Concept evolution of conservation

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Abstract. The purpose of this study is to analyze the evolution of the concept of conservation at Semarang State University (UNNES). This research use descriptive qualitative approach. The object of research is various documents related to conservation development and implementation policies, such as chancellor's regulations and / or chancellor's decisions, and various other documents. The data collection was used the method of documentation, observation, and interviews. Data were analyzed descriptively-comparatively. The results showed that the implementation of the conservation concept at UNNES was initially supported by 7 (seven) pillars, then reduced to 3 (three) pillars, but it was more comprehensive. The evolution of the concept of conservation accelerates the achievement of UI Green metric.

1. Introduction
The quality of human life is directly proportional to the available resources (limited) and inversely proportional to the human population (which is constantly increasing) along with various levels of needs (primary, secondary, and tertiary). Environmental damage cannot be prevented or avoided, but it can be controlled systematically by implementing sustainable development, which is supported by Education for Sustainable Development (ESD).

Indonesia is one of the ten member states of the economically and politically diverse regional organization of ASEAN [1]. UNNES has taken a role in ESD by reformulating its vision, becoming an International Conservation and Reputational Vision University. As a conservation campus, UNNES was declared on March 12, 2010 by Mendikbuk Muhammad Nuh. UNNES obtained Kalpataru from the Ministry of Environment.

Environment is defined as the combination of natural resources, things made by man and the inter-relationship between these as well as various circumstances which surround people on earth [2]. It is important in understanding natural re-source management contexts and audiences, and is essential in the design and delivery of effective and durable management strategies [3]. Successful natural resource management is dependent on effective knowledge exchange and utilization [4]. Conservation means keeping or saving what we have used wisely. The concept of conservation is related to the concept of sustainable development that is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Ultimately in the natural resources utilization, the use of natural resources is for the greatest good to greatest number of people for the longest time.
The proper use of natural resources for long-lasing human welfare is known as conservation [5]. Biological resource monitoring systems often depend on student community participation. [6] The level of participation significantly influences forest resources conservation. [7] Multi-level governance of forest resources involves complex interactions of state, private and civil society actors at various levels, and institutions. Emphasizing wisdom and ethics environmental expressed through religious are very useful tools in natural resource management [8, 9].

The brilliance of UNNES in achieving Kalpataru is not merely supported by physical conditions that are indeed "green fever", but academically supported by the obligation of each student to take the Conservation Education MKU, as a source of conservation cadres, who plant seeds on campus and off campus to end lecture. These various policies are formulated in the formulation of 7 (seven) conservation pillars. In its development, the seven pillars were formulated into 3 (three) pillars.

The seven pillars of conservation were (1) biodiversity conservation, (2) green architecture and internal transportation, (3) paperless policy, (4) waste management, (5) clean energy, (6) ethics, art, and culture, and (7) conservation agent. Those pillars are then transformed into three major pillars of (1) natural resources conservation, (2) value and character, and (3) art and culture. The interaction of these three aspects is biological resource monitoring systems often depend on student community participation [10].

2. Methods
This research use descriptive qualitative approach. The object of research is various documents related to policy development and implementation of conservation policies, such as chancellor's regulations and / or chancellor's decisions, the preparation and results of the UI greenmetric, and various other documents.

Data collection using the method of documentation, observation and interviews. Interviews were conducted with related leaders, starting with university leaders, faculties, departments, UPT, even laboratory assistants and cleaning services. Data were analyzed descriptively-comparatively.

3. Results and Discussion
Based on three pillars, the focus is not only natural resources conservation but also value and character conservation. There are three keys of creating environmentally friendly university, namely green campus, clean campus, and healthy campus. UNNES develops eight values and integrates them as faculty characters. Faculty of Education has inspiring values, Faculty of Language and art has humanist value, then Faculty of Social Science has caring value, Faculty of Mathematics and Natural Sciences is innovative. Faculty of Engineering should develop creative value, while Faculty of Sport Science should have sportive value, Faculty of Economics should be honest and finally Faculty of Law should be inspired by justice value.

UNNES has built reservoirs to control surface runoff and water conservation (infiltration and percolation). A wastewater treatment plant (WWTP) was also built to control the pollution of wastewater produced by activities in the laboratory. This university develops solar panels as well as micro hydro as a form of renewable energy.

The stakeholders' hard work in implementing the three pillars of conservation resulted in sweet results by obtaining UI Greenmetric 6th for Indonesia and 71st in the world [11], with a score as shown in Table 1.

| Table 1. Greenmetric UI Score |
|-----------------------------|
| Category | Point | Percentage of Point to Total Score | Maximum Point | Percentage of Point to Maximum Point |
| Setting and Infrastructure | 1,050 | 14 % | 1500 | 70.00 % |
Energy and Climate Change (EC)  
Waste (WS)  
Water (WR)  
Transportation (TR)  
Education (ED)  
Total Score

| Component   | Score | %  |  | %  |
|-------------|-------|----|---|----|
| Energy and Climate Change (EC) | 1,475 | 20% | 2100 | 70.24% |
| Waste (WS)  | 1,125 | 15% | 1800 | 62.50% |
| Water (WR)  | 800   | 11% | 1000 | 80.00% |
| Transportation (TR) | 1,450 | 20% | 1800 | 80.56% |
| Education (ED) | 1,500 | 20% | 1800 | 83.33% |
| Total Score | 7,400 | 100% | 10000 | 74.00% |

From Table 1 obtained information, the lowest score on the waste component (62.5%). These component indicators include recycle, reduce, waste treatment and sewerage disposal. The details are presented in Table 2

**Table 2. Indicator Waste**

| Indicator | Score |
|-----------|-------|
| WS.1 Recycling program for university waste | 225 |
| WS.2 Program to reduce the use of paper and plastic in campus | 300 |
| WS.3 Organic waste treatment | 150 |
| WS.4 Inorganic waste treatment | 150 |
| WS.5 Toxic waste treatment | 225 |
| WS.6 Sewerage disposal | 75 |

WWTP operations still need to be improved to minimize organic waste, inorganic waste, and toxic waste due to the generation of liquid waste originating from laboratory activities. The quality of the wells in the south of the Biology Lab (radius about 200 m), as shown in Table 3 [12].

**Table 3. Population Well Water Checks**

| No | Parameter | Unit | Result | Quality standards |
|----|-----------|------|--------|-------------------|
| 1. | Colour    | Skala TCU | 5 | 50 |
| 2. | Rasa      | - | Tasteless | Tasteless |
| 3. | Smell     | - | Odorless | Odorless |
| 4. | Temperature | °C | 28.0 | Air temperature ± 3°C |
| 5. | Turbidity | NTU scale | 0,016 | 26 |
| 6. | Iron (Fe) | mg/l | 0.00 | 1.0 |
| 7. | Fluoride  | mg/l | 0.00 | 1.5 |
| 8. | Cadmium (Cd) | mg/l | 0.00 | 0.005 |
| 9. | Total hardness (CaCO₃) | mg/l | 198 | 500 |
| 10. | Chlora (Cl) | mg/l | 22.07 | 600 |
| 11. | Mangan (Mn) | mg/l | 0.00 | 0.5 |
| 12. | Nitrat sebagai N (NO₃) | mg/l | 6.25 | 10 |
| 13. | Nitrit sebagai N (NO₂) | mg/l | 0.18 | 1.0 |
| 14. | pH | mg/l | 6.12 | 6.5-9.0 |
10. Seng (Zn) mg/l 0.003 15
11. Sianida (Cn) mg/l 0.00 1
12. Sulfat (SO\(_4\)) mg/l 17.07 400
13. Detergent (MBAS) mg/l 0.03 0.5
14. Timbal (Pb) mg/l 0.00 0.05
15. Organic Substances mg/l 1.22 10
16. Cromium valensi 6 (Cr\(^{+6}\)) mg/l 0.00 0.05

Liquid waste generated by chemical and biological laboratories has been relatively safe, but its potential to degrade the aquatic environment must be watched out for. Data Table 1, all parameters still meet the quality standards set by Permenkes No. 416 / Menkes / Per / IX / 1990, except for pH.

Based on Table 1, the education component achieved the best score (83.33), supported by 7 indicators as in Table 4.

| Indicator | Score |
|-----------|-------|
| ED.1 The ratio of sustainability courses towards total courses/modules | 225 |
| ED.2 The ratio of sustainability research funding towards total research funding | 225 |
| ED.3 Sustainability publications | 225 |
| ED.4 Sustainability events | 300 |
| ED.5 Sustainability student organizations | 225 |
| ED.6 Sustainability websites | 200 |
| ED.7 Sustainability report | 100 |

UNNES develop students’ character: tradition to uphold achievement, antidrug, antiplagiarism, antiradicalism, and patriotism. Every UNNES student participates in Conservation Education Course to produce conservation agent. In the Conservation Education course, Anti-Corruption and Disaster Education material are provided in the course. Academically, starting from the academic year 2019/2020 UNNES accepts new students for Environmental Science Study Programs.

4. Conclusion
Based on the results and discussion it can be concluded, the evolution of the concept of conservation at UNNES, from 7 pillars to 3 pillars can accelerate the vision that has been formulated; conservation is not only related to natural resources and the environment, but also values and character, as well as arts and culture, so that it is more comprehensive.

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