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# Innovation of environmental management system as prototype of eco-temple models in Nakohon Pathom Province, Thailand

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**Abstract:** The research entitled "Innovation of Environmental Management System in Temples as a Prototype of Eco-Temple Models in Nakhon Pathom Province, Thailand" has three objectives: 1) to study the design of environmental management systems in temples, 2) to develop activities to drive the environmental management system, and 3) to evaluate the environmental management system of temples as eco-temple models in Nakhon Pathom Province. This mixed-methods investigation examined the development and implementation of sustainable environmental management systems in temples as localized contributions to Sustainable Development Goals (SDGs) 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), and 13 (Climate Action). Results revealed three significant findings: (1) effective environmental management systems demonstrated five interdependent structural components; (2) environmental management intervention activities were developed and implemented across four dimensions; and (3) evaluation metrics demonstrated high overall implementation efficacy (M=3.72), with environmental policy formulation achieving the highest performance indicators (M=3.77), followed by strategic planning processes (M=3.70). Assessment utilizing the GREEN principles framework indicated satisfactory performance in waste management systems, sanitation facilities, nutritional practices, energy utilization, and environmental protection measures. The research culminated in the development of the "GREEN TEMPLE Model," which consists of two complementary components: (1) the GREEN operational framework focusing on five critical intervention areas—garbage, restrooms, energy, environment, and nutrition—enabling systematic approaches to environmental challenges within institutional boundaries; and (2) the TEMPLE conceptual framework emphasizing six foundational elements: temple, environmental management, participation, learning, and energy. These elements are grounded in the Apassena principle (virtues to lean on), providing a decision-making framework for sustainability initiatives, and reinforced by the Sappāya principle (seven favorable conditions), establishing a holistic approach to environmental development in religious institutions.

***Keywords:*** *Eco-temple, Environmental management systems, Green temple model, Sustainable development goals.*

## 1. Introduction

The environment and natural resources are essential factors in the survival of humans and other living things, both natural and man-made environments. However, the current situation is that the environment has been destroyed by human, resulting in the reduction of natural resources and the imbalance of the world's ecosystem. Thailand has been continuously affected by environmental problems. Therefore, the government has set a national strategic plan for creating growth on an eco-friendly for holistic good quality of life. The plan was set by focusing on organizing a system for conservation, restoration, and prevention of natural destruction, integrated water management,


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development and use of environmentally friendly energy. The strategic plan potentially reducing the problem of global warming and being ready to adapt to climate change, and preserving, conserving, restoring, and developing natural resources, architectural and cultural heritage, identity, and local ways of life on a natural and cultural basis in a sustainable manner [1].

In the last decade, the Sangha has given importance to improve the quality of the environment within the temple area. The development of the temple to be in line with the direction of Thailand's development according to the national strategic framework. The Sangha Supreme Council (SSC) has agreed to increase the standard criteria for environmental management of temples, as proposed by the Department of Environmental Quality Promotion. This is a component in considering the allocation of budget and ecclesiastical titles, in order to promote temples as models for communities in environmental management, whether it be tree planting, pollution management, or community lifestyles, by applying Buddhist principles to environmental management [2]. The Sangha has driven environmental management work under the Buddhist Affairs Reform Plan, which has set guidelines for the Sangha's operations. In terms of public utilities, this includes developing temples in all material aspects, including making temples clean, shady, and convenient, building walkways in the temple, and decorating the temple to make it look beautiful and pleasing to the eyes of those who see it [3]. The Sangha Supreme Council has agreed for the public utilities department of the Sangha Supreme Council to work with network partners. Implement the Wat Pracharat Sangsuk Project, aiming to promote temples as community centers for health development, in line with the 5S approach, to improve overall health for communities, Buddhists, or the general public [4].

Base on the information of temples in Sam Phran District, Nakhon Pathom Province, Thailand reflecting environmental quality issues, is that most temples are located in urban communities and industrial areas. "Industrial development in the past has caused environmental, safety, and occupational health and safety issues for society". Some areas have problems with polluted water and air pollution which affect the health of people living in the area" [5]. In addition, temples have been affected, causing environmental problems in various dimensions [6]. From studying research documents and information on environmental management in temples, the following issues were found that operations lack long-term planning, no personnel to provide knowledge about pollution and the environment, environmental management does not cover wastewater, garbage, odor, noise, and toxic waste, no campaign to reduce pollution in organizing various ceremonies, and lack of cooperation between temples and communities. From surveying spatial data on environmental management operations within temple areas, it was found that most temples carry out environmental management activities to varying degrees, according to each temple's development policies, which place different importance on environmental management. Overall, environmental management operations in temples do not have a system to promote operations to achieve objectives that are consistent with the national development strategy for continuously improving of environmental quality [7]. Therefore, in order t to the development of environmental quality in the temple to arise from the awareness and development needs of monks and stakeholders working together in the area, it is seen that it is necessary to use the research process to collaborate in designing the system and developing activities to drive the environmental management system in the temple to raise it to a model of ecological temples in Nakhon Pathom Province, Thailand.

## 2. Research Objectives

1. to study the design of environmental management systems in temples in Nakhon Pathom Province, Thailand.
2. to develop activities to drive the environmental management system in temples in Nakhon Pathom Province Thailand.
3. to evaluate the environmental management system of temples as eco-temple models in Nakhon Pathom Province Thailand.

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## 3. Research Methodology

This investigation employed a sequential research and development (R&D) methodological framework to design, implement, and evaluate a contextualized environmental management system for Buddhist institutional settings. The objective was to establish environmentally sustainable prototype models (Eco-temples) in Nakhon Pathom Province, Thailand. The methodology followed a five-phase sequential design:

### *3.1. Phase 1: Systematic Literature Analysis*

A comprehensive meta-analysis of relevant theoretical and empirical literature was conducted to establish conceptual frameworks for environmental management systems applicable to religious institutional contexts. This phase employed content analysis techniques to identify key environmental management parameters and contextually appropriate implementation strategies for religious settings.

### *3.2. Phase 2: Participatory System Design*

Environmental management system architecture was developed through collaborative design methodologies incorporating multi-stakeholder engagement (MSE) protocols. System components were iteratively refined through feedback mechanisms with key institutional stakeholders. Concurrently, intervention activities were formulated utilizing participatory action research (PAR) principles, with representatives from temple administrations functioning as co-investigators in the design process.

### *3.3. Phase 3: Evaluation Protocol Development*

Operating in parallel with Phase 2, systematic assessment instruments were developed for evaluating environmental management system efficacy. These instruments incorporated standardized measurement protocols aligned with established environmental management frameworks while integrating context-specific variables relevant to religious institutional settings.

### *3.4. Phase 4: Implementation Site Selection and Intervention*

Target religious institutions were identified through criterion-based sampling procedures. Implementation of the designed environmental management system was conducted at selected sites using controlled intervention methodologies to test system efficacy under field conditions. Implementation fidelity was monitored through structured observation protocols and stakeholder feedback mechanisms.

### *3.5. Phase 5: Systematic Evaluation and Assessment*

Comprehensive assessment of implementation outcomes was conducted using mixed-methods approaches to determine system effectiveness, sustainability, and transferability. Evaluation incorporated both process and outcome measures to identify implementation facilitators and barriers across institutional contexts.

## 4. Sampling

A purposive expert sampling technique was employed to identify key informants (n=25) with specialized knowledge in religious site environmental management. Informants were stratified into three discrete cohorts:

1. Religious leadership cohort (n=10): Senior monks with administrative or environmental management responsibilities within temple settings.
2. Community stakeholder cohort (n=10): Community leaders and environmental management practitioners with operational knowledge of temple environmental systems.
3. Environmental expert cohort (n=5): Academic specialists in environmental management systems and sustainable development.

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Selection criteria were established a priori to identify participants with:

Operational responsibilities in religious site landscape management Environmental management expertise specific to temple context Decision-making authority within the designated research sites Specialized academic knowledge in environmental system development.

The stratified sampling approach ensured representation of diverse stakeholder perspectives while maintaining focus on those with direct operational knowledge of temple environmental management systems.

*4.1. Instrumentation*

*4.1. Semi-Structured Interview Protocol*

A semi-structured interview instrument was developed to facilitate in-depth qualitative data collection. The protocol examined; Environmental management system architectural components, Activity development frameworks for system implementation, and Transformational processes for eco-temple development. The instrument incorporated both fixed-response and open-ended items to capture standardized data points while allowing for emergent themes. Psychometric properties were established through expert review (n=3) and pilot testing with a subset of participants (n=4) prior to full implementation. The protocol allowed for adaptive questioning based on informant responses, with provisions for audio-visual documentation following informed consent procedures.

*4.2. Structured Assessment Questionnaire*

A multi-component assessment instrument was developed with the following structure:

Section I: Demographic and institutional variables (nominal and ordinal measurement scales)

Section II: Environmental management system assessment using a 5-point Likert-type scale (1=lowest, 5=highest) across five dimensions: Environmental policy formulation and institutional alignment Strategic planning processes and resource allocation Implementation protocols and stakeholder engagement Monitoring systems and corrective action mechanisms System review procedures and continuous improvement.

*4.3. Standardized Self-Assessment Instrument*

A criterion-referenced assessment tool was developed for participatory evaluation of environmental management system implementation. The assessment framework was structured according to the GREEN principle with five standardized criteria:

1. G: Garbage - Waste management systems assessment (7 indicators)
2. R: Restroom - Sanitation facilities management evaluation (5 indicators)
3. E: Energy - Energy utilization and conservation metrics (6 indicators)
4. E: Environmental - Environmental protection measures evaluation (8 indicators)
5. N: Nutrition - Food and water safety assessment (4 indicators)

Each indicator was assessed on a 3-point scale (1=needs improvement, 2=satisfactory, 3=exemplary) with operational definitions provided for each performance level to enhance measurement precision. Inter-rater reliability testing yielded a Cohen's kappa coefficient of $\kappa=0.82$, indicating substantial agreement among raters.

## 5. Data Collection Procedures

The investigation employed a sequential mixed-methods data collection strategy with multiple data points:

1. Preliminary Documentation Analysis: Systematic review of environmental management literature (N=47 sources) followed by reconnaissance visits to potential implementation sites (N=8 sites).

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Site visits incorporated preliminary interviews with institutional leaders to establish baseline environmental management practices.

2. In-Depth Qualitative Interviews: Semi-structured interviews were conducted with stratified key informants (n=25) to examine system design parameters, implementation frameworks, and success metrics. Interviews averaged 73.4 minutes in duration (SD=14.2) and were audio-recorded with participant consent.
3. Knowledge Synthesis: Qualitative data underwent thematic analysis to develop a three-component knowledge framework:

Component I: Environmental management system architectural framework Component II: Implementation activity protocol Component III: Self-assessment methodology.

4. Focus Group Validation: Three focus groups (average participants per group=8.3) were conducted with key informants to validate the synthesized knowledge framework and refine system components based on practitioner feedback. Sessions were facilitated using structured discussion protocols and documented through audio recording and observational notes.
5. Knowledge Transfer: Dissemination seminars were conducted with implementation site representatives (n=18) to transfer the environmental management system framework and provide operational training. Pre-post knowledge assessments were administered to evaluate knowledge acquisition (mean improvement=27.6%, $t=8.34$, $p<0.001$).
6. Field Monitoring: Implementation monitoring was conducted through site visits (average 3.2 visits per site) using standardized assessment instruments. Data collection incorporated quantitative metrics through questionnaires (n=100 respondents) and qualitative feedback through stakeholder consultation for system refinement.

## 6. Analytical Framework

Quantitative data were analyzed using IBM SPSS Statistics with descriptive statistical procedures including measures of central tendency, variability indices, and frequency distributions. Inferential analyses included t-tests for pre-post comparisons and correlation analyses to identify relationships between implementation variables. Quantitative data were analyzed through a three-stage process:

1. Systematic coding of response data using a priori and emergent coding schemes
2. Thematic analysis to identify principal concepts and relationships
3. Comparative analysis to identify patterns across different stakeholder groups

Integration of quantitative and qualitative findings utilized a concurrent triangulation design to develop a comprehensive understanding of system effectiveness and identify critical success factors for environmental management implementation in religious institutional contexts. Methodological rigor was enhanced through member checking procedures, where preliminary findings were presented to a subset of participants (n=8) for validation and refinement.

## 7. Research Results

1. Environmental Management System in Temples Elevated to Ecological Temple Model

The research results found that an effective environmental management system in temples consists of 5 major components that are interconnected and support each other. Component 1: Determining an environmental policy to elevate the temple to an ecological temple, which is an important starting point for setting clear directions and goals, which must be consistent with the context and potential of the temple, as well as the needs of the community. Component 2: Planning to develop the temple into an ecological temple, which is the transformation of policies into concrete plans and projects, setting clear goals, indicators, and operational guidelines. Component 3: Application of operations and implementation, which is the step of bringing the plan into actual practice, with the participation of all sectors, including monks, temple committees, and communities. Component 4: Inspection and correction, which is a systematic process of monitoring and evaluating operations to identify progress, problems, obstacles, and solutions. Component 5: Reviewing the environmental management of the

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temple, which is an important process that helps environmental operations to continuously develop, by reviewing operations, listening to suggestions from all sectors, and improving operational guidelines for greater efficiency. These 5 components work together in a continuous cycle as well, with information flow and communication between all components, resulting in the temple's environmental management being continuously developed and improved leading to its elevation to a sustainable ecological temple. It can be a model and a source of learning in environmental management for temples and other communities. The implementation of these 5 components requires cooperation from all sectors, support in terms of resources, and integration of knowledge in both environmental management and Buddhist principles.

2. Development of activities to drive the environmental management system in temples to be elevated to be models of ecological temples. The study of the development of activities to drive the environmental management system in temples to be elevated to be ecological temples found important research results in 4 dimensions that are linked and supportive of each other. Dimension 1: The process of developing participatory activities consists of 8 important steps, starting from creating awareness and mutual recognition, analyzing the situation and needs, setting a shared vision and goals, designing activities according to the GREEN concept framework, setting an action plan and indicators, developing the potential of stakeholders, creating a collaborative network, and setting a monitoring and evaluation system. Dimension 2: The components of the driving activities consist of 5 main aspects: waste and waste management, energy conservation, water and wastewater management, green space conservation, and creating awareness and participation. All activities are designed based on the integration of Buddhist principles with environmental conservation. Dimension 3: The mechanism for driving the activities is developed in 4 sub-mechanisms: 1) Management structure with the establishment of committees and sub-working groups; 2) Clear definition of the roles of stakeholders; 3) Development of internal and external communication and coordination systems; and 4) Participatory monitoring and evaluation. Dimension 4: Continuous development approach consists of 3 important elements: 1) Systematic review and improvement of activities; 2) Expansion and networking through knowledge and experience sharing; and 3) Development of policy and practice recommendations focusing on support from all sectors. The success of the operation is due to several important factors, especially the commitment of the leaders, the participation of all sectors, the integration of Buddhist principles with environmental conservation, continuous development of personnel potential, the creation of strong cooperation networks, and an effective monitoring and evaluation system. As a result, the temple has been innovated to become an eco-temple that is a center for learning about environmental management and leads to the sustainable development of the community's quality of life.

3. The results of the assessment of the environmental management system in the temple were raised to a prototype of an ecological temple. From the quantitative research results on the assessment of the environmental management system in the temple, the results can be concluded and analyzed as well. Overall, the temple has driven the environmental management system to a high level. The environmental policy determination has the highest average value, followed by the planning aspect. The review aspect has the lowest average value, reflecting that the temple places great importance on policy determination and planning. However, there are still gaps in monitoring and reviewing the results of the operations. When considering each aspect, interesting issues are as follows: In terms of environmental policy, the temple has clearly designated responsible persons for environmental work and has policies that are in line with the government sector. However, public participation in policy determination is still lower than in other aspects. In terms of planning, responsible persons are clearly designated and plans are in line with the policies. However, personnel participation in planning is still limited. In terms of implementation, the temple has implemented measures to correct and prevent environmental problems and has adjusted activities to be in line with the objectives. However, there is still little development of personnel potential through training. In terms of inspection and correction, responsible persons are clearly designated and continuous monitoring and improvement is carried out. However, the document management system still needs to be developed. In terms of review, the review

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is regularly improved and executives participate in the review. However, data collection and meeting minutes still need to be developed. The results of this assessment indicate that although the temple has good environmental management, there are still issues that should be further developed, especially in promoting the participation of all sectors, developing personnel potential, and managing the document and data system to enhance the efficiency of environmental management in the temple.

## 8. Discussion

From the research results on the environmental management system in temples to upgrade them to be ecological temple models, there are important issues that should be discussed as following; The study found that an effective environmental management system in temples consists of 5 major components that are interconnected and support each other. The policy determination, planning, implementation, inspection and correction, and review, which is consistent with the concept of Deming's PDCA quality management cycle that emphasizes continuous and systematic development. This is consistent with Chantamas [8] who has studied and researched major changes in the environmental management system to ISO 14001:2015. The research results found that the Environmental Management System (EMS) has been in place since 1996 by the management system standards agency. The requirements are based on the same principles as other management systems: planning, following the plan, measuring and correcting various defects [8]. In terms of environmental policy determination, success depends on having a clear vision, setting measurable missions and goals, and receiving approval and support from the abbot. This is consistent with the strategic management concept that emphasizes organizational direction and support from leaders who are environmental management consultants in temples. This issue is consistent with Amjaeng, et al. [9] who studied and researched on the development model of environmental management consultants in the industrial sector. The study results found that the most desirable characteristics of consultants that have the most impact on consulting services are the consultant's knowledge transfer method to service recipients, which should be clear and easy to understand. The specialized knowledge of environmental management consultants shows that the knowledge received from consultants affects implementation [9]. In terms of planning, the research results indicate that effective planning requires SWOT analysis and clear goal setting, especially in terms of waste management, energy conservation, and increasing green space, which is consistent with the concept of sustainable development that emphasizes efficient resource and environmental management. In terms of application, success depends on having a specialized working group, appropriate resource allocation, and community participation, which is consistent with the participatory management concept that emphasizes resource mobilization and cooperation from all sectors. This issue is consistent with Kamsumrit and Pathong [10] research on The application of good governance principles in environmental management for the sustainability of local administrative organizations in Samut Sakhon Province The results of the study found that in terms of maintaining public cleanliness, local administrative organizations and environmental management have adopted laws as the principles and guidelines for their work. However, the participation of local people in maintaining public cleanliness is a factor that makes success easy and sustainable [10]. In terms of inspection and correction, the research results indicate the importance of having a tangible monitoring and evaluation system, both physical measurements and qualitative evaluations, including systematic problem analysis, which is consistent with the concept of quality assurance that emphasizes continuous monitoring and improvement. For review, the research results emphasize the importance of having a systematic review process, listening to suggestions from the community, and continuous development, which is consistent with the concept of organizational learning that emphasizes improvement and development from experiences and feedback. Another important issue is the limitations of specialized knowledge, lack of resources, and creating long-term sustainability, which reflects the need to create a collaborative network and develop personnel potential. The integration of environmental management knowledge with Buddhist principles is consistent with Phra Metheethammajarn and Phra Maha [11] research on Eco-Town: The Development of a Buddhist Ecological Environmental Management System of Temples

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in Bangkok. The study found that the integration of Buddhist ecological principles in the development of eco-towns of temples and communities in Bangkok can use Buddhist ecology principles to create concepts and processes that make monks and communities see the importance of the environment more, have processes that take sustainability into account, and have a more systematic environmental management within the temple to be an Eco-Town [11]. In order for the development of temples into ecological temples to be effective and sustainable.

From the analysis of the research results on the development of environmental management system activities in temples to upgrade them to ecological temples in Nakhon Pathom Province, the research results can be discussed as follows: The development of environmental management system activities in temples to become ecological temples is carried out systematically and efficiently, starting from the participatory activity development process that emphasizes the participation of all sectors, including the Sangha, communities, and relevant agencies, through 8 important steps, starting from creating common awareness, situation analysis, goal setting, to monitoring and evaluation, which is consistent with the participatory development principle that emphasizes the participation of all stakeholders.

## 9. Conclusion

A research study on the design of an environmental management system in temples to elevate them to a prototype of an ecological temple in Nakhon Pathom Province presents the knowledge gained from the research, namely the "TEMPLE GREEN Model", consisting of 2 main parts: the environmental management system in temples (TEMPLE) and basic environmental management activities (GREEN). The environmental management system in temples to elevate them to an ecological temple (green temple) and activities related to environmental management in temples to drive the system towards sustainable environmental development in temples are as follows:

TEMPLE GREEN Model has shown environmental management of ecological temples, the knowledge gained from the research on the design of environmental management systems in temples to upgrade them to ecological temple models in Nakhon Pathom Province can be explained in detail as follows:

1. TEMPLE: Environmental management system in temples is an environmental management system in temples to upgrade them to ecological temples. It consists of 6 main components as follows:

1. T: Temple Environmental management in temples starts from the temple as the center of the mind and the center of the community. It is necessary to clearly define environmental policies that cover important issues such as energy and environmental conservation, waste management, landscape development, and cleanliness. This is driven through short-term and long-term plans with clear goals, indicators, budgets, and responsible persons. Creating a network of cooperation with external agencies is also an important part of exchanging knowledge and mobilizing resources to support effective environmental operations.

2. E: Environmental Temples need to assess the environmental impacts of various activities, including surveying and managing major problems such as traffic systems, waste burning, wastewater management, and noise pollution. Then, establish an environmental database system for the temple, including energy consumption, waste volume, water quality, and create indicators that can actually be tracked, such as the percentage of recycled waste or the number of trees that have increased. To continuously assess and improve the environmental plan

3. M: Management: Environmental management in temples requires the establishment of a specific environmental working group, specifying clear roles and structures, creating a manual of practices, and a monitoring and evaluation system. Temples should allocate budgets for purchasing materials and equipment, improving public utilities, and conducting training or campaign activities transparently. At the same time, importance must be given to developing environmental personnel, such as training on waste separation, energy saving, and promoting knowledge exchange within the temple and community networks.

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4. P: Participation: Achieving success in environmental management in temples requires participation from all sectors, both within the temple and surrounding communities. A public forum should be opened to listen to opinions, a joint committee and environmental volunteer groups should be established, and various campaign activities should be organized, such as setting up a waste bank, training workshops, and online media to create awareness and encourage people to change their behaviors towards a true "eco-temple."

5. L: Learning Space: Temples can develop areas into "environmental learning centers" that are open to the community and interested parties to study and observe, such as setting up learning bases on waste separation, composting, and renewable energy, posting signs providing information about the ecosystem, organizing training workshops, and organizing youth camps. and develop the temple into a nature study trail that shows the harmony between religious sites and nature, which will facilitate learning and enhance awareness of the value of the environment. 6. E: Energy (Energy) Sustainable energy management. The temple should have an energy conservation plan, starting from assessing high energy consumption points and improving energy-saving measures, such as changing light bulbs to LED, installing an automatic light control system, or maintaining electrical equipment to be ready for use at all times. Energy consumption data should be recorded to assess cost trends, leading to appropriate strategy adjustments. In addition, the use of clean and renewable energy, such as installing solar panels, using biomass stoves, and biogas systems from food waste, must be supported to be a good example of self-reliance and reducing environmental impacts. It can be summarized "GREEN TEMPLE Model" is a framework for systematic and sustainable environmental management in temples, from policies, administrative structures, learning areas, to networking and fostering shared awareness. It is an important guideline for elevating temples to become "eco-temples" and a model that can be expanded to communities and other areas sustainably.

2. GREEN: Environmental management activities in temples

2.1 G: Garbage Waste management according to the 3R principles

(1) Reduce, focusing on campaigning to reduce the use of plastic packaging in merit-making and religious activities, promoting the use of environmentally friendly containers, and creating campaign signs. As for reuse activities, campaigning to reduce the use of plastic bags and foam in temples, promoting the use of environmentally friendly materials, organizing activities to reduce the amount of waste in temples.

(2) Reuse, focusing on reusing waste materials into landscape decorations and making compost from food scraps and leaves. Meanwhile, recycling activities reuse containers in temple activities, modifying waste materials to be useful, and creating a recycled material bank.

(3) Recycle, transforming for reuse, including setting up a waste bank, separating recycled waste, and creating added value from recycled waste, separating waste by type, making compost from food scraps and leaves. Generate income from selling recycled materials

2.2 R: Restroom management In terms of restroom management, participants have designed activities that focus on raising the standards of cleanliness and safety, including improving the infrastructure, organizing a daily cleaning system, installing an efficient ventilation system, and creating a restroom maintenance manual for those responsible for developing restrooms to meet HAS (Health Accessibility Safety) standards, installing a suitable wastewater treatment system, and organizing regular cleaning and maintenance.

2.3 E: Energy management. Terms of energy management (Energy), the designed activities include installing a solar power system, changing light bulbs to energy-saving ones, installing an automatic light on-off control system, and campaigning for energy saving in various activities of the temple. Installing renewable energy systems such as solar cells, campaigning for energy saving in the temple, and using energy-saving devices such as LED bulbs.

2.4 E: Environmental management. Terms of environmental management (Environmental), participants have designed activities that cover green space management, landscape improvement, conservation of local plant species, herbal gardens, creating environmental learning resources, and

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developing a natural wastewater treatment system. Manage the landscape to be shady, clean, and beautiful. Control noise, air, and water pollution. Create green spaces and learning resources for the environment.

2.5 N: Nutrition Food and water sanitation management In terms of food and water sanitation management (Nutrition), activities are designed to raise the standards of the temple kitchen, manage clean and safe drinking water, train food preparers, and organize a system for regular inspection of food and water quality. Manage the kitchen and cafeteria (dining hall) to be hygienic, control the quality of drinking water, water used, organize a system for storing and disposing of food waste.

## 10. Suggestions

Suggestions for applying the research results

1) Temples should establish an environmental working group consisting of members from all sectors, including monks, temple committee members, and community representatives, with clear roles and responsibilities, monthly follow-up meetings, and an annual work plan with tangible goals and indicators, such as reducing waste, saving energy, and increasing green space, to ensure systematic and continuous operations.

2) Temples should initiate comprehensive waste management projects, starting with campaigns to reduce the use of plastic in merit-making ceremonies and temple activities, placing separate bins at key points with easy-to-understand signs, setting up a waste bank that accepts purchases every Buddhist holy day, and making compost from food scraps and leaves for use in temple gardens, involving the community in every step.

3) Temples should build networks of cooperation with local agencies by coordinating with sub-district administrative organizations to support budgets and waste management, cooperating with schools to organize environmental education activities, and linking up with nearby temples to exchange knowledge and experiences in environmental management.

## Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.



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