Eco-Architecture and Eco-Landscape Management Concept For Riparian Landscape in Lebak Kantin – Sempur, Bogor

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ABSTRACT

This paper was written to inventory and analyze management systems found in Ciliwung Riparian Landscape, especially in Lebak Kantin, Sempur Area, Bogor City. The management concept used to develop the area was eco-architecture and eco-landscape concept. Methods used in this study were survey (field check and interview) and literature study. The results showed that there were seven *Rukun Warga* (RW – community territorial) found in Lebak Kantin which character of the community most people. The housing pattern in Lebak Kantin is closed to each other with the Ciliwung River as backdrop. People use the river for many activities, like washing clothes and dishes or for bathing. There also found some fish cultivation activity with *Keramba* systems. Alleys as a connectors of each housing block were used for drying the laundry. Facilities found in that area were for public toilets and for spring water for household use. In some part of the area, there were houses that were potentially harmed by a landslides. The analysis resulted in an eco-landscape concept applied to the area to provide a green-community, that is open areas for multi uses as sports facilities, household activities place (drying laundry or home items), and green open space. Retaining walls also need to be build to protect the area from landslide. Changing the housing orientation from water-at-the-back into a waterfront concept, arranging an ecological alley by providing sufficient and convenient space, and maximizing the spring water uses and built communal septic tank are proposed for an eco-architecture concept.

Keywords: Riparian Landscape, Eco-Architecture, Eco-Landscape, Landscape Management

1. INTRODUCTION

The word of riparian derived from the Latin words of 'riparious' - meaning as 'bank' – related with land or life in the bank of a body water. Riparian zone might define as the interface between terrestrial and aquatic ecosystem, which is not easily deliniated but are comprised of mosaics of landforms, communities, and environments within the larger landscape (Gregory et al, 1991). Further, Ilhardt et al (2000) define riparian area as the three-dimensional ecotones of interaction that include terrestrial and aquatic ecosystems, that extended down into the ground water, up above the canopy, outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the water course at the variable width.

Lebak Kantin is riparian area of Ciliwung Rivers. It is located in Sempur Village, Central Bogor Distict, Bogor City. The area consist of three Rukun Warga/RW (RW 5, 6 and 7) from total of seven Rukun Warga. It is a high-density area with the total area about 13.8 ha and total population about 3635 persons. Therefore, Lebak Kantin classified as a **Kupat-Kumis** area (Kumuh-Padat and Kumuh-Miskin) which characterized as an unconvenient housing, less of facility and socio-economically belong to not-the have community.The Kupat-Kumis area ussually found as area on the riverbanks, on the side of train rails, near to CBD's, suburbs, flooding and landslide area, and area between luxury houses. Figure 1 below shows the location of Lebak Kantin.

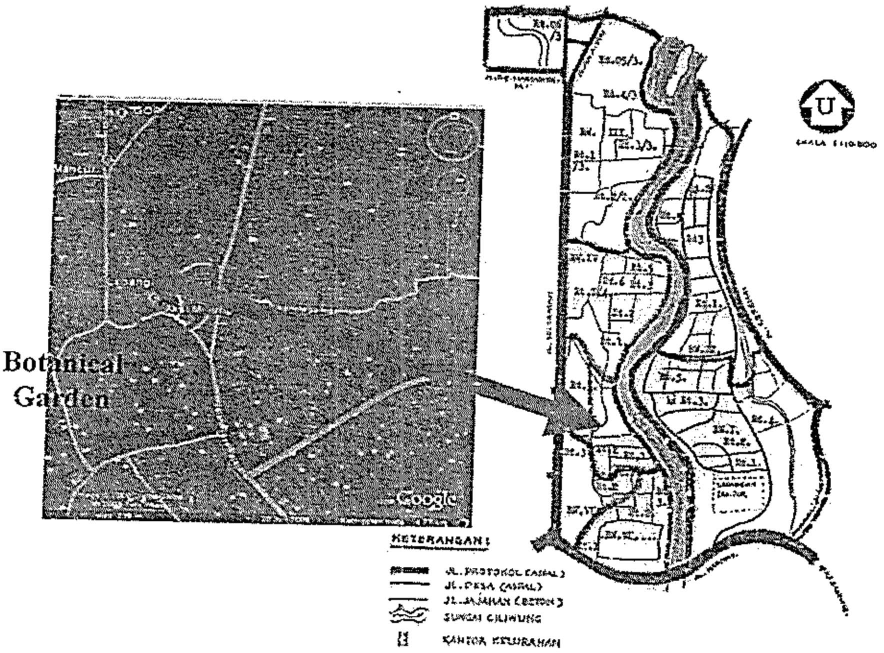

Figure 1. Study site location

The aims of this study was to inventoried and analyzed management system found in Ciliwung Riparian Landscape, especially in Lebak Kantin, Sempur Area, Bogor City. The management concept used to develod the area was eco-architecture and eco-landscape concept. Result of this study are an inventory data of existing condition and management system in Lebak Kantin and an advisory to manage the area to be environmentally sustain.

2. MATERIALS AND METHODS

Lebak Kantin is Ciliwung riparian area which is located on the north of Botanical Garden, in Sempur Village, district of Central Bogor. It is a high-density populated area which consist of three Rukun Warga with the total area about 13.8 ha. Method used in this study were survey (field check and interview) and literature study. Field survey was taken to check the existing condition on the area by taking picture on the site location. Interview with some resident in Lebak Kantin held to collect data about their daily life, river uses, and its relation. Supported data collected from the statistic data of the Sempur Village and also from literature.

2. RESULTS

a. Demoghraphy

Lebak Kantin is the high-density populated area with the total area about 13.8 ha. It is administer by Sempur Village, Central Bogor District, Bogor City. Sempur Village has seven Rukun Warga (community territorial). Each Rukun Warga consist of several Rukun Tetangga (sub-community territorial). The number of Rukun Tetangga/RT in Sempur Village is about 32 RT. Table 1 below shows demographic condition of Sempur Village. On the last three lines of the table belongs to Lebak Kantin area, they area RW 5, 6, 7 (shading).

Table 1. **Demography Data of Sempur Village**

RW	∑ RT	∑ of Households	∑ Total Area (ha)	∑ Person
1	5	531	18,5	1950
2	5	354	18	1320
3	6	397	5	1578
4	7	365	6	1345
5	3	393	4.7	1530
6	3	309	4.7	1238
7	3	246	3.4	867

Source : Demography Statistic Report of Sempur Village, July 2009.

Amongs the Lebak Kantin area, the most populated area located in RW 5 with total of population reached to 393 households or 1530 peoples in 4.7 hectare. The character of community is a comer. They work in variety job field as mostly in private sector like trader, guide in Botanical Garden, rent-motorcycle rider and so on. Some activity that also found there is fish cultivation using Keramba system, they block the river stream, and build Keramba on the side of river. In general, job classification for people in Sempur Village can be shown below (Figure 2).

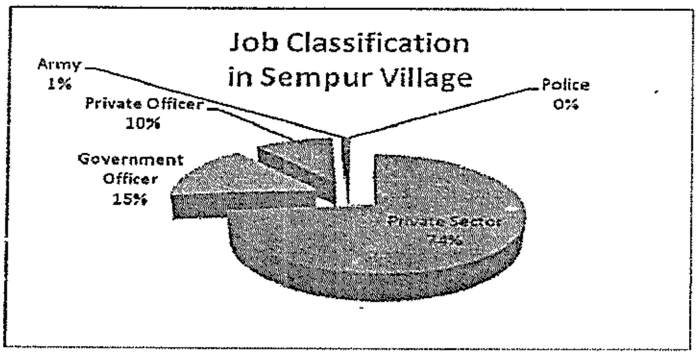

Figure 2. Job Classification in Sempur Village
(Source: Demography Statistic Report of Sempur Village, July 2009)

b. Landuse Pattern

Most of the area in Sempur is built area (98%), only about 2 % is green area. Green area in Sempur found as vegetation near the river and the sloping area near to Jalan Sudirman (west side). Part of Lebak Kantin which is harmfully damage by a landslide located in RW 7. People build their house very close to sloping area. The land uses in Sempur Village can be shown in Figure 3 below.

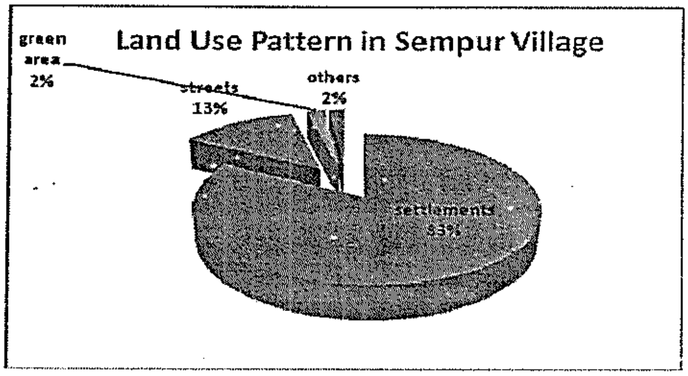

Figure 3. Land Use Pattern in Sempur Village
(Source : Demography Statistic Report of Sempur Village, July 2009)

c. **Activities and Facilities**

The housing pattern in the area is very close to each others. Their home orientation is river as water back. The most common problems found are their less concern about environment. They like to treat the river as garbage dumb and using river as a toilet even though they have public toilet. Alley is connector inside the housing area. They used alley for many household activity, for example drying a laundry. For water sources, they use spring water, PDAM, and water from the well.

3. DISCUSSIONS

Riparian corridors are naturally disturbance-mediated ecosystems, but because they receive input of matter and propagules from such large areas, they accumulate, concentrate and exacerbate further human-induced impacts and disturbances. Amongst the most degradated ecosystems globally is riparian area (Revenga et al., 2005; Dudgeon et al., 2006 in Esler K.J. et al., 2008). People in Lebak Kantin with their daily life style have change the integrity of the riparian landscape between terrestrial and aquatic zone.

There are some management concept might be applied in Lebak Kantin riparian zone. But this paper concern on two concept of riparian management. The first concept concern on eco-architecture and the other is eco-landscape. Both the concepts have purpose to reach sustainable environment for riparian zone.

The first is eco-landscape management concept. This concept implemented by building green retaining wall with re-vegetation on sloping area and riverside to protect the area from landslide. Part of the area is very sloping. But, people in Lebak Kantin especially in RW 7 build their house very close to slope area without concerning the dangerous of it. On rainy season, when water flows from higher place, might caused landslide if no enough vegetation to catch the water or no enough space between sloping area and housing area. Another eco-landscape management concept is building green-community open area (sports facilities, household activities). This concept appropriate for high-density area, where communal space not available.

The second proposed concept is eco-architecture management concept. An architectural problems found in study area is unhealthy environment of the alley, less concern of the borrowing natural view from river and lack of owned toilet. In other to solve these problems, an architectural strategy need to implemented. Therefore, providing ecological, sufficient and convenient space for the alley is important. In sanitary problems, building public toilet or communal septic tank with spring water also needed. They can maximize the uses of their own natural resources of spring water for daily needed for public toilet or laundry. Otherwise, to beautify the area, they can borrow the natural view of Ciliwung by changing their home orientation into the river.

4. CONCLUSIONS

Lebak Kantin as high-density populated area of Ciliwung riparian landscape need to take concern especially to develop the area to be environmentally sustain. Many concept might implemented to manage the area. Eco-architecture and eco-landscape concept are some of management concept might applied. Those concept might development environment quality and protect the area from environmental degradation so the riparian area environmentally sustain.

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REFERENCES

Gregory et al. 1991. An Ecosystem Perspective of Riparian Zones. BioScience 41 Volume 8, 540–551.

Ilhardt et al. 2000. Defining Riparian Areas. In: Riparian Management in Forests of the Continental Eastern United States. Lewis Publishers. New York (2000). pp. 23–42.

Pemerintahan Kelurahan Sempur. 2009. Demography Statistic Report of Sempur Village, July 2009. Not Publish

Revenga, C et al. 2005. Prospects for Monitoring Freshwater Ecosystems Towards The 2010 Targets. Philosophical Transaction of The Royal Society 360, 397-413. And: Dudgeon, D et al. 2006. Freshwater Biodiversity: Importance, Threats, Status and Conservation Challenges. Biological Review 81, 163-183. In: Esler K.J. et al. 2008. South African Journal of Botany Volume 74, 397-400.