Green campus development of UNNES postgraduate program: potential identification and performance analysis

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Abstract. Universitas Negeri Semarang (UNNES) with the vision of conservation-minded university with international reputation continues to develop a conservation-based academic life, namely the value of caring for the environment. This vision is supported by one of the internal UNNES Green Campus Programs, namely H-BAT (green, clean and healthy). Based on the results of the H-BAT assessment in period of June 202, it showed that the achievement of the UNNES Postgraduate Program (it’s called PPs UNNES) performance was 62.24%. This performance achievement is a low indicator for PPs UNNES in its efforts to develop a green campus. The formulation of the problem that can be raised is how to improve the performance of PPs UNNES’s H-BAT achievement in the field of conservation. The purpose of this study is to identify potential and analyse campus performance in accordance with the H-BAT indicator assessment criteria. The method used in this research is descriptive exploratory. The results show that the achievement of 62.24% of the H-BAT assessment illustrates that the PPs UNNES green campus governance is not optimal, both in administration, programs, policies and implementation in the field. PPs UNNES has great potential to be able to better improve H-BAT achievement, but it seems that there are obstacles that may be the cause of the low H-BAT performance achievements in the past period. It needs a lot of efforts to optimize the existing potential so that it can fulfil the H-BAT assessment indicators more optimally.

1. Introduction
The emergence of various problems and environmental issues above must be responded to with a sense of responsibility. We can emulate the birth of environmental movements that fight for the importance of the environment to raise our awareness of the importance of the environment. In the academic sphere, an academic can bring these issues into the realm of academia. Universities that care about sustainability can create a green campus movement as a new icon in the academic world. The movement is a concrete step in responding to environmental issues. Universitas Negeri Semarang (UNNES) is one of the universities in the world that cares about the environment. With the vision of “Being a conservation-minded university with international reputation”, UNNES continues to develop a conservation-based academic life. In 2020, UNNES was ranked 85th greenest university in the world and ranked 6th in Indonesia is proof of UNNES seriousness in caring for environmental sustainability (based on the UI Green Metric). The vision of developing UNNES until 2040 is to realize UNNES as a University of Conservation and International Reputation. With a conservation perspective, it means to look at and
behave in a conservation principle, namely the protection of life support systems; preservation and use of natural resources in a sustainable manner, environmental balance; and social, artistic and cultural values. This conservation principle is the basis for the implementation of the UNNES’s threefold missions of higher education [1-2].

The spirit of UNNES to become a conservation-minded university with an international reputation is realized through strategic missions. One of the conservation-oriented implementation programs is the H-BAT (Green, Clean and Healthy) Program. The competition between these units takes place twice a year, namely June and December. The H-BAT program in 2019 has been integrated with several UI Greenmetric indicators so that the results contribute to strengthening UNNES as a conservation-minded university [1-2]. Through The H-BAT Program which is integrated with UI-Greenmetric, it is hoped that several objectives can be achieved, namely: (a) encouraging each work unit to implement the UNNES vision with a conservation perspective; (b) increase the awareness of campus residents to care more about the environment; and (c) increasing supporting data for UI-Greenmetric indicators with international reputation. The program which has been going on for 5 years has received a positive response from work units as program participants. Each work unit seeks to improve the quality of the carrying capacity of the environment in accordance with the established assessment indicators. Every work unit that wins the competition will receive an award from the Rector of UNNES and announced in the university leadership forum. The winner of the H-BAT competition has a good reputation in managing the campus environment and is a brilliant achievement for the leaders.

The results of the H-BAT assessment in the period of June 2021 showed that PPs UNNES achievement of the components of the H-BAT entry was 62.24% and 7th in rank of 8 units in category of faculty/postgraduate. This achievement is certainly a performance indicator for PPs UNNES in the management of a conservation-based campus that is integrated with UI-Greenmetric which is still low. Looking further, actually PPS UNNES has great potential to be able to better improve the H-BAT achievement, but it seems that there are obstacles that may be the cause of the low H-BAT performance achievement in the past period. Of course, it is felt that there is an imbalance between potential and results, so that the formulation of the problem that can be raised is “how to improve the performance of PPs UNNES’s H-BAT achievement in the field of conservation?”. Based on the background and problem formulation, the purpose of this study is to identify potential and analyze campus performance in accordance with the H-BAT indicator assessment criteria.

2. Literature Review

2.1. Conservation
Hambler and Canney [3] stated that conservation means preservation or protection. Meanwhile, according to environmental science, conservation is: (a) Efficient efforts from energy use, production, transmission, or distribution that result in a reduction in energy consumption on the other hand providing services of the same level; (b) Efforts to protect and manage the environment and natural resources carefully; (c) Management of certain quantities which are stable during chemical reactions or physical transformations; (d) Asylum measures and long-term protection of the environment; (e) A belief that the natural habitat of an area can be managed, while the genetic diversity of species can occur by maintaining the natural environment.

The manifestation of the conservation program has several reasons that should be the basis and guidance for conserving natural resources and the environment [4] are: (a) Every living thing or species has the right to live regardless of its number or importance to humans, each species must be guaranteed its survival; (b) All species depend on each other. The loss of one species in nature is certain to have a real impact on other species in their community. In the event of a series of species extinctions, the entire community is certain to become unstable; (c) Humans have a mandate as "protectors and guardians of the earth". If humans destroy natural resources and cause damage, as well as the extinction of species, then future generations will have to pay for it with a lower standard and quality of life. Therefore, humans must use resources wisely and sustainably so as not to damage species and their communities;
(d) Respecting human life and paying attention to the interests of mankind is in line with respecting biodiversity; (e) Nature has spiritual and aesthetic value that exceeds its economic value; (f) Biodiversity is needed to understand the origin of life; (g) Improving the quality of the environment, aesthetics, culture, and religion is more important than increasing materialistic consumption.

Taking into account the above matters relating to conservation and the existence of sustainable development, universities must be able to provide concrete examples in terms of how to protect, preserve, and preserve biodiversity through education, research, and service programs in the campus environment and its surroundings in a program with the theme "Conservation Campus". Thus, the definition of a conservation campus is a higher education institution that pays attention to environmental ecological conditions by protecting, preserving, and conserving biodiversity through education, research, and service programs. This big program is the responsibility of campus stakeholders for the sustainability of biological life.

2.2. Green Campus

The concept of green architecture is a design concept to produce a built environment (green building) that is built and runs sustainably. Green architecture is an architecture that is environmentally sound and based on concern for the conservation of the natural global environment with an emphasis on energy efficiency, sustainable and (holistic approach [5]. Starting from ecological design thinking which emphasizes the interdependencies and interconnectedness between all systems (artificial and natural) with their local environment and the biosphere. The form follows energy credo was expanded to become a form follows environment based on the principles of recycle, reuse, reconfigure.

The criteria for developing Energy and Environmental Design in Green Buildings, especially campuses, include: (a) Site sustainability; (b) Water efficiency; (c) Energy and atmosphere; (d) Materials and resources; (e) Indoor air quality; and (f) Keep options open [6]. Activities within the scope of green campus planning include: (a) Site development; (b) Utility resources conservation; (c) Recycling and waste reduction; (d) and Building occupant health, safety, and comfort.

2.3. H-BAT Program

The H-BAT (Green Clean and Healthy) program is a green campus assessment program aimed at work units in the UNNES Campus Environment. This program was implemented for the first time in 2017 and is a new form of the previous program called The Green Unit Award (GUA). In 2019 for the first time the H-BAT Program was held online. The competition between these units takes place twice a year, namely June and December. The H-BAT Program in 2019 has been integrated with several UI Greenmetric indicators.

2.3.1. Assessment Aspects. In The H-BAT Program integrated with UI Greenmetric, the assessment indicators are divided into 5 aspects, namely: (a) Green; (b) Clean; (c) Healthy; (d) UI-Greenmetric Supporting; (e) Covid-19 Handling [7-10]. The details of the assessment indicators are as in Table 1.

| No | Assessment Aspects | Scores and achievements |
|----|-------------------|------------------------|
| 1  | Green             |                        |
| 1.1| Availability of Green Open Space (%) | <11 11-20 21-30 31-40 >40 |
| 1.2| Green Open Space Treatment (times/week) | 1 2 3 4 5 |
| 1.3| Average number of living plants per building | <7 7-10 11-30 31-50 >50 |
| 1.4| The average number of art ornaments | <3 3-5 6-10 11-15 >15 |
| 1.5| Average markers/signs inside the building | <3 3-5 6-10 11-15 >15 |
| 1.6| Number of trees with a diameter of 10 - 25cm | <15 15-25 26-50 51-75 >75 |
| 1.7| Number of trees >25cm in diameter | <15 15-25 26-50 51-75 >75 |
| 1.8| Percentage of trees marked with scientific names & regional names (%) | <15 15-25 26-50 51-75 >75 |
| No | Assessment Aspects | Scores and achievements |
|----|--------------------|------------------------|
| 1.9 | Total area of Vertical Garden | 0 | 1 | 2 | 3 | 4 | <4 | 4 - 6 | 7 - 10 | 11 - 20 | >20 |
| 2 | Clean | 2.1 Sanitary conditions of toilets and kitchens (%) | <35 | 35 - 50 | 51 - 75 | 76 - 95 | >95 |
| 2.2 | Sanitary condition of drainage network (%) | <35 | 35 - 50 | 51 - 75 | 76 - 95 | >95 |
| 2.3 | Office space cleanliness (%) | <35 | 35 - 50 | 51 - 75 | 76 - 95 | >95 |
| 2.4 | Kebersihan ruang kuliahi (%) | <35 | 35 - 50 | 51 - 75 | 76 - 95 | >95 |
| 2.5 | Availability of trash bins in the building (standard at least 40 liters with a lid) | <4 | 4 - 5 | 6 - 9 | 10 - 14 | 15 |
| 2.6 | Availability of large trash bins outside the building (minimum 120 liters and with lid) (%) | <35 | 35 - 50 | 51 - 75 | 76 - 95 | >95 |
| 3 | Healthy | 3.1 Sports activities (gymnastics or other) | <7 | 7 - 10 | 10 - 24 | 25 - 49 | ≥50 |
| 3.2 | Lecture room that prioritizes natural ventilation (%) | <50 | 50 - 60 | 61 - 70 | 71 - 80 | >80 |
| 3.3 | Lecture room that prioritizes natural lighting (%) | <50 | 50 - 60 | 61 - 70 | 71 - 80 | >80 |
| 3.4 | Availability of bike | 0 | 1 - 5 | 6 - 10 | 11 - 15 | >15 |
| 3.5 | Availability of electric vehicles owned for operational activities | No | 1 | 2 | 3 | 4 |
| 3.6 | Availability of lactation room | No | There is |
| 3.7 | Average intensity of bicycle use by the academic community every month | 0 | 1-5 times/month | 6-10 times/month | 11-15 times/month |
| 3.8 | Availability of bicycle shelter | No | There is |
| 4 | UI-Greenmetric Supporting | 4.1 Availability of rainwater harvesting program | 0 | 1 | 2 | 3 | ≥4 |
| 4.2 | Availability of infiltration wells | 0 | 1 | 2 | 3 | 4 |
| 4.3 | Number of biopores | <10 | 10-20 | 21-30 | 31-50 | >50 |
| 4.4 | Number of tap water installations ready to drink | 0 | 1 | 2 | 3 | 4 |
| 4.5 | Number of drinking water refill points for public/students (number of gallons) | <2 | 2 | 3-4 | 5-6 | >7 |
| 4.6 | Automatic number of taps with sensor | 0 | 1 | 2 | 3 | 4 |
| 4.7 | Number of double flush toilets (two functions with small and large discharge) | 0 | 1-2 | 3-4 | 5-6 | >6 |
| 4.8 | Percentage of budget for activities that support conservation (excluding research and community service) | <5 | 5 - 10 | 11 - 20 | 21 - 30 | >30 |
| 4.9 | Percentage of unit budget allocated for research and community service that has conservation content (%) | <10 | 10 - 20 | 21 - 30 | 31 - 40 | >40 |
| 4.10 | Research Grants and conservation content service (excluding UNNES PNBP funds) | <50 | 50-100 | 101-200 | 201 - 300 | >300 |
| 4.11 | More efficient use of power tools (LED lights, power tools, etc.) (%) | <10 | 10 - 20 | 21 - 30 | 31 - 40 | >40 |
| 4.12 | Number of renewable energies generating units (solar panels, micro hydro, biomass, wind turbine etc) | 0 | 1-2 | 3-4 | 5-6 | 7 |
4.13 The capacity of electrical energy produced from renewable energy (kWh) in one year
<50
50-150
151-250
251-350
>350

4.14 Courses with conservation content (%)
<15
15 - 20
21 - 30
31 - 40
>40

4.15 Publication of research and service with conservation content (%)
<5
5 - 10
11 - 20
21 - 30
>30

4.16 Number of events held related to conservation
0
5-10
11-15
16-20
>20

4.17 Student organizations with conservation content activities
0
1
2
3
>4

4.18 Websites with conservation content
0
1-5
6-10
11-15
>15

4.19 The average percentage of 2018-2020 students who plant and upload to Siomon (%)
0-20
21-30
31-45
46-60
>61

4.20 Availability of waste water recycling program
0
1
2
3
>4

4.21 Conservation Start-up (unit has involvement in the start-up)
No
There is

5 Covid-19 Handling

5.1 Percentage of hand washing facilities outside in each building (%)
0-20
21-40
41-60
61-80
81-100

5.2 Percentage of hand sanitizer per building (%)
0-20
21-40
41-60
61-80
81-100

5.3 Availability of health protocol announcements/posters during the pandemic
No
There is

5.4 Number of types of facilities distributed to employees for Covid prevention
0
1
2
3
>4

5.5 Implementation of activities with the new normal protocol
1
2
3
4
>5

2.3.2. Participants. Participants of the H-BAT Program with integrated UI-Greenmetric are work units within the UNNES environment, both faculty and non-faculty groups, namely:

a. Faculty group (30 indicators): Faculty of Education (FIP), Faculty of Languages and Letters (FBS), Faculty of Social Sciences (FIS), Faculty of Mathematics and Natural Sciences (FMIPA), Faculty of Engineering (FT), Faculty of Sports Science (FIK), Faculty of Economics (FE), Faculty of Law (FH), Postgraduate Program (PPS UNNES)

b. Non-Faculty Groups (22 indicators): Institute for Research and Community Service (LPPM), Institute for Educational and Professional Development (LP3), Business Development Agency (BPB), UPT Library (Library), UPT Information and Communication Technology (ICT), UPT Archives (Archive).

c. The scope of the participant area includes the campuses under the management of the work unit, namely those on the Sekaran Campus and Kelud Campus.

3. Methods
This study uses an exploratory method used in collecting and analysing data. Exploratory research aims to explore and understand information and facts about the phenomenon under study and become the centre of attention because little is known about it [7]. The exploratory method is carried out based on the facts that are seen to be specific, then mapping and categorization are carried out. This method is also supported by field research to strengthen the analysis. In this research, the exploratory method is intended to see the spatial development of the research area by identifying the use of space from an
ecological point of view. The research material is UNNES Postgraduate Program (PPS UNNES) building on Jl Kelud Utara III, Sub-district of Gajah Mungkur, Semarang City.

The method of research is carried out directly or indirectly. Directly, namely the collection of data obtained directly from the source. This primary data collection includes: interviews, coordination and visual observation. Indirectly, namely the collection of data indirectly from the source / object. This can be obtained through literature, H-BAT activity documents, regulatory documents, and other supporting data. The study was carried out in stages: (a) The data collection stage, covering primary (field) and secondary (supporting) data, through field surveys; (b) Spatial data processing stage (spatial); (c) non-spatial data processing stage; (d) Analysis Phase; (e) Finalization stage.

4. Results
4.1 PPS UNNES Campus. The PPS UNNES campus is located on Jl. North Kelud III No. 15 Petompon, Gajah Mungkur Sub District, Semarang City. This area is a new campus as a result of redevelopment and was built in 2015 and has been actively used since 2017 by occupying the old UNNES Campus area before the development to the Sekaran Area. The campus area is 53,477.00 m2, with a built area of 10,926.38 m2 (20.5%) and outdoor space of 42,550.62 m2 (79.5%). The character of the campus area has a hilly topography with a slope of about 60%. So that some areas are formed with segments resulting from the existing land cut and fill process and also the process of adapting buildings to sloping land. There are 3 integrated buildings, namely: (a) Building A has 2 floors and functions as a reception area consisting of: lobby, front desk, integrated service unit, meeting room and warehouse; (b) Building B has 3 floors and functions as a boardroom, administration room and lecture hall; (c) Building C has 3 floors and functions as a study room and lecture hall, as well as the building's utility room. The outdoor space has a function as a green open space, parking area and utility support.

Figure 1. Existence of PPS UNNES Campus

4.2 Green Campus Performance Achievements based on H-BAT Assessment. PPS UNNES is one of the work units within UNNES that participates in the H-BAT Program as a benchmark for green campus management performance. In general, the following are the results of the June 2021 H-BAT Program assessment which can be seen in table 2 below [8].

Based on Table 2 above, it can be seen that postgraduate is ranked 7th in the faculty category with an achievement percentage of 62.24%. The achievement of each indicator can be seen in the following data.

Table 3 above illustrates the best achievement of PPS UNNES on the Covid-19 handling indicator with 0% lack of achievement. However, Supporting UI Greenmetric indicator is the worst achievement, with a 25% lack of achievement. Meanwhile, there is a lack of achievement in green indicators (5.10%), clean (2%), and healthy (6.64%). So that the total lack of achievement is 37.76%.
Table 2. H-BAT Program assessment results (Period of June 2021)

| No | Work unit | Score per component | Total Score | Max Score | Percentage | Rank |
|----|-----------|---------------------|-------------|-----------|------------|------|
|    |           | Green Clean Healthy Supporting UI Greenmetric Handling Covid 19 |             |           |            |      |
| 1  | FT        | 35 24 23 68         | 20          | 170       | 196        | 86.73 | 1    |
| 2  | FE        | 34 22 22 65         | 20          | 165       | 196        | 84.18 | 2    |
| 3  | FMIPA     | 31 24 22 66         | 20          | 163       | 196        | 83.16 | 3    |
| 4  | FIP       | 31 24 23 60         | 19          | 157       | 196        | 80.10 | 4    |
| 5  | FIS       | 30 24 20 64         | 20          | 138       | 196        | 70.41 | 5    |
| 6  | FH        | 29 24 10 44         | 20          | 127       | 196        | 64.80 | 6    |
| 7  | PPS UNNES | 26 22 19 35         | 20          | 122       | 196        | 62.24 | 7    |
| 8  | FBS       | 19 24 10 42         | 18          | 113       | 196        | 57.65 | 8    |
| 9  | FIK       | 4 18 0 0            | 18          | 40        | 196        | 20.41 | 9    |

Category: Unit

| No | Work unit | Score per component | Total Score | Max Score | Percentage | Rank |
|----|-----------|---------------------|-------------|-----------|------------|------|
|    |           | Green Clean Healthy Supporting UI Greenmetric Handling Covid 19 |             |           |            |      |
| 1  | LPPM      | 31 18 19 36         | 20          | 124       | 168        | 73.81 | 1    |
| 2  | LP3       | 31 20 20 24         | 20          | 115       | 168        | 68.45 | 2    |
| 3  | UPT TIK   | 26 17 25 19         | 20          | 107       | 168        | 63.69 | 3    |
| 4  | Library   | 13 16 7 19          | 16          | 71        | 168        | 42.26 | 4    |
| 5  | Archive   | 4 10 0 1            | 6           | 21        | 168        | 12.50 | 5    |
| 6  | BPB       | 11 0 0 0            | 0           | 11        | 168        | 6.55  | 6    |

Table 3. PPS UNNES achievement of H-BAT Program indicators

| Indicator       | Score | Max score | % Achievement | % Max achievement | Lack of achievement (%) |
|-----------------|-------|-----------|---------------|-------------------|------------------------|
| Green           | 26    | 36        | 13.27         | 18.37             | 5.10                   |
| Clean           | 22    | 24        | 11.22         | 12.24             | 1.02                   |
| Healthy         | 19    | 32        | 9.69          | 16.33             | 6.64                   |
| Supporting UI Greenmetric | 35    | 84        | 17.86         | 42.86             | 25                     |
| Handling Covid 19 | 20    | 20        | 10.20         | 10.20             | 0                      |
| Total           | 122   | 196       | 62.24         | 100               | 37.76                  |

Total Score 622

Figure 2. PPs UNNES Green Campus potentials

4.3 Achievements on the Green Indicator. In The H-BAT Program, the green indicator requires the efforts of each unit to meet the parameters related to land management, vegetation management, greener level, and campus campaigns for sustainability. There are 9 parameters in the green indicator which are assessed with a maximum score of 4. The scope of the area is outside and inside the building. Based on the results of the assessment in the H-BAT Program, there are only 4 parameters that can be
achieved a maximum of 9 parameters. The following table 4 describes the achievements on the green indicator:

| No. | Parameter                                                      | Score |
|-----|----------------------------------------------------------------|-------|
| 1.1 | Availability of Green Open Space (%)                          | 4     |
| 1.2 | Green Open Space Treatment (times/week)                       | 4     |
| 1.3 | Average number of living plants per building                  | 1     |
| 1.4 | The average number of art ornaments                           | 4     |
| 1.5 | Average markers/signs inside the building                     | 4     |
| 1.6 | Number of trees with a diameter of 10 - 25cm                  | 2     |
| 1.7 | Number of trees >25cm in diameter                            | 2     |
| 1.8 | Percentage of trees marked with scientific names & regional names | 3     |
| 1.9 | Total area of Vertical Garden                                 | 2     |

Some of the possible factors causing the non-achievement of the 5 parameters in the green indicator are related to plant quantity. The average number of live plants per building is scored 1, this is due to the very rare availability of plants in pots that are placed in indoor spaces. The small number of trees outside the building is also the cause of the not maximal value for the number of trees. Looking at the conditions in the field, the open area is still dominated by the parking area and is a new campus area so that it is not optimal to plant trees in the open space.

4.4 *Achievements on the Clean Indicator.* In The H-BAT Program, the clean indicator demands the efforts of each unit to meet the parameters related to cleanliness that support campus productivity. There are 6 parameters in the clean indicator which are assessed with a maximum score of 4. The scope of the area is outside and inside the building. Based on the results of the assessment in the H-BAT Program, there is only 1 parameter that cannot be achieved by a maximum of 6 parameters. The following table 5 describes the results of the clean indicator:

| No. | Parameter                                                      | Score |
|-----|----------------------------------------------------------------|-------|
| 2.1 | Sanitary conditions of toilets and kitchens                    | 4     |
| 2.2 | Sanitary condition of drainage network                         | 4     |
| 2.3 | Office space cleanliness                                       | 4     |
| 2.4 | Kebersihan ruang kuliah                                        | 4     |
| 2.5 | Availability of trash bins in the building (standard at least 40 liters with a lid) | 4     |
| 2.6 | Availability of large trash bins outside the building (minimum 120 liters and with lid) | 2     |

The possible factor causing the maximum failure is the availability of large trash bins outside the building. Attention to waste requires serious efforts not only to meet the assessment aspects of the H-BAT Program, but also to provide maximum support for green campus performance.

4.5 *Achievements on the Healthy Indicator.* In The H-BAT Program, the healthy indicator requires the efforts of each unit to meet the parameters related to the health of the academic community that support campus productivity. There are 8 parameters in the healthy indicator which are assessed with a maximum score of 4. The scope of the area is in the outside and inside the building. Based on the results of the assessment in the H-BAT Program, there were only 4 parameters that were achieved a maximum of 8 parameters. The following table 6 describes the results of the achievements on the healthy indicator.
| No. | Parameter                                                                 | Score |
|-----|---------------------------------------------------------------------------|-------|
| 3.1 | Sports activities (gymnastics or other)                                   | 4     |
| 3.2 | Lecture room that prioritizes natural ventilation                         | 4     |
| 3.3 | Lecture room that prioritizes natural lighting                           | 1     |
| 3.4 | Availability of bike                                                     | 1     |
| 3.5 | Availability of electric vehicles owned for operational activities        | 1     |
| 3.6 | Availability of lactation room                                           | 4     |
| 3.7 | Average intensity of bicycle use by the academic community every month   | 4     |
| 3.8 | Availability of bicycle shelter                                          | 0     |

Some of the possible factors causing the failure to achieve the 4 parameters in the healthy indicator are the management of ventilation elements, activities and health infrastructure facilities. The percentage of use of natural lighting is still lacking in almost all spaces. Only rooms that are located on the edge with an open outside area, which allows natural lighting to be used. However, many spaces do not allow full use of lighting due to the location and conditions in the building, so it is practical to use artificial lighting. Regarding the availability of bicycles and electric vehicles which are still very lacking, of course it is related to the level of need of the academic community and the location of the independent PPs UNNES Campus outside the UNNES integrated campus area (Sekaran) which is located far from PPs UNNES Campus. In addition, the hilly topography of the location becomes an obstacle for bicycle and electric vehicle users, so that it also affects the unavailability of bicycle shelters.

4.6 Achievements on the UI-Greenmetric Supporting Indicator. In The H-BAT Program, the UI-Greenmetric Supporting indicator requires the efforts of each unit to meet the parameters related to the performance of campus infrastructure and campus sustainability programs with an environmental perspective. There are 21 parameters in the UI-Greenmetric Supporting indicator which are assessed with a maximum score of 4. The scope of the area is outside and inside the building. There are only 6 of the 21 parameters that can be achieved to the maximum, there are even 7 parameters that are not achieved (Score 0). The following table 7 describes the results of the achievements on the UI-Greenmetric Supporting indicator.

Several possible factors causing the failure to achieve the 15 parameters in the UI-Greenmetric Supporting indicator are related to the management of rainwater, drinking water, alternative energy, budgeting, conservation events, student organizations and websites. Judging from the existing conditions, actually some of them are already available, but it seems that they are not in sync with filling out complementary documents. For example: PPs UNNES already has a rainwater harvesting installation located on the roof top of Building C, infiltration wells, automatic sensor faucets, efficient use of electric tools and a conservation themed web site. This of course causes it to be invaluable in terms of documents. Other things that are obstacles and need to be overcome are increasing the budget allocation in the field of conservation, adding conservation events, forming student organizations in conservation, intensifying planting programs, developing waste recycling programs and forming conservation start-ups at PPs UNNES.

4.7 Achievements on the Covid-19 Handling Indicator. In The H-BAT Program, the Covid-19 handling indicators require the efforts of each unit to meet the parameters related to efforts to prevent the spread of Covid-19 in the campus environment. There are 5 parameters in the Covid-19 handling indicator which are assessed with a maximum score of 4. PPs UNNES is able to achieve all the parameters in this indicator because of the maximum efforts made by the PPs UNNES Manager.
Table 7. Achievements on the UI-Greenmetric Supporting Indicator

| No.  | Parameter                                                                 | Score |
|------|---------------------------------------------------------------------------|-------|
| 4.1  | Availability of rainwater harvesting program                             | 0     |
| 4.2  | Availability of infiltration wells                                        | 0     |
| 4.3  | Number of bio pores                                                       | 4     |
| 4.4  | Number of tap water installations ready to drink                         | 0     |
| 4.5  | Number of drinking water refill points for public/students (number of gallons) | 1     |
| 4.6  | Automatic number of taps with sensor                                     | 0     |
| 4.7  | Number of double flush toilets (two functions with small and large discharge) | 4     |
| 4.8  | Percentage of budget for activities that support conservation (excluding research and community service) | 1     |
| 4.9  | Percentage of unit budget allocated for research and community service that has conservation content | 2     |
| 4.10 | Research Grants and conservation content service (excluding UNNES PNBP funds) | 4     |
| 4.11 | More efficient use of power tools (LED lights, power tools, etc.)         | 2     |
| 4.12 | Number of renewable energies generating units (solar panels, microhydro, biomass, wind turbine etc) | 4     |
| 4.13 | The capacity of electrical energy produced from renewable energy (kWh) in one year | 2     |
| 4.14 | Courses with conservation content                                         | 4     |
| 4.15 | Publication of research and service with conservation content             | 4     |
| 4.16 | Number of events held related to conservation                             | 1     |
| 4.17 | Student organizations with conservation content activities                | 0     |
| 4.18 | Websites with conservation content                                        | 1     |
| 4.19 | The average percentage of 2018-2020 students who plant and upload in-Sioman | 1     |
| 4.20 | Availability of waste water recycling program                            | 0     |
| 4.21 | Conservation Start-up (unit has involvement in the start-up)             | 0     |

Table 8. Achievements on the Covid-19 Handling Indicator

| No.  | Parameter                                                                 | Score |
|------|---------------------------------------------------------------------------|-------|
| 5.1  | Percentage of hand washing facilities outside in each building            | 4     |
| 5.2  | Percentage of hand sanitizer per building                                 | 4     |
| 5.3  | Availability of health protocol announcements/posters during the pandemic | 4     |
| 5.4  | Number of types of facilities distributed to employees for Covid prevention | 4     |
| 5.5  | Implementation of activities with the new normal protocol                 | 4     |

5. Conclusion

PPs UNNES as part of the UNNES campus with a conservation perspective has tried to support the development of a green campus. The achievement of 62.24% of the H-BAT Program illustrates that PPs UNNES green campus governance is not yet optimal, both in administration, programs, policies and implementation in the field. PPs UNNES has great potentials to be able to better improve H-BAT achievement, but it seems that there are obstacles that may be the cause of the low H-BAT performance achievements in the past period. It needs a lot of efforts to optimize the existing potential so that it can fulfil the H-BAT assessment indicators more optimally.

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