

## Conference Paper

# Green Campus As a Concept in Creating Sustainable Campuses

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## Abstract

The concept of green campus is an integration concept in the Education research and community service system in environmental management. The objectives of this study are: (1) To find out the results of studies in several universities in Indonesia, whether this concept has a good impact on the process of creating a sustainable campus; (2) Knowing what obstacles are faced by the campus in applying the concept of green campus. This research method uses qualitative analysis with a literature study approach. Based on the results of the analysis on several campuses in Indonesia, it is known that the application of the green campus concept is very effective to be applied specially to manage the campus environment so that the creation of a sustainable campus. The most common obstacle is lack of knowledge about green campus and campus readiness to commit to protecting the environment. The need for the readiness of the campus management and students themselves on the importance of protecting the environment and creating a sustainable campus.

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## 1. Introduction

The campus is a place for agents of change. The development of campuses in Indonesia must be supported by programs that support sustainable development. Many attempts were made by the campuses in realizing sustainable development. Many campuses have begun to implement various models in preserving nature, including the green campus.

Green campus can be defined as a program that integrates environmental management and protection into tertiary institutions [1]. Green campus is a combination of the environment and the campus world in its management. The concept of the environment which includes 3R (reduce, reuse, recycle), greening, in front of office, CSR and so on

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are combined with the campus concept which consists of the physical condition of the campus, campus location and the behaviour of campus residents [2]. In Indonesia the concept of green campus has been widely applied.

Some indicators of the creation of a green campus are campus management policies oriented to environmental management, including efforts to save water, paper, and electricity, greening to achieve the ideal proportion of green open space (RTH), and the availability of campus waste management with the 3R principle (reduce, reuse, recycle) [3]. The concept of green campus is designed to support sustainable development in tertiary institutions. At present there is a green campus

designing body that is used in Indonesia, one of which is the UI green metric owned by the University of Indonesia. The legal basis supporting education for sustainable development in tertiary institutions is law number 20 of 2003 concerning the National Education System, law number 32 of 2009 concerning Environmental Protection and Management and government regulation number 19 of 2005 concerning National Standards.

The application of the concept of green campus in Indonesia has had mixed results, due to the varying environmental conditions, geography and habits of each campus. With a variety of conditions, it provides a challenge on the campus can the campus be a pioneer in protecting the environment so that the creation of a sustainable campus. From the description above, this research focuses on finding out the application of green campus in Indonesia from studies that have been carried out by these campuses.

Sustainable development is an effort to optimally utilize resources to meet current and future needs. The United Nations (UN) has declared the past 2005-2014 as “the Decade of Education for Sustainable Development”, which aims to integrate the principles, values and implementation of sustainable development into all aspects of education [4]. The environment with education cannot be separated from its role in creating sustainable development.

## 1.1. Understanding green campus

The concept of sustainable development is rooted in thought-oriented thinking to help understand our environment with all its complex and serious problems that we created so that we are able to overcome them [5]. In his thinking in creating sustainable development, it needs a lot of changes in the concept of thinking, especially what must be applied is the concept of returning to nature.

Green can be interpreted as green and campus can be interpreted as a campus or educational location. If literally, the green campus can be interpreted as a green campus. Green is not the building but the environment. Green campus is a concept of a fusion of the environment with the world of campus [2]. Green Campus can be interpreted as a campus with nuances of green because lush vegetation, grasses and trees [4]. From the above definition it can be concluded that the green campus is an overall activity in environmental management in order to create a sustainable campus.

Understanding the term Eco Campus or green campus in the context of environmental preservation is not just a campus environment filled with green trees or a campus filled with green paint, or because the campus's alma mater jacket is green, further than that the meaning contained in the eco campus is the extent to which campus residents can utilize the resources available in the campus environment effectively and efficiently, for example in the use of paper, writing stationery, the use of electricity, water, land, waste management, and others [6].

## 1.2. Development of green campus in Indonesia

The green campus program is nothing new in Indonesia. This program has been widely applied in several campuses in Indonesia. Here is a list of 10 greenest campuses in Indonesia [7]:

1. University of Indonesia, Jakarta
2. Bogor Agricultural University, Bogor
3. Diponegoro University, Semarang
4. Sepuluh November Institute of Technology, Surabaya
5. Semarang State University, Semarang
6. Gajah Mada University, Yogyakarta
7. Sebelas Maret University, Surakarta
8. Indonesian Islamic University, Yogyakarta
9. Padjadjaran University, Bandung
10. Telkom University, Bandung

In addition to the above-mentioned Ministry of the Environment designates Hasanuddin University Makassar, Jayapura Cendrawasih University, and Diponegoro University

Semarang as a green campus pilot. At present prestigious campuses are starting to compete to make their campus a green campus, because besides being environmentally friendly the concept of green has now become a trend among our people. In the application of the concept of green campus it requires a change of mind and persistent efforts to achieve the implementation of a green campus [9].

In recent decades the thought of the evolution of sustainability for universities has received very serious attention [10]. In many parts of the world, many universities want to make their campus a green and comfortable campus for their students.

## 2. Methods

The study used qualitative methods with a literary study approach to examine the relevance of the Green Campus journal in Indonesia. Literature study, which is the retrieval of data by means of studying books and documents relating to the fundamentals of research [8].

## 3. Result

Green campus is not new anymore in this world. This concept has been applied in several universities in the world. but in Indonesia this concept is still a new concept that is not yet well known to many famous people in this country. in this research, we will discuss how to apply the concept of green campus in several universities in Indonesia and whether after the concept is implemented, it can create a sustainable campus. Among the studies that will be discussed this time are them?



Figure 1: Riau University

Research conducted by Mahendra Saam, Zulfan Nasution and Syafruddin at the University of Riau with the title “Implementation of the Green Campus Concept in Riau University Colleges” in 2013 outlined the results of an assessment of the implementation

of the green campus concept in the PSLH UR (Riau Study Center for Environmental Studies) policy [11]

TABLE 1: Evaluation Results of the Implementation of the Green Campus Concept on the PSLH UR Policy

Assessment Criteria	Total Value
Vision and Mission of PSLH UR which includes efforts to protect the Environment (PPLH)	100
The field of UR PSLH activities that includes PPLH efforts	100
Website related to green campus program	60
Average	86,67

From the table in Table 1, an average value of 86.7 was obtained in the policy parameters of PSLH UR (Canter for Environmental Studies at the University of Riau) with the criteria for implementation of implementing the concept of green campus very well. This value shows that the concept of green campus can be implemented well because it is supported by the vision and mission at the University of Riau.

TABLE 2: Evaluation Results of the Implementation of the Green Campus Concept in Green Facilities and Infrastructure at the University of Riau

Assessment Criteria	Total Value
Campus facilities and infrastructure to overcome environmental problems	70
Campus facilities and infrastructure support environmental learning.	95
Average	82,5

Table 2 shows that the implementation criteria of implementing the green campus concept are very good. Infrastructure and facilities at Riau University strongly support the implementation of green campus. The average facilities and infrastructure at the University of Riau are in accordance with the concept of green campus. The adequate facilities of Riau University must be optimized in their use in accordance with the goals of a sustainable campus.

TABLE 3: Results of the evaluation of the implementation of the green campus concept in waste management

Assessment Criteria	Total Value
Plastic waste management	30
Organic waste management	30
Inorganic waste management	30
Liquid waste management	30
Average	27,5

In table 3, it shows the criteria for implementing the green campus concept in waste management is not good. when seen from the results of the average assessment which is still below 50, it is known that waste management at the University of Riau is still

not good. There needs to be a strong commitment from the campus and the campus community about the dangers of waste and how to react to it. Waste management is not easy, because it is all about habits. This habit must first be changed. There must be a strict policy from the University regarding waste management at this time.

When viewed from the results of research conducted at the University of Riau on green campus, it can be seen that if a strong campus commitment to implementing the concept will create a sustainable campus. Riau universities have facilities and infrastructure that support the concept of green campus can be applied. All that remains is to improve a few other sides so that the concept can actually be implemented at Riau University.

Other research conducted at Itenas that discusses the implementation of the concept of green campus on Itenas campus setting and infrastructure categories [12]. This research will describe the application of the concept of green campus only in the category of setting and infrastructure. Setting and infrastructure categories are in the green metric UI of the University of Indonesia. The layout and infrastructure category have several indicators in the assessment, namely [12]:

1. Comparison between green open space and total campus area
2. Percentage of campus area in the form of forest
3. Percentage of campus area covered with plants / gardens (including grass, gardens, etc.) (%)
4. Percentage of surface area in the campus environment that can absorb water (including soil or concrete blocks) (%)
5. Total open space divided by campus population
6. Percentage of campus budget to create a sustainable campus (environmentally friendly)

From the results of research conducted at Itenas in the category of setting and infrastructure, the results show that open space in Itenas is dominated by non-green open space. Open space in Itenas has not been utilized to the full. For that we need more planning in designing open spaces in Itenas.

The successful implementation of the green campus concept depends on the commitment of all parties in the campus itself. It takes a lot of preparation to be able to achieve the goals of the green campus.

The next university is University of Indonesia. University of Indonesia is the first university in Indonesia that pioneered the concept of green campus. University of Indonesia has a program used by many universities in the world, the program is a greenmetric UI. The successful concept of Green campus in University of Indonesia inspires many universities in Indonesia to start developing green campus.



Figure 2: University of Indonesia

## 4. Discussion

The concept of green campus in Indonesia is still not so new. at this time only large campuses have begun to apply the concept. This concept needs to be supported by not only campus leaders but also by campus residents and residents around the campus. In the concept of a green campus many indicators must be fulfilled for the achievement of the concept. These assessments and indicators are usually obtained from the green campus design body, one of which is in Indonesia, the UI green metric.

Some campuses do not directly apply the whole concept but one by one from the indicators began to be applied. In implementing a new concept, it is certain that many obstacles will be faced, including in applying this green campus concept. The biggest obstacle faced is the lack of infrastructure and the amount of funds that must be spent to realize the concept.

A healthy campus must have a variety of open spaces with a variety of objectives that can be poured into attractive designs [13]. Utilization of open space is included in the category of green campus that must be met in accordance with government regulations in force in Indonesia. How related the concept of green campus with the environment, it is appropriate that the concept can be applied in universities in Indonesia today.

## 5. Conclusion

From what has been discussed above, it can be concluded that:

1. The green campus concept is a breath of fresh air in a change towards a sustainable campus. The application of this concept can bring a positive change in both teaching and learning activities and the achievement of the tridharma perguruan tinggi in Indonesia.
2. Constraints faced in implementing new concepts are common. Everything depends on the readiness and willingness of the campus to apply the concept. This concept is also a concept that supports government programs in sustainable development goals or SDG's.

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## Conflict of Interest

The authors have no conflict of interest to declare.

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