

Sustainable environment: Road to educopolis and green city in the post covid-19 in Indonesia

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Abstract: *Sustainable environment* and green city becoming the future trend of civilization. *Green city* is a dynamic design toward good civilization that is possessed of good health, educative, and harmonious living. Focused on the development of *a green city* is the aesthetic view, eco-friendly environment, and sustainable *future*. The research obstacle is the problem of dense population, pollution, load of work, mess situation, and loss of biodiversity due to degraded environment. The method used in study uses a qualitative approach. Primary data was obtained through direct observation in 2 locations, including the Malioboro area and the public space area in Sleman district. While secondary data obtained through bibliometric analysis. Data analysis uses an interpretation. This research aims to find a suitable model of an environmentally friendly, educative, and green city full of plants that support human health, good for current and future living, specifically through a case study in Yogyakarta. The results of this study shows that a sustainable environment is the road to educating cities through sustainable policies in cities. The results also indicate that improving the quality of sustainable environmental development will have an indirect positive impact on sustainable agricultural development in Indonesia.

Keywords: Sustainable environment, Ecology, Green city.

1 Introduction

Environmental issues, climate change, and increasing world population are important issues in studies and studies on sustainable environment and conservation issues are of concern to scientists and environmentalists to build a sustainable life. Sustainable environmental knowledge management is an important paradigm in human processes and ways to maintain and care for civilization. The existence of knowledge management about a sustainable environment will be an important supporting force for increasing environmental awareness and developing a green innovative culture [1]. The fundamental problem faced by the world community is the imbalance and differences in sustainable ecosystem governance in each country or area. There are at least 20 global issues regarding

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environmental issues that have been discussed and formulated by Protect Energy Future [2], as in the following table:

Table 1. 20 current issues on environment

1. Pollution	11. Climate change
2. Soil degradation	12. Ocean Acidification
3. Global warming	13. The Nitrogen Cycle
4. overpopulation	14. Ozone layer depletion
5. Natural resource depletion	15. Acid Rain
6. Generating unsustainable waste	16. Water Pollution
7. Waste Disposal	17. Overfishing
8. deforestation	18. Urban Sprawl
9. Polar Ice caps	19. Public health issues
10. Loss of Biodiversity	20. Genetic Engineering

Source: <https://www.conserve-energy-future.com/15-current-environmental-problems.php>, access 5 May 2023.

Environmental issues have brought the paradigm of scientists in placing environmental issues not only as science but to answer global problems and the sustainability of human civilization and other living things. Cases in other continents such as In South Africa, current issues related to social issues and the participation of the younger generation that are of concern are the issues of handling Covid-19, climate change, and employment. In particular, the discussion regarding climate change focuses on 3 areas, namely climate adaptation, resilience, and mitigation [3]. The crisis of water, food and energy has become a concern for scientists to be discussed and elaborated more deeply for the future of mankind. Rizzi's study discusses sustainable water resource management through a case study on Santa Cruz Island (Galápagos, Ecuador). The results of this study describe that efforts to monitor the quality of clean water on an ongoing basis with accountable procedures and accurate data will help the public and water users to determine the quality of the water used [4]. The United Nations (UN) defines sustainability simply as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" [5]. Various research related to a sustainable environment with an interdisciplinary approach has also been carried out on issues and themes such as Biodiversity & Conservation, Ecosystem Services, Climate Change & Ecology, Macroecology, Animal and Behavioral Ecology, Molecular Ecology, Chemical Ecology & Biogeochemistry, Wildlife & Habitat Management, habitat degradation, Invasive species, Biogeography, Population Dynamics, Ecosystem restoration, Land Use & management, Biological Resources, Urban Ecology, Agro ecology, Conservation Policy, Political Ecology, and Ecology Economics [6].

The increase in the world's population which is increasing from year to year is a concern because the uncontrolled process of increasing the world's population will be a source of problems for the global ecosystem in cities. Based on statistical data from the World Growth Population regarding the top 5 most populous countries in 2021, the first place is

China, followed by India, USA, Indonesia and Pakistan [7]. Graph as follows:

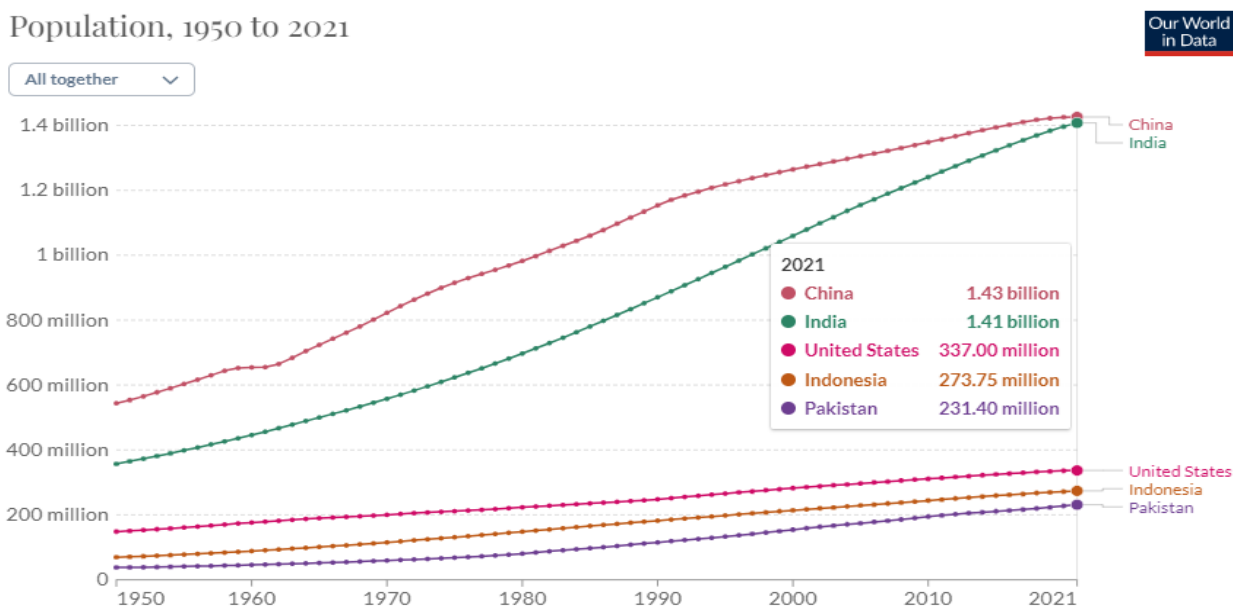


Fig 1. Development of world population growth

Source: <https://ourworldindata.org/world-population-growth>, access April 25, 2023.

The world's population growth is spread across various locations and regions ranging from urban, rural or inland areas which are officially recorded in the local government or country database. Resident records outside of that may not be recorded in the graph above. A study conducted by S Subasinghe, R Wang, and Y Murayama in mapping the pattern of population distribution in cities around the world shows an interesting pattern. The results of a study by S Subasinghe, R Wang, and Y Murayama through a geospatial analysis of 50 major cities in the world show that the pattern of population distribution in developed and developing countries differs depending on the economic growth that occurs. In addition, global, regional and national influences can be a factor in the pattern of population distribution in major cities in the world. This is exemplified in the context of the Southeast Asian region, several cities in India and China have a unique pattern followed by economic growth [8]. In various studies, the city has become the focus of attention in terms of a sustainable environment, especially related to the rate of population growth which continues to increase and how to deal with environmental problems and air, water and soil pollution, as well as the problem of decreasing quality of life in urban areas. Simone's description. M.Müller and Annika Mattisek in *the green city Exploration and Vision of Urban Sustainability* explain that the majority of the world's population lives in urban areas and this number will continue to grow over the next few decades. Cities in the world already have a total population exceeding 10 million inhabitants as in Tokyo, Delhi, Shanghai, or Sao Paulo the population growth is increasing and even bigger [9]. The rapid pace of urbanization in cities has brought about 75 percent of energy consumption in urban areas and 70 percent causes greenhouse emissions [10]. The purpose of this study will focus on how the concept and paradigm of a sustainable environment has developed since Covid 19 in governance towards educopolis and green city in Indonesia. So far, studies on green cities and sustainable environments have made efforts to build environmentally-friendly cities more understood and designed to build artificial green city ornaments and areas, not on the concepts and paradigms of a sustainable environment. It is found that there are still

many problems related to spatial planning, urban area management towards the concept and paradigm of a green city and a sustainable environment. This study will be carried out through case studies in Yogyakarta on how to design a green city area in Yogyakarta to build a sustainable environment. Primary data was obtained through direct observation in 2 locations, including the Malioboro area and the public space area in Sleman district. While secondary data obtained through bibliometric analysis. Data analysis uses interpretation.

2 Methods

The method used in study uses a qualitative approach. Primary data was obtained through direct observation in 2 locations, including the Malioboro area and the public space area in Sleman district. While secondary data obtained through bibliometric analysis. A bibliometric approach by entering several important keywords in the research and entering them into a bibliometric application to find data and graphics to the title and issues. After being analyzed, the next step is to interpret the data and results of the field analysis. The results of analysis and interpretation are described. Methods of data analysis using reduction and interpretation of the data obtained both primary and secondary data. This research aims to find a suitable model of an environmentally friendly, educative, and green city full of plants that support human health, good for current and future living, specifically through a case study in Yogyakarta.

3 Discussion

3.1 Discourse on green city, educopolis, and sustainable city

The concept of a green city, a sustainable city has become a concern of the world to formulate and encourage a global movement to organize and design a sustainable city. The concept of a sustainable city is directed at providing a sense of security, comfort and a sense of a healthy environment. The Asian Development Bank (ADB) has formulated and explained the concept of a green city as a city that has a healthy environment, is suitable for living, and improves the quality of life for humans through improving the quality of water, water and good land. According to ADP data, as many as 120,000 people move and come to the city every day. For example, in the Asian region it is found that many cities are home to the most people for the next 20 years to get better opportunities in work and life [11]. There are five key components of green and sustainable cities, namely: first, sustainable transportation, transportation is an important part as a means for community activities in urban areas to carry out daily life activities such as work, activities and interactions. Transportation must be accessible, affordable, and avoid carbon emissions. Second, clean energy, the green cities paradigm is related to reducing the wider environmental impact through the use of clean energy through solar power, and avoiding electricity dependency. Third, urban farming, as an effort to produce food and food needs in the city in order to avoid food being taken from outside sources. Urban farming helps cities to reduce carbon emissions from high-emission agricultural production. Fourth, water conservation is an important part of the process for efficiency in water use. Efforts to conserve water from possible sources such as rainwater, water saving, and smart irrigation systems are ways to store water better. Fifth, public green spaces and green infrastructure are an important part of developing multi-functional community gardens and public spaces. This can reduce air pollution, improve physical and mental health, and provide adequate public space [10].

Green city as an effort to build a city that is sustainable and has adequate educational

value. Educopolis is a concept and dialogue that continues to be carried out in understanding the human way of life and managing the city as life for humanity. The green concept is an idea that starts to build a more natural vision. Situations and conditions of cities that have lost environmentally friendly public spaces, lost fresh air, and comfortable public places, as well as parks that provide better spaces. Green city can be interpreted in another context as a struggle to free the city from a dirty environment, polluted air and dirty water [12].

Green city discourse is often associated with the idea of doing promotion and marketing in order to attract investors and tourists related to sustainable cities. As stated by Sabine Barthold about *branding the green city*, a wave of changes in thinking about eco-modernization, energy and resource efficiency, smart cities, and sustainable cities has shaped and given birth to the paradigm of sustainable cities, this is termed as cities branding and adequate marketing strategy. intelligently influence the community and political and economic elites to make changes to the management of urban areas [13].

3.2 Concept and paradigm of green city in Indonesia

The concept and paradigm of a green city is continuously evolving according to the needs of the times. The important issue of why a green city needs to be made is based on a background that shows that in the future, almost 70% of the world's population will live in urban areas. In addition, cities also have an important role in economic growth in a country where around 80% of the world's GDP is driven in cities [14]. Urban challenges need to be answered with multiple approaches so that urban problems that have an impact on the lives of the world's people can be minimized as early as possible in the context of sustainable development and a sustainable environment that ends in cities [15].

The study that has been conducted by Galuh (2013) in discussing green cities in Indonesia with the title *green cities in Indonesia: Challenges and Current Status* explains the problems of world society and urban areas which are always related to high population, growth rate, food insecurity, and environmental degradation as the important theme in the effort to create friendly and comfortable environmental conditions for humans. According to Galuh, the concept and paradigm of a green city are generally adopted from the thinking of a group of communities and civil society organizations through various forms of programs and activities that lead to the formalization of government policies. In Indonesia, the concept and paradigm of green city became a topic of discussion after it became an intensive global discussion in the 2000s [16].

Government policy in Indonesia through Law Number 26 of 2007 concerning Spatial Planning provides a mandate and confirms that every city must at least allocate RTH (Green Open Space) of at least 30% of the city area as Green Open Space [17]. For this reason, since the enactment of this law, various cities in Indonesia have begun to improve and organize public spaces by building environmentally friendly facilities, such as city parks, environmental parks, urban forests, and green belts as a form of participation in the green city concept and paradigm. implemented in Indonesian cities. Developments on spatial planning related to green city concepts and paradigms were also observed by Alinda FM Zain, Didit O. several urban areas to support the green city performance program in Indonesian cities [18].

3.3. Current model and implementation of green city and educopolis in Indonesia

The model and implementation of the concept of green city and educopolis in Indonesia in the post-covid-19 context for the 2020-2022 period shows an interesting phenomenon. Spatial planning is not only interpreted as an effort to give the impression of a clean city but also a healthy city and has various kinds of plants that can provide perceptions and thoughts that lead to calm, peace, and also beauty. One of the trends being developed is to increase the number of plants in the city and government agencies are starting to mobilize to plant ornamental plants, orchids and various plants that can support human awareness in the aftermath of the Covid-19 pandemic to improve healthy lifestyles. Apart from that, public spaces are also made that have simple sports equipment or equipment.

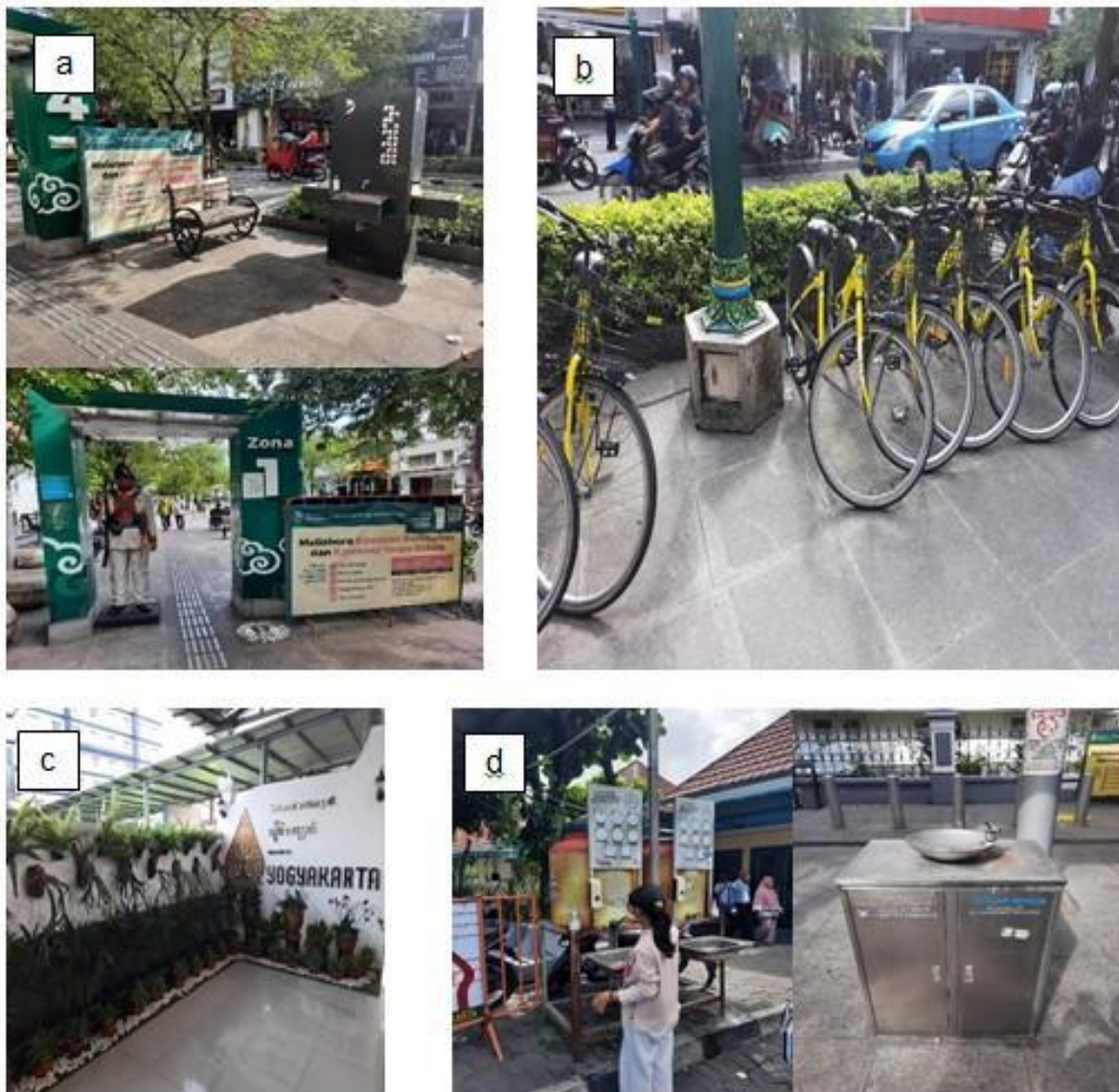


Fig 2. Model and implementation of green city in public areas in Yogyakarta: a). pedestrians are given information to use masks; b). provision of bicycles to promote a healthy lifestyle in the Malioboro area; c). The monument station is given ornamental plant ornaments; d). handwashing place for tourists

Based on Figure 2, it shows that the concept and implementation of a green city post-covid-19 pandemic lays down two main ideas, namely: 1. Increase ornamental plants and plants that can provide a sense of comfort and beauty to the community. 2. Increase

sports equipment that can be used by the community to carry out sports activities in order to maintain health and fitness to be free from Covid 19. So that sports equipment can be found in city parks to support a healthy lifestyle. Based on observations made in the April-May 2023 period in the 2 main areas of public space in Yogyakarta, there have been significant changes in urban spatial planning since the post-covid 19 pandemics. Public spaces are given public washing areas, spaced seats are provided, and plants are provided. decorate more. As seen in the Malioboro area and its surroundings. Figure 2 above shows public spaces cleaned and arranged to become smoke-free areas, seats to make visitors feel comfortable, and post-pandemic health protocols that remain attached to the Malioboro area such as hand washing areas, spaced seats, and zones for plants are increasingly being reproduced in several corners and places. This is also evident in the Sleman area which shows that there are places for mini sports for visitors and the multiplication of ornamental plants such as orchids on several roads to give a green city feel in the Sleman Regency area, specifically in the Sleman district government area. As in the following picture.



Fig 3. The atmosphere of public spaces in the Sleman district area: a). washing place in the garden; b). sport venue

Based on Figure 3, it shows that the development of public space since post-Covid 19 has brought public space to the learning process for the community. Covid 19 provides an important role and contribution in forming awareness for the public and policy makers to further accelerate the arrangement of areas and regions to make them more environmentally friendly and provide benefits for the wider community to care about the environment and public health by placing supporting tools for joint sports.

3.4. Road to educopolis and green city for sustainable environment: a proposal

The development of cities that are increasingly massive with the process of infrastructure development and urbanization of society has brought cities to become more crowded and has the potential to reduce the quality of life of the people and the environment. In the last 20 years, many cities have started to improve and propose solutions. Discussions on sustainable cities not only discuss regional governance but also public spaces and educational institutions starting to build sustainable roads. The road to educopolis is interpreted as a way to prepare for sustainable community life in urban areas by encouraging public spaces to be greener as a better place to live and work. The impact of urbanization and climate change has become a basis for thinking for people to find solutions to maintain and improve the quality of life in cities. The ideas of green cities,

sustainable cities, and sustainable environment are efforts to have a positive effect in efforts to maintain and preserve biodiversity, climate, wellness, and air quality. In Europe, the “Green Cities Europe” platform has been initiated. This platform is geared towards encouraging the greening of public spaces by providing a variety of innovative ideas, information based on academic research, and technical assistance from experts to address specific issues of urban health, climate change, a sustainable economy, biodiversity and social cohesion. There are already 13 countries that have carried out green city campaigns in Europe, including: Belgium, Bulgaria, The Netherlands, France, Germany, Denmark, Greece, Hungary, Ireland, Italy, Poland, Portugal and Sweden [19].

Indonesia has also made a paradigm shift to encourage innovative ideas to realize green cities by organizing a number of urban areas and public areas such as airports, campuses and government offices to make them more eco-friendly and to make public access more environmentally friendly.

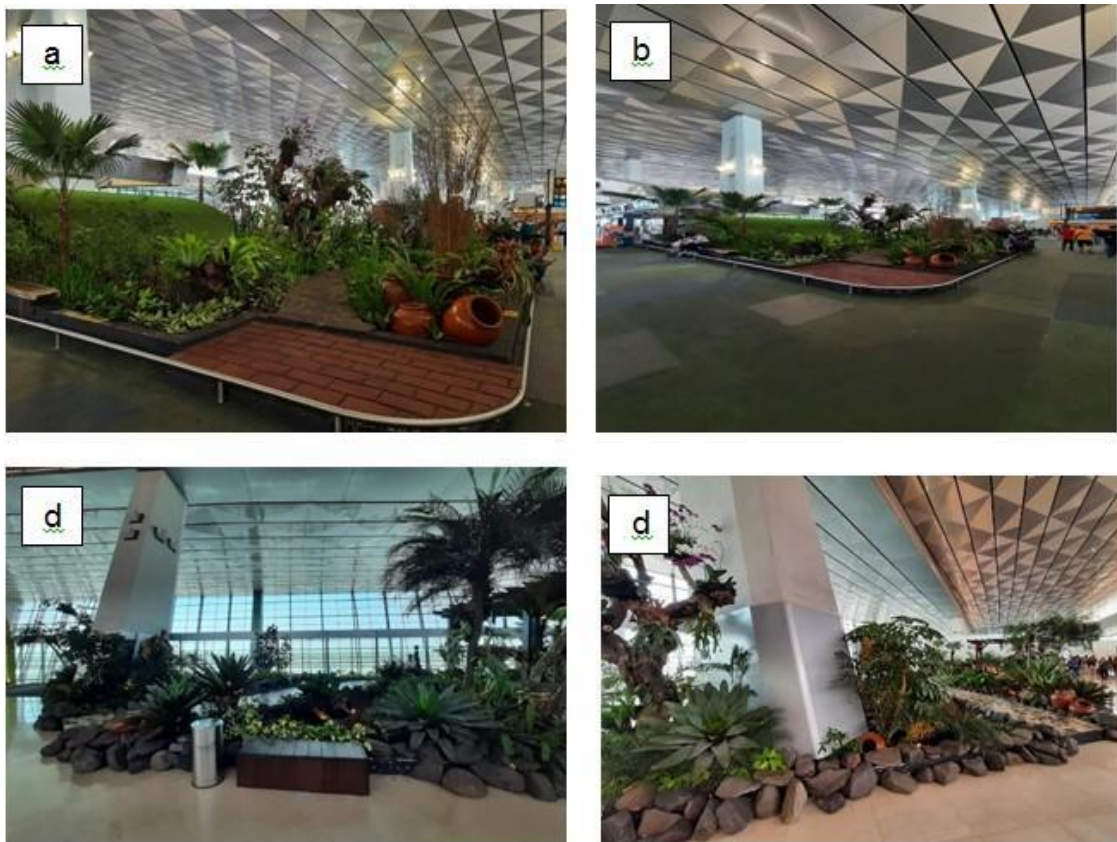


Fig 4. The atmosphere of Soekarno Hatta airport, Jakarta: a). soetta airport waiting area given plants; b). the middle side of the airport waiting area; c). the left side of terminal D soetta airport, d). main side of the airport area

Figure 4 above shows the atmosphere of the area within the airport which has been designed to provide a green atmosphere and native plants such as orchids and other ornamental plants placed in several corners and the waiting room area of the Soekarno Hatta airport, Cengkareng, Tangerang. Likewise, campuses in the Tangerang area have begun to be designed to green public space.



Fig 5. Campus atmosphere in Tangerang: a). the culinary garden area at the open University; b). sports bracelets for sports, c). washing area in front of UT.

Figure 5 above shows the campus atmosphere in Tangerang, which is starting to improve and build various public space facilities and infrastructure to make it even greener by providing additional sports equipment in green areas on campus. In post-covid 19, the addition of public space was carried out by providing a place to wash hands at each entrance to the building. The development of the post-covid-19 pandemic regional governance and spatial planning paradigm has brought an important message in structuring the area to make it greener and better in an integrated manner between the government, the community, and educational institutions [20].

4 Conclusion

Based on the results of this study, it shows that the direction and orientation of a green city towards a sustainable educopolis is based on public awareness to create a sustainable environment, a more humane and civilized place to live, as well as improving the quality of life for people in urban areas with a number of good governance and spatial planning. better. The concept of a green city has become a new paradigm in the 21st century because it is driven by public environmental awareness and policy makers to change the perspective of regional governance and a more sustainable environment. This study shows that development in urban areas is an important process to see the development of cities while still emphasizing the harmonization between development and the surrounding environment. As in the studies conducted in this research, it shows that efforts to create a

sustainable environment through urban education in the form of sustainable policies can change and shape the character of cities to become more humane and have an indirect positive impact on sustainable agricultural development in urban areas in Indonesia.

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