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Beyond Perception: Linking Physical Work Environment and Green Commitment to Natural Resource Conservation and Healthcare Workers' Health

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ABSTRACT:

Hospitals are institutions characterized by high energy consumption and significant medical waste generation; consequently, the green commitment of healthcare workers is crucial for achieving sustainable hospital practices. This study aims to explore the physical work environment and the green commitment of healthcare workers, as well as their implications for natural resource conservation and health, at RSUD dr. H. L. M. Baharuddin, M.Kes. A qualitative approach with a case study design was employed. Data were collected through in-depth interviews, participant observation, and document analysis involving four informants selected via purposive sampling; the data were then analyzed using an interactive model combined with thematic analysis. The results indicate that the physical work environment encompassing lighting, noise levels, the work climate, ventilation, cleanliness, and vibration/radiation control is generally perceived as safe and conducive. However, these perceptions remain subjective, lack validation through standardized measurement tools, and rely heavily on artificial systems (such as air conditioning). These facilitating physical conditions serve as enabling conditions that shape three dimensions of green commitment: affective (emotional concern regarding waste-related risks), continuance (rational support for energy efficiency and digitalization), and normative (a moral obligation to adhere to waste segregation standard operating procedures). Although these three dimensions reinforce one another, the commitment remains vulnerable to external disruptions, such as the lack of discipline among patients' families and the absence of a formal reward system. It is concluded that maintaining and standardizing an optimal physical work environment is a strategic prerequisite for sustaining green commitment, which ultimately supports natural resource conservation and the protection of healthcare workers' health within the hospital.

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1. INTRODUCTION

The physical work environment is a crucial determinant influencing employee attitudes, behaviors, and health in the workplace. [1] defines the physical work environment as the tangible elements of the workspace, including building design, equipment, furnishings, materials, chemicals, climate control systems, and daily work practices. Inadequate physical conditions such as poor ventilation, suboptimal lighting, uncomfortable temperatures, and limited waste management infrastructure not only reduce comfort but also pose potential physical and mental health risks to healthcare workers while driving the waste of natural resources (energy, water, and materials).

A conducive physical work environment fosters employee commitment, encompassing both organizational commitment and green commitment [2]. Green commitment refers to an employee's internal dedication to eco-friendly practices, involving awareness, active participation, and the sustained practice of pro-environmental behaviors. When green commitment is strong, employees tend to be more consistent in conserving energy, reducing water usage, sorting waste, and supporting recycling initiatives. Conversely, an unsupportive physical environment can hinder the internalization of such commitment, making it difficult to realize natural resource conservation practices at the individual level [3].

In the hospital context, the environmental impact is significant; hospital energy intensity is 2.6 times that of typical commercial buildings (averaging 738.5 kWh/m²) [4]. Hospitals generate hazardous medical waste accounting for up to 75% of their total waste, which poses a risk of contaminating water, soil, and air if not managed optimally [5]. In Indonesia, the healthcare sector generates approximately 2.7 million tons of medical waste annually [6]. The waste of energy, water, and materials in healthcare facilities not only increases operational costs but also expands the ecological footprint and heightens public health risks. National regulations mandate waste management, energy efficiency, and sustainable resource use [7]; however, on-the-ground implementation faces challenges regarding infrastructure, institutional capacity, and geographical disparities [8,9].

As the primary referral hospital in Muna Regency, RSUD dr. H. L. M. Baharuddin, M.Kes has established waste management facilities (wastewater treatment plants), waste segregation procedures, and environmental management systems in compliance with regulations. Nevertheless, data from August 2024 to October 2025 reveal significant fluctuations in medical waste volume (ranging from 3,703.76 kg to 4,475.16 kg), alongside energy wastage (air conditioners, lights, and electronic devices left running), excessive water consumption, inconsistent recycling participation, and conventional non-medical waste management practices. Building layout issues specifically inadequate natural ventilation and lighting, combined with a heavy reliance on electric cooling and lighting systems are suspected of exacerbating resource waste while also impacting the comfort and health of healthcare workers [10].

The gap between normatively stated institutional green commitments and the actualization of pro-environmental behavior at the individual level aligns with the findings of [11]. An unsupportive physical work environment can hinder the internalization of green commitment, thereby sub-optimizing natural resource conservation practices (energy, water, materials) and the protection of healthcare workers' health. Previous research has predominantly examined the relationship between the physical work environment and organizational commitment quantitatively within non-healthcare sectors [2,3]. Qualitative studies that deeply explore how the physical work environment shapes green commitment and its subsequent impact on natural resource conservation and healthcare worker health in regional public hospitals remain very limited.

Theoretically, this study is grounded in the concepts of the physical work environment [1] and organizational commitment [2], as well as Green Human Resource Management theory, which integrates HR practices with environmental sustainability goals. A qualitative approach is employed to explore the mechanisms of this relationship within the specific context of a regional public hospital (RSUD). Green commitment is defined here as healthcare workers' internal commitment to eco-friendly practices, encompassing awareness, active participation, and sustained practice of pro-environmental behavior.

The study's results are expected to contribute theoretically to the Green Human Resource Management literature within the healthcare sector, specifically by enhancing understanding of the physical work environment's role in shaping green commitment and its impact on natural resource conservation and healthcare worker health. Practically, the findings could inform recommendations to hospital management of designing physical work environments that support sustainability practices, as well as serve as a reference for regional and national policymakers in formulating more effective environmental management standards for healthcare facilities.

This study aims to qualitatively explore how the physical work environment influences the green commitment of healthcare workers at RSUD dr. H. L. M. Baharuddin, M.Kes, and to examine the implications of this influence for natural resource conservation and health. The findings are expected to demonstrate that building design, ventilation, lighting, and waste management infrastructure play a fundamental role in fostering or hindering green commitment; consequently, interventions targeting the physical work environment serve as a strategic prerequisite for effective sustainability practices, natural resource conservation, and the protection of the health of both healthcare workers and the public.

2. MATERIALS AND METHODS

2.1 Research Approach and Design

This study employs a qualitative approach with a case study design [12]. This design was selected to explore in depth the phenomena of the physical work environment and the green commitment of healthcare workers within the hospital setting [13]

2.2 Research Location and Timeline

The research was conducted at RSUD dr. LM. Baharuddin M.Kes in Muna Regency, Southeast Sulawesi. This location was chosen because the hospital is a primary referral facility involving complex management of infrastructure and human resources. The study spanned four months, from December 2025 to March 2026, covering preparation, fieldwork (data collection), and analysis.

2.3 Data Sources

Data were derived from primary sources (interviews and observations) and secondary sources Standard Operating Procedures (SOPs), policy documents, and hospital reports). Informants were selected using purposive sampling based on the principle of data saturation, whereby data collection ceased when no new information emerged [14]. There were four informants in this study:

1) 1 key informant: Head of the HR Department (initials: Yg), who understands GHRM policies and practices
2) 1 primary informant: Head of the Hospital Facilities and Infrastructure Unit/IPSRS (initials: Drm), who understands the management of the physical work environment, facility maintenance, and environmental commitment.
3) 2 supporting informants: Head of Medical Records (initials: Sbn) and a nurse (initials: M); they provide practical perspectives on daily pro-environmental behaviors related to the physical work environment and green commitment.

2.4 Data Collection Techniques

1) To ensure data validity, data collection was conducted using three triangulation techniques [15]
2) In-depth Interviews: Exploring informants' subjective perceptions regarding the variables of the physical environment and green commitment.
3) Participant Observation: Directly observing workspace conditions, medical waste management, and energy efficiency.
4) Documentary Study: Reviewing hospital archives and policy documents related to environmental sustainability.

2.5 Data Analysis Technique

The data analysis technique in this study employs the interactive model proposed by [16], comprising three main stages: data reduction, data display, and conclusion drawing/verification. This analysis process is systematically integrated with [17] six-phase thematic analysis approach, which encompasses verbatim interview transcription, repeated reading for in-depth understanding (data familiarization), coding, theme identification, theme review, and the compilation of the analysis report. To ensure the trustworthiness of the research findings, the study verifies data validity through triangulation techniques, including source triangulation, method triangulation, and theory triangulation.

3. RESULTS AND DISCUSSION

3.1. Physical Work Environment

3.1.1 Indoor Lighting

Based on interviews with informants regarding lighting conditions within the hospital environment, the following data were obtained:

Lighting conditions are generally good, although there are limitations regarding facilities and infrastructure that have a specific service life. Personally, thank God, the lighting has been good; the only issues arise when fixtures fail after all, products have a limited lifespan but otherwise, I feel it is safe (Informant Yg, 2026).

Visually, the lighting conditions seem good because there is plenty of ventilation and windows. However, we do not yet have the measuring equipment to verify this precisely. This is despite the fact that the Ministry of Health Regulation (Permenkes) sets specific limits, especially for inpatient wards (Informant Drm, 2026).

Natural sunlight alone is actually insufficient, so we rely on electric lighting; since we are in a multi-story building, many rooms are not directly adjacent to the outer walls there are gaps and separations between them (Informant Sbn, 2026).

The lighting is good, though it can get dim when it is overcast. So far, no glare that caused eye discomfort (Informant M, 2026).

Based on interviews with the four informants, lighting conditions at the hospital are generally perceived as good and supportive of work activities. Informants Yg and M stated that the lighting is good and does not cause distracting glare. Informant Drm assessed the lighting as good due to the presence of ventilation and windows but emphasized that the hospital lacks the measuring instruments needed to verify compliance with the standards set by Ministry of Health Regulation Number. 70 of 2016 regarding Occupational Environmental Health Standards and Requirements. Meanwhile, Informant Sbn noted that natural sunlight is not evenly distributed due to the multi-story building structure, necessitating the use of electric lighting. Thus, the interpretation of the lighting indicator is that lighting conditions are generally functioning well; however, technical evaluation and standardized measurements are still required, particularly in spaces that do not receive direct natural light.

3.1.2 Noise Level

Sound levels that do not disrupt concentration or communication, nor cause hearing impairment. Based on interview results with informants regarding noise levels in the work environment, the following data were obtained:

Noise levels are safe and conducive; it is far from the hustle and bustle. Sounds from the floor below might still be audible, but we are located on the third floor. It is secure, and the windows are kept closed (Informant Yg, 2026).

There have been no noise issues so far. We are not disturbed, and staff concentration remains within safe limits (Informant Drm, 2026).

There are no noise disturbances, and communication remains clear (Sbn, 2026).

Noise levels are within reasonable limits; it can get a bit noisy during visiting hours, but not to the point of shouting, so concentration remains unaffected (Informant M, 2026).

The interview results indicate that noise levels in the hospital environment are relatively low and do not disrupt work concentration. Informant Yg stated that the work atmosphere is safe and conducive because of the third-floor location and the use of closed windows. Informant Drm emphasized that there have been no significant noise disturbances so far, and staff concentration remains within safe limits. Informant Sbn stated there were no noise disturbances and noted that communication between staff members remains clear. Informant M added that noise levels are within reasonable limits; although the atmosphere can become noisier during visiting hours, it does not disrupt work concentration. Based on this, the hospital environment is generally conducive, with the potential for situational increases in noise, particularly during visiting hours or in specific areas.

3.1.3 Work Climate (Temperature and Humidity)

Air temperature and humidity levels that be comfortable neither too hot nor too cold to prevent fatigue or health issues. The interview results with informants are as follows:

Temperature and humidity control are adequate; we are assured of comfort because we use air conditioning (Informant Yg, 2026).

Temperature should ideally be measured especially in laboratories or storage areas requiring specific temperature ranges but current efforts are focused only on the most urgent priorities. Humidity levels are good, though, as noted, measuring them requires specific equipment. Regarding comfort, conditions have been satisfactory so far, and staff are not experiencing

discomfort. Critical points usually arise in inpatient wards, particularly during visiting hours when the area becomes crowded (Informant Drm, 2026).

Room temperature is normal. Humidity is also normal; it is comfortable to work (Informant Sbn, 2026).

The room temperature is reasonably comfortable thanks to the fans, though it can get hot without them. I find the humidity level just right; there is no air conditioning in the staff room only in patient rooms but the humidity level makes for a comfortable working environment (Informant M, 2026).

Based on the interview results, informants generally considered the temperature and humidity conditions in the workspace comfortable. Informant YG stated that temperature and humidity control is adequate because the rooms are air-conditioned. Informant Sbn also assessed the temperature and humidity as normal and comfortable for work. Informant M found the room temperature quite comfortable with the aid of fans, although the room can feel hot without cooling in certain situations. However, Informant Drm noted that objective measurement of temperature and humidity has not been optimally implemented, particularly in laboratories or storage areas requiring specific temperatures. Critical conditions can occur in inpatient wards, especially during visiting hours. Thus, the work climate indicator suggests that while subjective thermal comfort is good, the hospital still needs instrument-based monitoring of temperature and humidity, especially in rooms with specific technical requirements.

3.1.4 Indoor Air Quality/Ventilation

Based on interview results with informants regarding indoor air circulation and ventilation, the following data were obtained:

Air circulation is good due to the air conditioning; it doesn't feel hot (Informant Yg, 2026).

Air circulation seems good because there are many windows. So far, the issues are mostly broken AC units or damaged ceilings, which again comes down to budget constraints. There are also occasional complaints about water not flowing, but those are quickly resolved Informant Drm, 2026).

Sometimes, if the AC breaks down, it feels hot because air circulation relies on the AC; the IPRS unit usually handles this, though the person who actually comes to attend to it is often a cleaning staff member (Informant Sbn, 2026).

Air circulation is smooth... As for stuffy odors, thankfully there are none (Informant M, 2026).

The interview results indicate that air circulation in the hospital is generally considered good. Informant Yg stated that air circulation is good because of the air conditioning and the fact that the rooms do not feel hot. Informant M confirmed that air circulation is smooth and no stuffy odors were detected. Informant Drm added that the presence of many windows aids air circulation; although issues such as broken AC units, damaged ceilings, or water supply interruptions do occur, they are usually addressed promptly. Informant Sbn explained that in some rooms, air circulation relies heavily on air conditioning, so rooms can feel hot when the AC malfunctions, with repairs typically handled by the relevant unit. While air quality and circulation are generally good, reliance on air conditioning systems requires routine maintenance and rapid response to breakdowns.

3.1.5 Cleanliness and Building Condition

Based on interview results with informants:

There are pros and cons; cleanliness is good, and the condition is good (Informant Yg, 2026).

Cleanliness is well-maintained because we have a cleaning service team with specific assigned responsibilities. All hospital staff also participate in collective cleanup activities; every Tuesday, we conduct cleanup work that extends to areas outside the hospital. Urgent repairs are usually addressed quickly. The condition of the floors is also satisfactory (Informant Drm, 2026).

Based on interview results with four informants regarding cleanliness and the physical condition of the hospital buildings, the following data were obtained:

The hospital workspace is neatly organized, and the floors are not slippery (Informant Sbn, 2026).

Based on the interview results, the cleanliness and physical condition of the hospital building are perceived positively by all four informants. Informant Yg stated that the facility is clean and the building is in good condition, while noting a few minor pros

and cons. Informant Sbn assessed the workspace as neatly organized and noted that the floors are not slippery. Informant M emphasized that the floors are cleaned and mopped, the building remains structurally sound, and there is no hazardous ceiling damage. Informant Drm explained that cleanliness is maintained through a cleaning service team with specific responsibilities and routine collective cleanup activities every Tuesday involving the entire hospital staff. Urgent repairs are also typically addressed promptly. The hospital's cleanliness and building condition are well-maintained and support workplace safety, though periodic maintenance is still required to sustain these conditions.

3.1.6 Cleanliness of the Building Grounds

Based on interview results with informants regarding the cleanliness of the building grounds and drainage systems, the following data were obtained:

So far, there haven't been any issues; if there are complaints, they are quickly addressed (Informant Yg, 2026).

The grounds are well-maintained thanks to routine community cleanup activities. Regarding water pooling, it usually only happens during rain and is cleaned up immediately afterward. So, there is no standing water (Informant Drm, 2026).

Back when the building was new, there were many clogs, but improvements have been made since then (Informant Sbn, 2026).

From what I see, the hospital grounds are clean, and the gardens are well-arranged. I haven't seen any standing water or clogged drains; issues might occur occasionally, but not every day (Informant M, 2026).

The interview results indicate that the cleanliness of the hospital grounds is generally good. Informant Yg stated that there have been no significant complaints so far, and if complaints do arise, management addresses them promptly. Informant Drm explained that the grounds are well maintained due to routine cleanup activities; water pooling typically occurs only during rain and is cleared immediately, preventing it from becoming stagnant. Informant Sbn acknowledged that there were drainage clogs when the building first opened, but repairs have since been carried out. Informant M assessed the hospital grounds as clean with neatly arranged gardens, noting no instances of standing water or permanently clogged drains. The cleanliness of the hospital's outdoor areas is well managed, drainage systems function adequately, and potential water-pooling issues can be handled quickly.

3.1.7 Vibration and Radiation

Based on interview results with informants regarding protection against machinery vibration and medical radiation, the following data were obtained:

Vibration management is confined to the radiology room and does not transmit to the outside. Staff members also undergo regular health checks to ensure everything is safe (Drm, 2026).

Issues regarding vibration and radiation are located in the Medical Support Unit (Informant Yg, 2026).

There are currently no vibrations (Informant Sbn, 2026).

Informant M also reported no machine vibrations (Informant M, 2026).

Based on interview results, vibration and radiation conditions within the hospital environment generally do not interfere with work activities. Informants Sbn and M stated that they felt no machine vibrations in their work areas. Informant Yg explained that vibration and radiation issues are confined to the Medical Support unit, meaning other work areas remain relatively safe. Informant Drm added that the management of vibration and radiation is focused within the radiology room preventing transmission outside the room and that staff working in that area undergo regular health checks. The interpretation regarding the vibration and radiation indicators is that these risks are being managed in specific units with adequate protection; however, the hospital must continue to maintain oversight, staff health screenings, and periodic radiation safety monitoring.

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Table 1. Physical Work Environment Variable Matrix

Indicator	Data Collection (Core Findings)	Data Reduction (Theme)	Data Display (Brief Narrative)	Verification/ Conclusion
Indoor Lighting	Yg and M: Good, no glare. Drm: Good, but no measuring instrument available yet. Sbn: Lacks natural light; artificial lighting is needed.	Visual lighting is adequate; however, distribution is uneven and has not been measured against the Ministry of Health Regulation standards.	Lighting is sufficient for work activities, but the distribution of natural light is obstructed by the multi-story building structure, resulting in reliance on artificial lighting.	Lighting is functional but requires standardization of intensity measurement (in Lux) and more even distribution of artificial light.
Level Noise	Yg, Drm, Sbn: Safe and non-disruptive. M: Reasonable; slightly noisy during visiting hours.	Noise levels are low and conducive, with only situational fluctuations in sound.	The acoustic environment is quiet and supportive of communication. Elevated sound levels occur only during specific periods (patient visiting hours).	Noise is well-controlled and does not generally disrupt staff concentration at work.
Work Climate	Yg, Sbn: Normal and comfortable with air conditioning (AC). M: Fairly comfortable with a fan. Drm: Comfortable, but a measuring instrument is needed (critical in inpatient wards).	Subjective thermal comfort is good; however, objective monitoring (measuring instruments) is not yet optimal.	Temperature and humidity are perceived as comfortable thanks to air conditioning. Specialized rooms (laboratory/inpatient wards) require close monitoring.	The work climate is comfortable by perception but requires periodic measurement using standardized instruments, particularly in critical areas.
Indoor Air Quality/ Ventilation	Yg, Drm, M: Air circulation is smooth, with many windows and no stuffiness. Sbn: Relies on AC; becomes hot if the unit malfunctions.	Air circulation is good, sourced from both natural ventilation and (AC).	Indoor air quality is well maintained. Dependence on AC demands prompt maintenance readiness.	Ventilation is adequate; however, the timeliness of AC servicing is crucial in determining indoor air comfort.
Cleanliness and Building Structure	All Informants: Clean, tidy, non-slippery floors, and a sturdy building. Drm: Cleaning service (CS) staff are available, and routine communal cleaning is conducted.	Cleanliness is well-maintained, and the building structure is safe.	Cleanliness is facilitated by cleaning service staff and routine communal cleaning activities, keeping floors in good condition. The physical building is structurally sound and free of hazards.	The building condition and interior cleanliness are excellent, supporting both occupational safety and work comfort.
Building Grounds	Yg, Drm, M: Clean, no stagnant water, and well-kept gardens. Sbn: The drainage system has been repaired.	The exterior area is well-organized, and the drainage system functions properly.	The grounds are clean, with drainage capable of preventing stagnant water. Infrastructure complaints are addressed promptly.	Exterior cleanliness is good and free from environmental sanitation risks (no flooding or waterlogging).

Vibration and Radiation	Sbn, M: No vibration detected. YG, Drm: Isolated within the Radiology Unit; protective measures and routine health check-ups are in place.	Vibration and radiation risks are localized and fully protected.	General work areas are free from vibration and radiation. The radiology room is equipped with specialized protection and strict safety SOPs.	Exposure to vibration and radiation is fully controlled and poses no hazard to staff in general work areas.

3.2 Green Commitment

3.2.1 Affective Green Commitment

Regarding reactions and concerns about improperly discarded medical waste

It is a matter of concern, and it represents a shared duty and responsibility (Informant Yg, 2026)

Personally, I go straight to the unit and make a polite request, or I speak directly to the head nurse. It was very difficult in the beginning, but thankfully things are organized now. If the waste bags are full, they contact me themselves. We constantly remind them not to mix waste types, so now we no longer see syringes scattered around haphazardly (Informant Drm, 2026)

It feels unsettling and uncomfortable. If we ourselves aren't disciplined about disposing of waste according to procedure, we lack the authority to reprimand others. It feels like disregarding the safety of the environment where we work every day (Informant Sbn, 2026)

Honestly, it is quite regrettable especially regarding habits, particularly in the immediate environment. While it may be only a few individuals, there is still a lack of proper disposal habits; even when there is a trash bin, people might leave waste beside it rather than putting it directly inside. This habit requires education (Informant Sbn, 2026)

Oh, honestly, I personally worry if I see needles or used cotton swabs lying around, as they are sources of disease. So, I do feel concerned. When it comes to improper disposal like just leaving used tissues or masks lying around it really bothers me (Informant M, 2026)

Regarding building awareness that maintaining cleanliness is the responsibility of all healthcare workers:

At every morning briefing, the Director always emphasizes that personal and environmental cleanliness is a shared duty, not just the job of the cleaning staff. The cleaning staff does the actual cleaning, but it is up to all employees to maintain the environment (Informant Yg, 2026)

Now, this is the hardest part. Especially in inpatient wards that have morning and afternoon shifts. Even if the morning staff is informed, the afternoon staff is a different group of people. While some individuals are already aware and responsible, others are not. The worst offenders are often the patients' families; typically, the cleaning staff has to clean up the resulting mess (Informant Drm, 2026).

Field findings indicate that Affective Green Commitment an emotional commitment to the environment within the hospital manifests through healthcare workers' emotional concern and intrinsic awareness regarding ecological and health risks. Informants reported psychological reactions ranging from worry and concern to moral discomfort when they encountered violations of medical waste management procedures. This suggests that employees' emotional attachment to eco-friendly practices is not merely driven by administrative mandates but is rooted in professional empathy for the safety of patients, colleagues, and the public from the threat of infection. The guilt experienced when errors in waste disposal occurred underscores that environmental preservation values have been internalized into their emotional identities as healthcare professionals.

3.2.2 Continuance Green Commitment

Support for the single-use plastic reduction policy. Interview results with informants are as follows:

This is a support function; however, our involvement in the Administration division involves handling complaints. If there are

any shortcomings, they are usually addressed promptly (Informant Yg, 2026).

There is support from leadership. Previously, the Director consistently directed us to ban the use of single-use mineral water bottles. He urged us all to use our own reusable water bottles (tumblers); he conveyed this appeal during every morning assembly (Informant Drm, 2026).

I agree with and support that policy. We have already started bringing our own water bottles or using washable containers; it is an excellent step (Informant M, 2026).

Regarding the paper usage reduction program:

To be honest, we are currently practicing efficiency by reusing scrap paper (using the blank side). We now conduct data transmission online through WhatsApp coordination groups. Operations are shifting toward online systems, while physical documents are used only when required for official accountability purposes (Informant Yg, 2026).

For implementation, we are focusing first on ensuring people dispose of waste in the proper bins rather than discarding it haphazardly (Informant Drm, 2026).

I am motivated to support the program. As someone working in medical records, I have personally experienced the issue of paper piles. However, there is a genuine need to make our work faster and data more secure, and of course to make the hospital environment cleaner by minimizing paper waste (Informant Sbn, 2026).

Motivated. Aside from saving paper, our work becomes faster. There is no longer a need to rummage through stacks of patient files to find information. Everything is just a click away on the computer (Informant M, 2026)

Regarding the use of energy-efficient medical equipment

At the end of the day, I instruct my staff to turn off electronic devices and air conditioning units to save energy (Informant Yg, 2026)

As for energy conservation, we do not yet use solar power (solar panels). We remain heavily dependent on the state electricity grid (PLN) and generators. If the power suddenly goes out, we use the generator, but we limit its use to essential services only (Informant Drm, 2026)

Yes, there is a sense of responsibility. We need to conserve energy because the hospital's electricity costs are enormous. We have been advised to save electricity and have received instructions regarding waste management (Informant M, 2026)

Regarding energy conservation reminders/monitoring mechanisms:

Leadership always conveys reminders about these matters directly during the morning assembly. The leadership constantly reminds the staff (Informant Drm, 2026)

The dimension of Continuance Green Commitment is reflected in employees' perceptions of the systemic benefits and operational efficiencies resulting from the institution's sustainability initiatives. The transition toward digitalization such as the implementation of Electronic Medical Records (EMR) alongside policies limiting plastic use and optimizing paper consumption, is rationally evaluated by informants as a strategic move offering mutual benefits: accelerated workflows and the mitigation of resource waste. Awareness of the hospital's high operational costs, particularly electricity expenses, encourages employees to consistently participate in energy-saving programs. Thus, this commitment to continuity is built upon the cognitive realization that green hospital practices are directly linked to institutional efficiency and the hospital's operational sustainability.

3.2.3 Normative Green Commitment

Regarding efforts to ensure staff feel obligated to segregate medical and non-medical waste, interviews with the following informants revealed:

To ensure staff compliance, we constantly coordinate with the respective division heads. We continuously urge the nurses to comply, as they generate the most medical waste in the wards (Informant Drm, 2026).

The Support Services division handles this information (Informant Yg, 2026).

Regarding regulations and the medical waste management workflow:

Well, medical waste originates from the service units. Regarding the IPRS Hospital Facilities and Infrastructure] unit, the regulation dictates that medical waste be disposed of in the designated receptacles in each room. Then, IPRS collects the waste. After that, a third party handles it; management has an MOU with the third party (Informant Sbn, 2026).

Regarding responsibility for cleanliness:

Responsibility doesn't lie solely with the IPSRS team; it is a shared responsibility. Waste bins have already been provided (Informant Sbn, 2026).

It isn't just the cleaning staff's job. We, as healthcare workers, are the ones who best understand the risks associated with medical waste. Therefore, maintaining the environment is a shared responsibility. We can't just say, Oh, someone else will sweep it up later that's not acceptable (Informant M, 2026).

Regarding the moral obligation to conserve energy:

Honestly, I do feel a sense of guilt. I now consider ensuring that lights and air conditioning are turned off when a room is empty to be a moral responsibility, not merely a rule to follow (Informant Sbn, 2026).

Regarding the obligation to segregate waste and adhere to SOPs:

It is mandatory; within the hospital environment, the rule is that waste must be disposed of in the proper receptacles. "I always emphasize to the team that this isn't just about tidiness; it's about protecting colleagues and the public from the risk of infection

(Informant Sbn, 2026).

It is difficult to control things here because we work in a service environment; we have to keep reminding patients' families not to dispose of waste indiscriminately. Personally, I view this as a moral obligation, not just a matter of following rules (Informant M, 2026).

There are SOPs in place; while it isn't strictly the cleaning staff's duty, we often pitch in and clean up as well (Informant M, 2026).

Regarding the dimension of Normative Green Commitment, employee commitment is demonstrated through the internalization of moral obligations and ethical adherence to Standard Operating Procedures (SOPs) for environmental management. Healthcare workers view medical waste segregation and energy conservation not merely as mandatory regulations, but as moral imperatives and ethical responsibilities inherent to the medical profession. Cross-unit coordination, routine briefings (such as morning roll calls), and the understanding that compliance with environmental regulations protects health all underscore employees' strong sense of normative obligation. They feel a sense of duty toward their profession and the environment to voluntarily safeguard the integrity of the hospital ecosystem, going beyond mere compliance with basic rules.

Table 2. Green Commitment Variable Matrix

Indicator	Data Collection (Core Findings)	Data Reduction (Theme)	Data Display (Brief Narrative)	Verification / Conclusion
Affective Green Commitment	Emotional reactions to medical waste: Drm directly reprimands non-compliant behavior, SBN feels uneasy, M worries about scattered needles, and Yg expresses concern. Feelings of guilt arise when waste is improperly disposed of.	Emotional concern; empathy toward infection risks; sense of guilt; shared responsibility.	Staff demonstrate a strong emotional attachment to the hospital environment. Feelings of concern and discomfort emerge when hygiene protocol violations are observed.	Affective commitment is strongly evident. Cleanliness has become a personal value among staff, although further education targeting cross-shift personnel and patients' families is still needed.

Continuance Green Commitment	Efficiency practices: encouragement to use reusable tumblers, implementation of Electronic Medical Records (EMR), use of scrap paper, coordination via WhatsApp, and directives to turn off air conditioning and lights upon departure.	Operational efficiency; digitalization; energy conservation; systemic benefits.	Staff support green practices because they yield tangible benefits, such as accelerating workflows (EMR), reducing paper waste, and lowering the hospital's electricity costs.	Continuance commitment is valid. Green practices are sustained because they are directly aligned with work efficiency and the institution's operational sustainability.
Normative Green Commitment	Compliance with SOPs: Drm coordinates across departments, SBN explains the MOU procedures for waste management, (M) refers to moral obligations, and Yg emphasizes the Director's directives during morning assemblies.	Moral obligation; SOP compliance; waste management regulations; professional ethics.	Staff view waste segregation and energy conservation not merely as coercive rules but as moral obligations and ethical responsibilities inherent to the medical profession.	Normative commitment has been internalized. Staff feel a sense of duty toward their profession to protect colleagues and the community from infection risks.

3.3 Discussion

3.3.1 The Physical Work Environment and Its Implications for Resource Conservation and Health

Research findings show that the four informants generally perceive the hospital's physical work environment as good, safe, and conducive. However, beneath this positive perception lies a significant structural gap: the absence of objective measurements using standardized instruments to verify that physical conditions meet health quality standards. These standards are mandated by Minister of Health Regulation Number. 70 of 2016, which serves as the reference for physical workplace factors (lighting, noise, temperature, humidity, ventilation, vibration, and radiation) [18] and Minister of Health Regulation Number. 2 of 2023, the latest regulation comprehensively governing environmental health standards, including for healthcare facilities [19]. These findings indicate that the assessment of the hospital's work environment remains perceptual and subjective, rather than fully grounded in empirical evidence.

Regarding the lighting indicator, Informants Yg and M felt that lighting conditions were adequate and free from glare. At the same time, Informant Drm appreciated the presence of ventilation and windows that supported this lighting quality. Nevertheless, Drm emphasized that the hospital lacks lux meters to verify compliance with Permenkes standards, particularly in inpatient areas. Conversely, Informant Sbn noted that the multi-story building structure resulted in uneven natural light distribution, causing rooms to rely heavily on artificial lighting to support work activities. These findings align with [3], who identify optimal lighting as a vital antecedent that enhances employees' cognitive capacity to focus on complex tasks and organizational goals, including sustainability initiatives. However, a heavy reliance on artificial lighting creates an energy burden that conflicts with green hospital principles. This aligns with the warnings issued by [20] that the absence of adequate physical infrastructure and parameters to support green initiatives can significantly undermine employee commitment; employees may feel that the announced environmental policies lack tangible facility support and conflict with the natural resource conservation principles inherent in the green hospital concept.

Regarding noise levels, all four informants consistently stated that noise within the hospital environment was relatively low and did not disrupt concentration at work. Informant Y corroborated this, explaining that the third-floor workspace—with its closed windows provided natural protection against external noise; similarly, Informant Drm emphasized that noise levels remained within safe limits, while Informant M added that any increase in noise was situational, occurring primarily during visiting hours. These findings support [3], who found that a work environment free from excessive noise is a critical factor influencing job satisfaction and organizational commitment. In a hospital setting, low noise levels not only support

administrative productivity but also contribute positively to patient recovery, thereby strengthening employees' emotional attachment to the institution and reinforcing sustainability values.

Regarding the work climate (temperature and humidity), findings indicate that subjective comfort needs were met, though this relied heavily on air conditioning (AC) systems. Informant Y noted that temperature and humidity levels were comfortable thanks to the AC. At the same time, Informant M relied on a fan but acknowledged that the room would feel hot without air conditioning. Conversely, Informant Drm offered a critical observation that objective measurement of temperature and humidity had not been optimally implemented, particularly in laboratory and storage areas requiring specific temperature controls. This heavy reliance on AC presents a paradox in the implementation of the green hospital model: while it ensures workplace comfort, the resulting high electricity consumption conflicts with natural resource conservation principles. [21] found that working conditions characterized by an inefficient reliance on electricity can mitigate the positive impact of green commitment on environmental performance. These findings also align with [22], who highlight that green initiatives lacking adequate infrastructure support risk triggering perceptions of greenwashing among employees, ultimately undermining environmental commitment.

Regarding the ventilation indicator, air circulation within the hospital environment was generally rated as good and smooth, free from stale odors, as noted by Informants Yg and M. However, Informant Sbn highlighted a heavy reliance on air conditioning (AC) systems in several rooms; consequently, when units malfunctioned, the rooms became hot, necessitating rapid intervention from the Hospital Facilities Maintenance Unit (IPSRS). Echoing this, Informant Drm added that while physical issues such as AC breakdowns, ceiling damage, or water supply disruptions were usually addressed quickly, the speed of the response depended heavily on budget availability. These findings underscore that both preventive and responsive maintenance of physical facilities are essential prerequisites for sustaining a work environment that supports a green commitment. Consistent with [20], a green work culture cannot flourish in an environment where basic infrastructure is poorly maintained, as employees will ultimately prioritize addressing urgent operational needs over sustainability initiatives.

Regarding the indicators of cleanliness and the building's physical condition, all four informants stated that the hospital environment was well-maintained. Informant Drm explained that cleanliness is upheld through the efforts of the cleaning staff and routine communal cleanup activities held every Tuesday, which involve all personnel and extend to the areas outside the building. Similarly, Informant M emphasized that the building structure remains sound, floors are mopped regularly, and there is no hazardous ceiling damage. These findings align closely with the concept of hygiene factors in motivation theory, positioning cleanliness and physical safety as fundamental requirements that must be met before employees can focus on higher-level commitments, such as Green Commitment. This supports the findings of [3], who asserted that a clean, hazard-free work environment and well-maintained facilities significantly boost employee dedication and organizational commitment.

Regarding vibration and radiation indicators, findings show that these risks are adequately managed in specific units, such as Radiology. Informant Drm explained that radiation is strictly contained within the radiology rooms to prevent leakage, and staff in the area undergo routine health check-ups. Meanwhile, Informants Sbn and M stated that they do not feel any machinery vibrations in their work areas. Effective risk management provides concrete evidence that the hospital applies the precautionary principle in its work environment; this indirectly strengthens employee trust in the institution's commitment to occupational health, safety, and sustainability.

Furthermore, regarding the cleanliness of the grounds and the drainage system, the gardens were described as tidy, with drainage channels functioning optimally. Informant Drm explained that staff clear rainwater pooling immediately to prevent standing water. At the same time, Informant Sbn added that although drainage blockages occurred when the building first opened, staff repaired them promptly. The hospital management's responsiveness to these physical environment issues indicates strong support. These findings support [23], who state that a robust drainage system not only prevents health risks associated with poor sanitation but also serves as a form of Perceived Organizational Support that is crucial for mediating and fostering employees' green behaviors in the workplace.

Overall, the hospital's physical work environment enables the development of green commitment. A safe, clean, and well-maintained physical environment fosters psychological safety, allowing employees to dedicate cognitive and emotional resources to environmental conservation practices. However, the lack of objective measurements based on standardized quality benchmarks and heavy reliance on artificial systems (such as air conditioning and the public power grid) remain issues that need

to be addressed. Consequently, strengthening these technical aspects is crucial to ensure that the quality of the work environment is not merely perceived as good subjectively but is scientifically verified, thereby supporting effective natural resource conservation and sustainable health outcomes.

3.3.2 Green Commitment: Natural Resource Conservation and Health Protection

Research conducted at RSUD dr. H. L. M. Baharuddin, M.Kes indicates that green commitment does not operate in a vacuum or in isolation; rather, it interacts dynamically with physical work environment conditions and organizational norms. By adopting and adapting [24] Three-Component Model of Commitment to the context of environmental behavior, these findings demonstrate that employees' green commitment manifests through three mutually reinforcing dimensions: affective, continuance, and normative. These three dimensions do not exist in a hierarchy; instead, they form a holistic ecosystem that directly impacts natural resource conservation and health and safety within the healthcare facility.

Regarding the affective dimension, healthcare workers demonstrate a strong emotional bond with hospital environmental safety; this explains the feelings of concern, discomfort, and anxiety they experience when witnessing violations of medical waste management procedures. This bond is rooted in their professional identity as health guardians, meaning waste violations are perceived not merely as administrative errors but as moral threats to collective safety (a health-related aspect). These findings align with [23], who emphasize the role of the human-nature relationship in driving pro-environmental behavior, and [25], who highlight how a green work climate strengthens individuals' psychological connections to the environment. [26] note that in the healthcare sector, exposure to biological hazards transforms SOP compliance into an emotional and moral bond. Furthermore, the nature of affective commitment tends to be proactive and contagious (emotional contagion), a phenomenon that[27] link to improved organizational environmental performance. However, this commitment remains vulnerable to erosion; the emotional strain caused by the disorderly conduct of external parties, such as patients' families disregarding protocols, carries the risk of triggering green work exhaustion, a phenomenon highlighted by [22].

The findings regarding the continuous (calculative) dimension indicate that a rational assessment of operational efficiency drives staff support for green initiatives. Support for the digitization of Electronic Medical Records (EMR), the reduction of single-use plastics, and electricity conservation demonstrates that this commitment is grounded in the cognitive awareness that green practices are directly linked to work efficiency.

These findings support the assertion by [20] that green initiatives garner full commitment when aligned with operational needs. [28] further corroborate this, showing that integrating Green HRM practices with operational efficiency strengthens commitment to green work, and [29] found that digitalization-based green management commitment can simultaneously enhance profitability and efficiency. Nevertheless, field observations regarding the reuse of waste paper indicate that the transition to a paperless system remains incomplete. This situation supports the warning [28] about the rebound effect, in which efficiency gains from adopting green technology risk being eroded by the persistence of conventional, environmentally unfriendly behaviors.

At the normative level, green commitment is reflected in an internal sense of moral obligation to sort waste and adhere to Standard Operating Procedures (SOPs) without the need for direct supervision. Environmental regulations have been fully internalized, shifting from mere external compliance to a collective internal obligation rooted in medical professional ethics. These findings align with the Theory of Normative Conduct [25], wherein injunctive norms (leadership directives and SOPs) and descriptive norms (peer behavior and routine collective cleanup activities) mutually reinforce green behaviors. However, when internal hospital norms clash with external realities, the surrounding community's low level of environmental awareness creates a normative dilemma. Consequently, these findings support [21] that top management's green commitment must not stop at the hospital walls but must extend to the education and engagement of external stakeholders.

Overall, these three dimensions of green commitment rely on the physical work environment, which functions as a hygiene factor. As noted by [3] a physical environment that fosters a sense of safety and cleanliness provides employees with the cognitive and emotional capacity to focus on higher-level commitments, such as conservation practices and health protection. Conversely, disruptions to the physical environment risk diverting employees' focus from environmental commitments toward resolving operational issues; therefore, interventions regarding the physical aspects of the work environment, such as providing standardized measuring tools, optimizing natural ventilation, and ensuring adequate waste infrastructure, are essential strategic prerequisites for sustaining effective green commitment at RSUD dr. H. L. M. Baharuddin, M.Kes.

3.4 Theoretical Implications

This study makes a significant theoretical contribution. First, the findings validate and extend [24] Three-Component Commitment Theory to the context of green hospitals by demonstrating that the affective, continuance, and normative dimensions operate in a circular and interdependent manner rather than hierarchically in shaping green commitment within a high-risk sector. Second, the study enriches the Theory of Normative Conduct [25] by showing that in medical settings, injunctive norms (norms dictating what ought to be done) carry greater weight due to their direct link to patient safety; consequently, norm violations are perceived as ethical breaches rather than mere procedural infractions. Third, the findings integrate the concept of the person-environment relationship [23] by extending human-nature connectedness to human-biological hazard connectedness a concept specific to the healthcare sector, where the environment to be protected is the hospital micro-ecosystem against the threat of nosocomial infections. Fourth, consistent with [21] the study confirms that an adequate physical environment facilitates the internalization of green values; however, the absence of objective metrics and a reliance on artificial systems can create detrimental working conditions in the long run. Fifth, [28] the findings support the Green Human Resource Management framework while revealing that, in the absence of formal reward systems and structured environmental performance metrics, green commitment remains fragile and heavily dependent on specific leadership figures.

3.5 Practical Implications

Based on a synthesis of field findings, management needs to promptly provide standard measurement instruments (such as lux meters, hygrometers, and sound level meters) to objectively verify physical environmental conditions in accordance with Ministry of Health regulations, thereby preventing perceptions of greenwashing. Compliance with Standard Operating Procedures (SOPs) for waste management and energy-saving practices must be integrated into Key Performance Indicators and reward systems, as a green culture requires support through concrete incentives. Visual educational campaigns and the application of nudge theory targeting patients' families are necessary to alleviate the moral and emotional burden placed on staff due to disorderly visitor behavior. Cross-unit coordination mechanisms (involving medical staff, facilities/maintenance, and cleaning services) need to be formalized, and routine collective cleanup activities should be maintained as rituals that reinforce a collective green identity. Incorporating green building design principles such as maximizing natural lighting and cross-ventilation and adopting renewable energy in future renovations will strengthen employees' Continuance Green Commitment by demonstrating the hospital's serious dedication. Accelerating the full implementation of Electronic Medical Records (EMR), accompanied by technical risk mitigation and periodic training, is essential to prevent a rebound effect.

3.6 Limitations and Future Research

This study has several limitations: the assessment of the physical environment (lighting, temperature, noise) remained subjective due to the absence of standardized measurement tools. The study was conducted at a single hospital with four informants. External factors, such as the behavior of patients' families, influenced cleanliness and waste management but were not examined in depth. Future research should employ objective workplace environmental measurements with larger samples, explore educational strategies for visitors and patients' families, and adopt a longitudinal approach to assess the consistency of green commitment over the long term. A comparative study across hospitals based on classification and ownership structure, as well as further research into the role of leadership in accelerating the implementation of sustainable green commitments.

4. CONCLUSION

The physical work environment is generally perceived positively. It supports the development of green commitment across affective, continuance, and normative dimensions, even though assessments remain subjective because of the lack of standardized measurement tools and heavy reliance on engineered systems. The close link between physical conditions and green commitment is fundamental to realizing sustainable hospital practices; however, this commitment remains vulnerable to external disruptions, such as the behavior of patients' families and the absence of formal reward systems. To strengthen this foundation, it is recommended that hospitals implement standardized environmental measurement tools, optimize natural lighting and ventilation, expand environmental education for visitors, and institutionalize formal reward systems alongside robust digitalization of Electronic Medical Records (EMR). These strategic measures will not only prevent rebound effects and institutionalize an internal green culture but also provide valuable input for policymakers in formulating physical environmental management standards for healthcare facilities, particularly resource-constrained Type C hospitals.

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AUTHOR CONTRIBUTIONS

NJA, as first author, conducted the research, analyzed the data, and drafted and edited the manuscript. UR provided the primary conceptualization, theoretical framework, and overall supervision of the study. RM assisted in validating the methodology and research framework, while LBA oversaw the literature review and data analysis and ensured the quality of revisions before final approval for submission. All authors have read and approved the published version of the manuscript.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICS STATEMENT

This study was approved by the Ethics Committee of Bina Husada Polytechnic of Kendari, (Number: 052/POLTEKBINHUS.5/KEPK/V/2026). All respondents provided informed consent, with guarantees regarding data confidentiality.

DATA AVAILABILITY STATEMENT

Data supporting the findings of this study are available from the corresponding author upon reasonable request.

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