private sector. Physical maintenance and fulfillment of facilities and infrastructure needs is carried out by the City Government through APBD funds. There is no division of CSR in managing landscape assets or the role of community groups.

The factors that hinder and support the sustainable management of landscape assets in the city of Magelang can then be a reference for managing urban landscape assets in a sustainable manner in general.

#### V. CONCLUSION

Based on the problems and objectives of the study and related to the results of the analysis and discussion, the conclusions of this study are as follows:

- Most elements of the city landscape in the form of soft materials in the form of plants as well as hard materials in the form of pavements, benches, lamps, fences, sculptures, monuments and fountains are felt by the community as assets;
- According to the community that landscape elements that are more considered assets are landscape elements in the public space that can be utilized by the community together
- In general, the scope of urban landscape management has covered elements that respondents consider to be assets;
- It turns out that there is no guarantee that the public's good perception of management performance with sustainable landscape management practices because to realize sustainable landscape asset management requires active public and private participation and response and sustainability and sustainability.
- If the landscape is considered as an asset, the landscape is something that can provide benefits both directly and indirectly to the community so that the landscape of a city is no longer a matter that is ignored but becomes a priority including in its management budget, so that sustainable urban landscape asset management is achieved.

#### VI. THEORETICAL CONTRIBUTIONS

In this study contributing to the findings of the factors that support and hinder landscape management as assets, previous studies only discussed sustainable landscape management in general. Factors that support and hinder the management of sustainable landscape assets are as follows:

*A. Supporting factors*

*1) Management of Human Resources and Basic Assets includes:*

- Quality and Quantity of Human Resources
- Types of Flora and Fauna
- Existence of a Management Organization
- Adequacy of Water Resources.

*2) Geographical and Government Conditions include:*

- Topography, Contour and Type of Soil
- Planning and strategy
- Role of Regional Government
- Climate

*3) Institutional and infrastructure include:*

- Organizational capacity

- Availability of facilities and infrastructure

*B. Factors that Inhibit*

The social factors of society include community behavior.

REFERENCES

- [1] W.B. Starke and J.O. Simonds, *Landscape Architecture: A Manual Of environmental Planning and Design*: McGraw-Hill Publishing, 2006.
- [2] R.W.D. Pramono, *Capability Approach for well-being Evaluation in Regional Development Planning: Case Study in Magelang Regency*. Central java, Indonesia Yogyakarta: Universitas Gadjah Mada, 2016.
- [3] D.N. Utami *Cultural Landscape Heritage in Indonesia, Case Study: Magelang, Central Java, Presentasi Expert Meeting – International*, DAAD, Universitas Cologne, Cologne Jerman, 2013.
- [4] H. Wasito, *Pengantar Metodologi. Buku Panduan Mahasiswa*. Jakarta: APTIK Dan PT. Gramedia Pustaka Utama, 1995.
- [5] H.H. Nawawi, *Metode Penelitian Bidang Sosial*. Yogyakarta: Gadjah Mada University Press, 1983.
- [6] J.P. Guilford, *Fundamental Statistic in Psychology And Education*. 3 rd. Ed. New York: McGraw-Hill Book Company, Inc, 1956.