p-ISSN 2302-6715 e- ISSN 2654-7732. *NATURALIS –Jurnal Penelitian Pengelolaan Sumberdaya Alam dan Lingkungan, April 2026,* **15(1):103-211**
DOI: https://doi.org/10.31186/naturalis.15.01.47714
Available online at https://ejournal.unib.ac.id/index.php/naturalis

An Environmental Impact Analysis of Ecogastronomy in Bangli Regency, Bali

Bondan Pambudi[*] & I Made Darsana

Institut Pariwisata dan Bisnis Internasioanal, Indonesia. Denpasar Utara, Kota Denpasar, Bali 80239, Indonesia
[*]Corresponding author: bndnpambudi@gmail.com
Submitted: 2026-01-13. Revised: 2026-01-18. Accepted: 2026-01-31

ABSTRACT

The impact of the COVID-19 pandemic is in the past, and it is evident that the environmental impacts of tourism, especially in inner areas with fragile ecosystems, are even more intense, especially in tourism metropolitan areas like the Bangli Regency, which is characterised by highlands, farming systems, and protected areas. This work attempts to explore and describe the impacts of the development of ecogastronomy in Bangli Regency, concentrating on the management and impacts of natural resources, pollution and waste, ecosystems and wildlife, and climate change. The researchers utilised a qualitative case study with in-depth interviews, constructivist observation, document review, and thematic analysis using NVivo. For the climate change impacts analysis, the researchers employed ISM as a qualitative paradigm. The study found that while awareness and conservation from overexploitation of resources and pollution are constructive, many risks are associated with the disturbance of the ecosystem. ISM emphasised natural resource management and climate change as two primary systemic elements that override the ecosystem. It was found that the development of ecogastronomy has the potential to promote environmental sustainability, especially with coordinated integrated environmental management, and that eco-gastronomy is an inner tourism.

Keywords ***: Bangli Regency, ecogastronomy, environmental impact, tourism, sustainable***

INTRODUCTION

Tourism in the world has gradually improved after the impact of the COVID-19 pandemic. In Indonesia, the tourism sector has improved, and Bali, one of the tourist destinations in the world and in Indonesia, has become one of the most visited areas in the world due to its towering natural beauty and diverse culture. Increasing tourism comes with increased environmental challenges, especially in destinations with high volumes of touristic traffic and rapid tourism growth that outstretch ecologically sustainable limits (Wiweka & Chevalier, 2022). The COVID-19 pandemic saw tourism activities and their associated environmental stress in destinations' ecosystems temporarily decline, which is due to the intertwined nature of environmental impacts and tourism. Environmental sustainability re-emerged to the forefront after the pandemic due to the unrestricted cross-border movement initiated in 2022. The destinations relying on nature-based tourism are particularly impacted. Hence, the focus is no longer just on the immediate economic recovery of the destination, but on the sustainable development of the destination in order to avoid environmental degradation and the adoption of patterns of resource use and tourism which are ecologically unsustainable (Wachyuni & Kusumaningrum, 2020)

Among numerous factors contributing to Bali's international attractiveness as a tourist destination, Bali's natural ecosystems such as coastlines, forests, and agricultural landscapes stand out as unique and irreplaceable. Consequently, the integrity and natural beauty of Bali's environment as a tourist magnet make it particularly susceptible to the adverse consequences of tourism such as ecological fragmentation, pollution, and the unsustainable exploitation of terrestrial and aquatic resources. The consequences of unequal distribution of tourism, and, in some cases, over-tourism, impact some areas of Bali's environment as tourist attractions, while other areas of the

Copyright © 2026 by Authors,
published by Badan Penerbitan Fakultas Peranian (BPFP) Universitas Bengkulu
This is an open-access article distributed under the CC BY-SA 4.0 License
(https://creativecommons.org/licenses/by-sa/4.0).

ecosystem remain underutilised and almost untouched, contributing to the over-exploitation of other Mt. Agung's resources; this is particularly the case of tourism in the Bali region of Kengal.

In Bali's tourism ecosystem, Kabupaten Bangli's case is unique. Geographically, it is the only Bangli regency in Bali. Thus, Batur Lake and Batur Geopark, forest ecosystems, highland farming, and rural cultural traditions are the only inland environmental assets Bangli can rely on. These inland natural resources are tourist attractions in their own right. However, and due primarily to inattention in the Kintamani tourism area, and concentrated tourist attraction in Kintamani, environmental resources in and around Kintamani have become over-exploited. Tourism figures demonstrate that in some cases, visits to Kintamani, in Bangli, exceed the area's environmental carrying capacity. This has led to the increased production of waste, added pressures on the area's water resources, and additional ecological stress on the cultivated and forested lands. Conversely, other parts of Bangli such as Susut and Tembuku, which are also rich in natural resources, remain underutilised. This geographical disparity illustrates the necessity to expand alternative tourism that fosters environmental protection and ecosystem sustainability (Bangli, 2022; Bali, 2022).

To address the environmental problems, ecogastronomy has been identified as one of the relevant and appropriate approaches in the context of tourism. Ecogastronomy focuses on environmentally sustainable food production throughout the food value chain, which incorporates local and seasonal food, and waste diversion, while also respecting the ecosystem. Within the framework of tourism development, ecogastronomy has the potential to address the environmental pressures of tourism through the integration of local food systems, reduced carbon emissions, and environmentally sustainable consumption that fosters ecosystem protective practices (Widyani, 2020 ; Wisudariani, 2019). Thus far research conducted in Bali has examined ecogastronomy mainly as a tool to foster sustainable tourism and community development in Kabupaten Bangli. But there is still a dearth of investigations that focus specifically on the environmental consequences of ecogastronomy also considering that the inland tourism destinations remain understudied. Of the few studies conducted, most focus on the economic advantages and the preservation of the local culture while the environment remains an outcome focus, and an afterthought (Widyani, 2020 ; Wisudariani, 2019)

In Bangli, where the inland fragile ecosystems and agro-landscapes determine the socio-ecological realities, the consequences of ecogastronomy on socio-ecological sustainability must be examined in detail to fully appreciate the implications around natural resources, waste, environmental stewardship, and tourism system resilience. Closing this gap is essential to ensure that the tourism development prospects in Bangli do not replicate the ecological footprints that come with the mass tourism paradigm. Thus, this research sets out to unpack the consequences of ecogastronomy on the other Bangladesh environments as a form of tourism and not as an inert backdrop, but as a living system that simultaneously sets the latch on tourism development and its sustainability

MATERIALS AND METHODS

This study uses a qualitative research design and a case study approach aimed at investigating the environmental impacts of ecogastronomy in Kabupaten Bangli, Bali (Creswell et al., 2022). This study, therefore, is supported by a qualitative approach, as it aims to explore a particular set of environmental dynamics at a level that is closely related to the different tourism-related food practices, such as interactions, governance, and practices, that would be difficult to articulate in a quantitative form. The unique inland tourism features and the heavy reliance on the natural and agricultural ecosystems in Kabupaten Bangli allowed it to stand out as a single case study. Unlike the other regencies in Bali, Bangli does not have any coastal tourism resources. Therefore, it is relevant to study the interaction of ecogastronomy and the environmental sustainability of non-coastal fishing destinations as it relates to the management of natural resources, waste, and pollution management, the integrity of ecosystems, and other climate issues.

Three methods were used to gather the necessary data. These included detailed semi-structured interviews, document analysis and non-participant observations. People who were directly involved in and had knowledge of the tourism development, environmental management and ecogastronomy practices in Bangli, were the targets of the interviews. Local government officials, traditional leaders, members of the tourism and hospitality association, and local food and tourism entrepreneurs were some of the people who were interviewed. The people were chosen based on their knowledge of the environment, not their statistical representativeness.

The observational method was used on selected tourism and culinary sites in order to collect and document the environmental and waste management systems, land use, and the relationships between the active tourism

systems and the natural systems. To provide the necessary and relevant institutional context and to complement the primary data, source documents such as local regulations, policy papers, and planning documents were analysed.

Thematic analysis was employed to examine data through a theory-informed qualitative lens. Coding was done to interview transcripts, notes from observations, and documents to pinpoint themes related to the environmental consequences of ecogastronomy. The analysis pursued cross-section interrelated environmental themes: the state of and management of natural resources, pollution and waste, and their consequences on wildlife, ecosystems, and the climate. These themes were informed by literature on sustainable tourism and the insights gained from the field. To disentangle the interconnections of the identified environmental themes, the study incorporated interpretative structural modelling (ISM) as a qualitative analysis aid. The study used ISM to arrange the thoughts of experts concerning the order of cause and effect and rank of the environmental elements. The inputs to ISM were based on qualitative reasoning and not numbers, and the model represents a theoretically unsophisticated portrayal of the environment, not measured empirically. For that reason, ISM is regarded as interpretative qualitative analysis as opposed to a numerical or mixed analysis approach.

Trustworthiness was upheld by triangulating data from interviews, observations, and documents as well as using different methods. Throughout the study, reflexivity was exercised in the analysis to reduce bias on the part of the researcher, and whenever the researcher considered it necessary to avoid misrepresenting the participants, explanatory member checking was done.

Ethical guidelines were followed throughout the undertaking. Participants were thoroughly briefed regarding the nature of the research and were able to provide their consent before taking part. Participants' confidentiality and anonymity were safeguarded as the research complied with the local societal and ethical standards throughout the entire process.

RESULT AND DISCUSSION

Analysis With Nvivo

The first analysis done using Nvivo. NVivo coding shows that environmental impacts of ecogastronomy in Kabupaten Bangli are articulated through diverse stakeholder perspectives. Business actors contribute the largest proportion of environmental-related verbatim, followed by culinary practitioners, government institutions, and hospitality associations. This distribution indicates that environmental issues are predominantly framed through practical experiences rather than formal regulatory narratives. Five major environmental themes emerge from the NVivo analysis: natural resource management, environmental awareness, wildlife and ecosystems, pollution and congestion, and climate-related considerations (Figure 1).

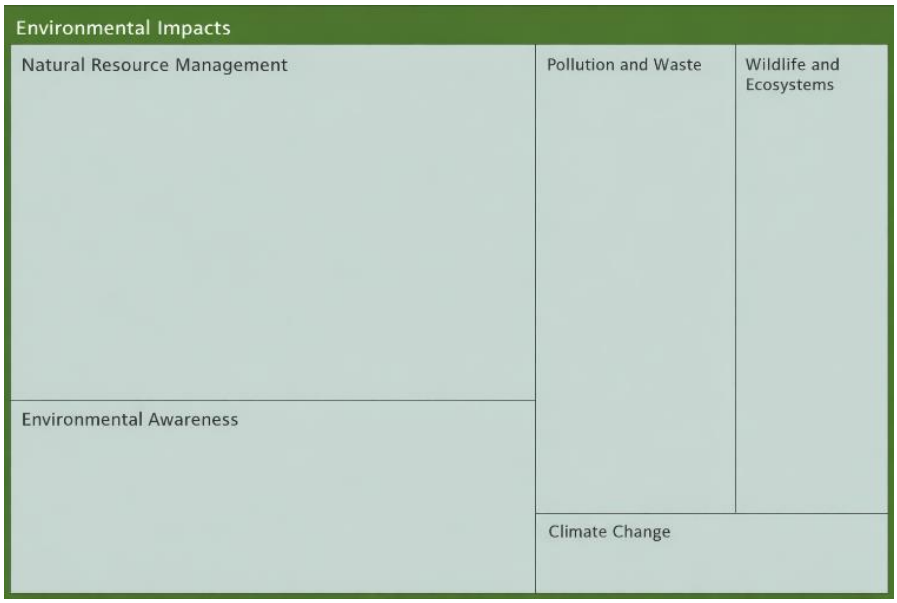

Figure 1. Nvivo Results

Natural Resource Management

Natural resource management emerges as the most dominant theme in the NVivo analysis. Stakeholders consistently describe a tension between environmental conservation and increasing tourism pressure, particularly in areas where ecogastronomy activities are concentrated. A tourism authority highlighted the role of conservation frameworks in tourism development: The geopark protects not only geological aspects, but also biodiversity and local culture (Tourism authority).

International recognition of Kintamani Geopark and the protected status of Lake Batur are perceived as strengthening conservation efforts. However, local-level impacts on natural resources remain a concern, particularly regarding water availability. A culinary practitioner explained the growing pressure on water resources: Natural springs are used not only for daily needs, but also for tourism activities such as ritual cleansing (Culinary practitioner). Community dissatisfaction also emerges in relation to perceived inequality between conservation responsibilities and economic benefits A business actor expressed this concern clearly: Bangli functions as a conservation buffer, but the economic benefits are enjoyed elsewhere (Business association). These findings indicate that natural resource management within ecogastronomy is characterized by a complex balance between conservation goals and development pressures.

Environmental Awareness

Environmental awareness reflects changes in community attitudes and behaviors associated with tourism development. Informants describe a gradual shift toward greater environmental consciousness, particularly in villages with strong cultural identity. Changes in daily behavior related to cleanliness are frequently mentioned by culinary practitioners: In the past, littering was common, but with tourism development, people are now more aware of the importance of keeping the environment clean (Culinary practitioner).

Tourism presence has encouraged collective activities such as communal clean-ups and local environmental education. However, stakeholders also express dissatisfaction with broader waste management systems. A business actor commented on these limitations: Waste management in Indonesia is still lagging behind, with improvements mainly seen in major cities (Business association). These findings suggest that increased environmental awareness does not always translate into effective and consistent environmental management.

Wildlife and Ecosystems

The NVivo findings indicate that ecogastronomy-related tourism activities have implications for wildlife and local ecosystems, particularly in high-traffic tourism areas. Concerns about habitat degradation are strongly expressed by institutional actors: If the jeeps follow designated routes, it is acceptable, but many create their own paths, which damages geological formations (Tourism authority). Changes in wildlife populations are also reported by local actors. A business actor reflected on ecological changes over time: There used to be many dragonflies around here, but now they are rarely seen (Business association). At the same time, some informants describe the appearance of new species in less-developed areas, suggesting ecological adaptation or migration. Species that were not previously present are now appearing, indicating migration or adaptation (Business association). Overall, these findings highlight uneven ecological impacts associated with tourism development.

Pollution and Congestion

Pollution and congestion emerge as significant environmental concerns linked to ecogastronomy-driven tourism. Vehicle emissions, particularly from off-road jeeps, are perceived as contributing to declining air quality. A tourism authority noted: The exhaust emissions from jeeps clearly add to air pollution in the area (Tourism authority). Noise pollution and traffic congestion are also identified as recurring problems, especially when regulations are inconsistently enforced. A hospitality association representative recalled: There were regulations restricting vehicle access due to noise and congestion, but enforcement has not been consistent (Hospitality association). Environmental pollution is also linked to agricultural practices supporting tourism. A business actor explained: Chemical fertilizers used for crops like citrus affect water quality, especially around Lake Batur (Business association). These findings demonstrate that pollution related to ecogastronomy spans transportation, agriculture, and waste systems.

Climate-Related Considerations

Climate-related impacts are discussed less frequently but remain relevant in stakeholder narratives. Most informants perceive the local contribution of tourism to climate change as limited, attributing climate impacts primarily to global processes. A business actor stated: Climate change in Bangli is not significantly driven by local tourism, but more by global processes (Business association). Nevertheless, certain local practices are acknowledged as contributing to carbon emissions. Carbon footprints are most visible from activities such as land burning (Business association). At the same time, the presence of protected forests and extensive vegetation is viewed as a mitigating factor. The environment here remains relatively well protected because forest areas are still maintained (Business association). These findings suggest that while climate change is not perceived as an immediate local threat, awareness of environmental balance remains present among stakeholders.

Analysis Interpretive Structural Modeling (ISM)

This subsection describes the results of interpretive modelling of the environmental consequences of ecogastronomy in Kabupaten Bangli. The results are structured according to four fundamental components: natural resources management (A1), pollution and waste (A2), animals and ecosystems (A3), and climate change (A4). These components are, to some extent, the most important environmental components, and through ecogastronomy, will help to understand the environmental metallisation (interconnection) with the local ecosystem. Hence, this will aid in integrating a focused and systematic understanding of the potential connection and influence for the environment and policy.

Structural Self-Interaction Matrix (SSIM)

Table 1 outlines the Structural Self-Interaction Matrix (SSIM) of the four environmental elements. The SSIM contains estimates from experts on the direction of influence among the elements A1–A4. The pattern suggests A1, natural resources management, is assumed to be a lead driver for A2 and A3, pollution and waste and wildlife and ecosystems, respectively. A2, pollution and waste, is assumed to directly lead to a change in A3, wildlife and ecosystems. Furthermore, the SSIM suggests that A4, climate change, and the other elements influence each other, and thus, climate change may possibly lead to feedback effects on the local environmental management (**Table 1** and **Table 2**).

Table 1. Structural Self-Interaction Matrix (SSIM)

	A1	**A2**	**A3**	**A4**
A1	–	V	V	X
A2	–	–	V	X
A3	–	–	–	X
A4	–	–	–	–

Table 2. Interpretasi Structural Self-Interaction Matrix (SSIM)

Factor	**A1 — Natural Resource Management**	**A2 — Pollution & Waste**	**A3 — Wildlife & Ecosystems**	**A4 — Climate Change**
A1 — Natural Resource Management	–	V	V	X
A2 — Pollution & Waste		–	V	X
A3 — Wildlife & Ecosystems			–	X
A4 — Climate Change				–

To enhance understanding of the data provided, **Table 2** captures the essence of the SSIM and preserves the original relationships, but with the factors being clearly labelled. Thus, the SSIM indicates an environmental system assumed to be tightly coupled, where resource management and waste governance, particularly in the upstream, can trigger changes in several eco-related variables and affect more chronic climate variables.

Initial Reachability Matrix (IRM)

Step ISM methodology involves converting SSIM into an Initial Reachability Matrix (IRM) through binary coding (0 = no direct influence; 1 = influence exists). As displayed in Table 3, A1 possesses direct reachability towards the remaining elements in the system (A2, A3, A4), signifying the most immediate influence one can hold in the system. A2 also demonstrates reachability; however, towards A3 and A4 excluding A1, which situates it as an intermediary entity that transfers downstream environmental pressure. A3 possesses the least reachability pattern as it is linked, primarily, to A4 thereby reinforcing A3 as a dependent ecological outcome that, in itself, moves A4 to a broader, more complex domain of climate-related outcomes (**Table 3** and **Table 4**).

Table 3. Initial Reachability Matrix

	1	**2**	**3**	**4**
1	1	1	1	1
2	0	1	1	1
3	0	0	1	1
4	1	1	1	1

Table 4. Interpretation of the Initial Reachability Matrix (IRM)

Factor	**A1**	**A2**	**A3**	**A4**
A1 — Natural Resource Management	1	1	1	1
A2 — Pollution & Waste	0	1	1	1
A3 — Wildlife & Ecosystems	0	0	1	1
A4 — Climate Change	1	1	1	1

From **Table 4** (IRM), we observe that A4 dominates all elements (including A1). This arrangement indicates that climate change cannot be merely seen as an endpoint outcome; rather, it is a systemic situation that provides a feedback loop with growing resource governance and pollution control at a localised level. The IRM thus responds to a dual logic, which states that localised environmental actions will alter climate change, and conversely, climate change will affect the environmental parameters at a localised level.

Level Partitioning and Hierarchical Structure

The sequence of influence within a hierarchy was determined using reachability and anteceding sets iteratively (see Table 5; interpretation Table 6). Level partitioning demonstrates an ordered sequential structure ranging from upstream drivers to downstream results. From the elimination process described, the hierarchy can be read as a series of progressively chained components, where A1 is the primary upstream driver, A2, A3 and A4 as the system-level outcome and feedback as downstream drivers of the system. A4 is downstream and system-level when A2 and A3 are feedback and layered transmission when A4 is downstream and A2, A3, A4 system-level when feedback is a modular upstream (**Table 5** and **Table 6**).

Table 5. Partion of Each Iteration Matrix

Iterasi	**Variable Names**	**Reachability Set**	**Antecedents Set**	**Intersection Set**	**Level**
1	A1	A1 A2 A3 A4	A1	A1	0
1	A2	A2 A3 A4	A1 A2	A2	0
1	A3	A3 A4	A1 A2 A3	A3	0
1	A4	A4	A1 A2 A3 A4	A4	1
2	A1	A1 A2 A3	A1	A1	0
2	A2	A2 A3	A1 A2	A2	0
2	A3	A3	A1 A2 A3	A3	1
3	A1	A1 A2	A1	A1	0

3	A2	A2	A1 A2	A2	1
4	A1 (Final)	A1	A1	A1	1

Table 6. Interpretation of the ISM Iteration Partition Matrix - Environmental Impacts of Ecogastronomy

Iterasi	Kode	Reachability Set	Antecedent Set	Intersection Set	Level
1	A1	A1, A2, A3, A4	A1	A1	–
	A2	A2, A3, A4	A1, A2	A2	–
	A3	A3, A4	A1, A2, A3	A3	–
	A4	A4	A1, A2, A3, A4	A4	1
2	A1	A1, A2, A3	A1	A1	–
	A2	A2, A3	A1, A2	A2	–
	A3	A3	A1, A2, A3	A3	2
3	A1	A1, A2	A1	A1	–
	A2	A2	A1, A2	A2	3
4	A1	A1	A1	A1	4

In interpretive terms, this hierarchy can be summarized as follows. Natural resource management (A1) forms the initial leverage point that triggers changes in pollution and waste management (A2). Pollution and waste then shapes conditions for wildlife and ecosystem stability (A3). Finally, ecosystem disturbances and accumulated environmental pressures connect to climate change (A4) as a broader and more systemic risk domain. This logic is consistent with the reachability patterns where A1 dominates outward influence, A2 functions as a linkage factor, and A3 is the most environmentally vulnerable endpoint within the local ecological layer. To avoid ambiguity, the hierarchy is presented narratively as an influence flow rather than relying solely on the level numbers, because level labels can be interpreted differently across ISM reporting conventions. Substantively, the directional structure implied by the matrices is: A1 (Natural Resource Management) → A2 (Pollution and Waste) → A3 (Wildlife and Ecosystems) → A4 (Climate Change).

Final Reachability Matrix and Structural Roles

The final reachability matrix (**Table 7** and **Table 8**) confirms the system configuration by revealing the influence paths, which are in a state of equilibrium after transitivity modifications. Both A1 and A4 show total reachability for all A's, while A2 and A3 show more limitations. This arrangement suggests two important characteristics in the model: A1 as the principal operational driver in the local environmental management system, and A4 as a systemic element having considerable feedback importance.

Table 7. Final Reachability Matrix

	A1	A2	A3	A4
A1	1	1	1	1
A2	0	1	1	1
A3	0	0	1	1
A4	1	1	1	1

Table 8. Final ISM Quantitative Analysis of Structural Roles

Code	Factor	Out-degree	In-degree	Structural Role	Relative Influence Score
A1	Natural resource management	3	1	Primary driver (dominant system driver)	0.75
A2	Pollution and waste	3	2	Linkage variable (active mediator)	0.75
A3	Wildlife and ecosystems	2	3	Dependent variable (most influenced)	0.50
A4	Climate change	4	3	Primary driver (broad bidirectional influence)	1.00

The **Table 7** and **Table 8** also lend further support to these findings. A1 has a high out degree and a low in degree and thus has the position of a strong driver with no other factors to impede it. A2 has a balance of in and out degree and so it can be conceptualised as a linkage variable receiving influence and also providing it. A3 has a higher dependence than driving power and so it can be placed as the most dependent variable in the system, an environmental component and an ecological outcome as a result of systemic upstream pressures. Though A4 also has high driving power, it has high dependence as well, which indicates climate change is a variable with high complexity in that it both defines and is defined by the system.

Driving Power–Dependence Interpretation

The impact driving power and dependence chart further clarifies the functions into specific categories. A1 positions itself as the greatest driver and least dependent actor, suggesting this is the most critical policy entry point. A2 holds an intermediate position whereby both influence and dependence are significant, indicative of the fact that waste and pollution management within the system is stabilising, albeit with the need for coordination from the upstream system governance. A3 is an actor with low driving power and high dependence, thus marking this as the most environmentally responsive element within the system. A4 has high driving power, but so does the dependence, meaning that the effect of climate change must be interpreted as a system variable, one that cannot be tamed with solely local actions, but does condition and amplify local environmental outcomes, thus remains a crucial driver.

Interpretation Consistency with Qualitative Perceptions

An important implication arises when comparing ISM structure with stakeholder perceptions from the qualitative phase. Some stakeholders may perceive climate change as less salient in daily environmental experience, whereas the ISM structure positions climate change as a highly consequential and systemically connected variable. This difference is logically interpretable as a gap between short-term observable impacts (e.g., waste, congestion, water pressure) and long-term systemic risks (e.g., climate variability and ecological resilience). The ISM results therefore function as a complementary analytic lens that highlights structural dependencies which may not be immediately visible in everyday environmental narratives.

Overall, the ISM results suggest that environmental governance for ecogastronomy in Kabupaten Bangli should prioritize upstream interventions in natural resource management (A1), because it triggers the widest cascade across the system. Pollution and waste (A2) should be treated as a critical linkage mechanism that mediates downstream ecological stability. Wildlife and ecosystems (A3) function as the most dependent ecological indicator, reflecting system performance. Climate change (A4) operates as a complex systemic domain that both responds to environmental pressures and feeds back into local environmental constraints, reinforcing the need for integrated and long-term environmental strategies.

Interviews with stakeholders revealed the environmental effects of ecogastronomy in the Bangli Regency and the interconnectedness of certain themes: the management of natural resources, public engagement, and the wildlife and ecosystem in relation to the environmental issues of pollution and climate change. Resource management was the most prominent issue and spoke to the friction between the growth of tourism and the ecology. It was noted in the literature that tourism is a double-edged sword, as it can provide conservation awareness, but the tourism resources, especially natural, can be strained, and that is the case with Bangli as the number of tourists increases without the appropriate governance (Bjorklund, 2016). Examples of the Kintamani Geopark show that the management of balanced conservation and tourism is positive; however, the paradox of increased tourism and the overconsumption of the water resource and other key resources is alarming.

Tourism has created a positive environmental awareness shift within Bangli and has also positively affected the activities of ecogastronomy practitioners. The case of Penglipuran Village, which is internationally recognised by the UNWTO, provides a positive illustration of the integration of environmental value in tourism community practice. This case has been supported by literature citing the ability of Gastronomy and Cultural tourism to promote environmental awareness at the community level. The gap between positive awareness and environmental action is evident in the presence of challenges, with the most prominent newly created challenges being waste management and the enforcement of existing environmental regulations.

The growth of tourism has impacted wildlife and ecosystems. Stakeholders pointed out that tourism in the mountains and the use of bypass roads by tourist vehicles are damaging the natural habitats and geological features of Kintamani. We have also noticed that the increase in the number of tourists coincided with a decline

in the number of certain wildlife, including some insects like dragonflies and butterflies. These also represent cumulative stresses and not adaptive resilience of the ecosystems. The latter is a dynamism that is the hallmark of ecosystems under pressures from tourism (Pietrykowski, 2004). As a result of tourism, pollution, especially from the transportation of tourists, the use of plastics, and the application of chemical fertilisers for agriculture also emerged. While control initiatives have been introduced, their inconsistent implementation has further restricted the initiatives. This finding correlates with the literature on sustainability which argues that tourism-related environmental degradation in tourist destinations is a result of poor governance, not the absence of regulation (Bjorklund, 2016).

Respondents' answers during the interviews concerning the climate changes in Bangli indicated that the climate changes in the area were 'of little consequence'. Almost all changes were viewed as the result of climate changes occurring at the global level. The burning of land as a local practice was also acknowledged as a source of climate-changing carbon emissions. This specific understanding captures a more global phenomenon in which local actors situationally assess climate changes with regard to the 'immediacy' of their devastating impacts, while for the more systematic analyses of the ecosystem, the changes pose more dire threats in the long run (Pietrykowski, 2004).

The problems arising from ecogastronomy in the Bangli Regency related to the environment encompass the management of resources, pollution, the modification and protection of the environment and of living organisms, and climate changes. The potential of ecogastronomy as a source of increased understanding of the environment and its value, and of the practices that promote the protection of the environment, is obvious. The other side of the coin, however, comprises the serious problems that are associated with the overexploitation of resources, as well as the inequitable distribution of the environmental and social costs and benefits.

Within the framework of policies aimed at sustainability, the management of resources and climate changes stand out as the primary and most urgent components that need to be tackled. The ISM analysis demonstrates that these components are primary systemic factors that determine the changes in pollution and the condition of the ecosystems. A coordinated and integrated governance system is the paramount condition for ensuring that the ecogastronomy-inspired tourism development results in a net positive contribution toward environmental sustainability and is not environmentally detrimental in the Bangli Regency.

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the local government of Bangli Regency, tourism stakeholders, and community representatives who participated in the interviews and provided valuable insights for this study. Appreciation is also extended to Institut Pariwisata dan Bisnis Internasional, Bali, for institutional support during the research process. The authors are grateful to all individuals who contributed directly or indirectly to the completion of this research.

REFERENCES

Bali, D. P. P. 2022. *Statistik dan Perkembangan Pariwisata Bali*. Pemerintah Provinsi Bali.

Bangli, B. P. S. K. 2022. *Kabupaten Bangli dalam Angka 2022*. Badan Pusat Statistik.

Bjorklund, T. 2016. *Eco-gastronomy: Creative food for transformation*.

Creswell, John, W., & Creswell, D. J. (2022). *Reseacrh Design: Qualitative, Quantitative, and mixed methods approaches*. Sage Publications.

Pietrykowski, B. 2004. You Are What You Eat : The Social Economy of the Slow Food Movement. *Review Of Social Economy*, *LXII*(3), 308–321. https://doi.org/10.1080/0034676042000253927

Wachyuni, S. S., & Kusumaningrum, D. A. (2020). The Effect of COVID-19 Pandemic : How are the Future Tourist Behavior ? *Journal of Education, Society and Behavioural Science*, *33*(4), 67–76. https://doi.org/10.9734/JESBS/2020/v33i430219

Widyani, A. A. D. 2020. Ecoastronomy and local food sustainability in Bali Tourism. *Jurnal Manajemen Pariwisata*.

Wisudariani, N. M. R. 2019. Ecogastronomy as sustainable tourism development strategy in Bali. *Jurnal Pariwisata Berkelanjutan*.

Wiweka, K., & Chevalier, S. P. 2022. Bali Tourism Research Trends: A Systematic Review, 1976–2022. *Jurnal Kajian Bali Journal of Bali Studies*, *12*(2), 600–626.