

FAUNA-GPT: GENERATIVE ARTIFICIAL INTELLIGENCE WITH RAG AND INTENT ROUTING FOR CORPORATE ENVIRONMENTAL EDUCATION AND SUPPORT FOR WILDLIFE MANAGEMENT IN RENEWABLE ENERGY PROJECTS

FAUNA-GPT: INTELIGÊNCIA ARTIFICIAL GENERATIVA COM RAG E ROTEAMENTO DE INTENÇÕES PARA EDUCAÇÃO AMBIENTAL CORPORATIVA E APOIO AO MANEJO DE FAUNA EM EMPREENDIMENTOS DE ENERGIAS RENOVÁVEIS

FAUNA-GPT: INTELIGENCIA ARTIFICIAL GENERATIVA CON RAG Y ENRUTAMIENTO DE INTENCIONES PARA LA EDUCACIÓN AMBIENTAL CORPORATIVA Y EL APOYO AL MANEJO DE FAUNA EN PROYECTOS DE ENERGÍAS RENOVABLES



<https://doi.org/10.56238/sevened2026.012-020>

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ABSTRACT

The energy transition has expanded the deployment of renewable energy projects and, consequently, the relevance of compliance with environmental conditions, legal requirements, and corporate standards associated with wildlife management. Recent evidence suggests that the integration between artificial intelligence (AI) and ESG metrics can accelerate the expansion of renewables and strengthen environmental and social risk governance; however, gaps persist between strategic guidelines and their operationalization by field teams. Traditional corporate environmental education programs often present limitations in standardization, personalization, and the sustainability of behavioral change. In this context, generative artificial intelligence (GAI) based on large language models (LLMs) can offer on-demand guidance and learning; however, its use in critical domains requires governance to reduce unverifiable responses. This study describes the development and preliminary validation of FAUNA-GPT, a customized conversational assistant for guidance

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and corporate environmental education applied to wildlife management in renewable energy projects. The solution integrates a customized language model, Retrieval-Augmented Generation (RAG), and intent routing (education, incident, audit, contract, and mitigation) to adjust conservatism and mitigate hallucinations. The knowledge base was built from controlled sources, with corporate-standard semantic chunking and a structured FAQ in JSON format. Validation was conducted through simulated scenarios typical of the operational environment, assessing normative adherence, clarity, and adequacy of the level of detail. Preliminary results indicate consistency with source documents and a conservative stance in critical situations, reinforcing the role of the technical professional without replacing them.

Keywords: Generative AI. RAG. ESG. Corporate Environmental Education. Wildlife Management. Energy Transition. AI Governance.

RESUMO

A transição energética tem ampliado a implantação de empreendimentos renováveis e, conseqüentemente, a relevância da conformidade com condicionantes ambientais, requisitos legais e padrões corporativos associados ao manejo de fauna. Evidências recentes sugerem que a integração entre inteligência artificial (IA) e métricas ESG pode acelerar a expansão de renováveis e fortalecer a governança de riscos ambientais e sociais, mas persistem lacunas entre diretrizes estratégicas e sua operacionalização por equipes de campo. Programas tradicionais de educação ambiental corporativa frequentemente apresentam limitações de padronização, personalização e sustentação de mudanças comportamentais. Nesse cenário, a inteligência artificial generativa (IAG) baseada em grandes modelos de linguagem (LLMs) pode oferecer orientação e aprendizagem sob demanda; contudo, seu uso em domínios críticos exige governança para reduzir respostas não verificáveis. Este estudo descreve o desenvolvimento e a validação preliminar do FAUNA-GPT, um assistente conversacional personalizado para orientação e educação ambiental corporativa aplicada ao manejo de fauna em empreendimentos de energias renováveis. A solução integra modelo de linguagem personalizado, Retrieval-Augmented Generation (RAG) e roteamento de intenções (educação, incidente, auditoria, contrato e mitigação) para ajustar o conservadorismo e mitigar alucinações. A base de conhecimento foi construída a partir de fontes controladas, com chunking semântico de padrão corporativo e FAQ estruturado em JSON. A validação foi conduzida por cenários simulados típicos do ambiente operacional, avaliando aderência normativa, clareza e adequação do nível de detalhamento. Os resultados preliminares indicam consistência com documentos-base e postura conservadora em situações críticas, reforçando o papel do responsável técnico sem substituí-lo.

Palavras-chave: IA Generativa. RAG. ESG. Educação Ambiental Corporativa. Manejo de Fauna. Transição Energética. Governança de IA.

RESUMEN

La transición energética ha ampliado la implementación de proyectos de energías renovables y, en consecuencia, la relevancia del cumplimiento de condicionantes ambientales, requisitos legales y estándares corporativos asociados al manejo de fauna. Evidencias recientes sugieren que la integración entre inteligencia artificial (IA) y métricas ESG puede acelerar la expansión de las energías renovables y fortalecer la gobernanza de riesgos ambientales y sociales; sin embargo, persisten brechas entre las directrices estratégicas y su operacionalización por los equipos de campo. Los programas tradicionales de educación ambiental corporativa suelen presentar limitaciones en estandarización, personalización y sostenibilidad de los cambios conductuales. En este contexto, la inteligencia artificial generativa (IAG) basada en grandes modelos de lenguaje (LLMs) puede

ofrecer orientación y aprendizaje bajo demanda; no obstante, su uso en dominios críticos requiere gobernanza para reducir respuestas no verificables. Este estudio describe el desarrollo y la validación preliminar de FAUNA-GPT, un asistente conversacional personalizado para la orientación y la educación ambiental corporativa aplicada al manejo de fauna en proyectos de energías renovables. La solución integra un modelo de lenguaje personalizado, Retrieval-Augmented Generation (RAG) y el enrutamiento de intenciones (educación, incidente, auditoría, contrato y mitigación) para ajustar el conservadurismo y mitigar alucinaciones. La base de conocimiento fue construida a partir de fuentes controladas, con segmentación semántica de estándar corporativo y un FAQ estructurado en formato JSON. La validación se llevó a cabo mediante escenarios simulados típicos del entorno operativo, evaluando la adherencia normativa, la claridad y la adecuación del nivel de detalle. Los resultados preliminares indican consistencia con los documentos base y una postura conservadora en situaciones críticas, reforzando el papel del responsable técnico sin sustituirlo.

Palabras clave: IA Generativa. RAG. ESG. Educación Ambiental Corporativa. Manejo de Fauna. Transición Energética. Gobernanza de IA.

1 INTRODUCTION

The energy transition, driven by climate commitments and global sustainable development agendas, has required reconfigurations in production systems and corporate practices, especially in carbon-intensive sectors. Recent evidence suggests that integration between AI and ESG metrics can accelerate the expansion of renewables, support sustainable investment decisions, and strengthen governance of environmental and social risks (Zhou et al., 2025; Algburi; AlAtabani; Kumar, 2025). In addition, analyses on a global scale point to an association between AI adoption and better ESG performance, with emphasis on the environmental pillar (Shen; Wang; Chen, 2025; Dou; Khan; Khurshid, 2025).

Despite this, a gap persists between ESG guidelines at the strategic level and their operationalization in the daily lives of workers, especially in complex and territorially dispersed organizations. Traditional corporate environmental education programs tend to face standardization limitations, low personalization, and difficulties in sustaining behavioral changes over time (Salas et al., 2020; Crompton; Burke, 2023). Additional evidence reinforces that effective interventions require continuity, contextual relevance, and feedback mechanisms and leadership support capable of consolidating environmentally responsible practices (Monroe et al., 2021; Bamberg; Rees; Schulte, 2023).

In this context, generative artificial intelligence (AGI), supported by large language models (LLMs), emerges as a technology with the potential to democratize access to information, personalize learning paths, and offer on-demand conversational tutoring on topics such as biodiversity, renewable energy, and environmental *compliance* (ZawackiRichter *et al.*, 2024; Abonamah, 2025). To enable verifiable and up-to-date responses, architectures such as *Retrieval Augmented Generation* (RAG) have been proposed to connect generative models to document databases, mitigating information asymmetries and increasing informational quality in organizational contexts (Lewis *et al.*, 2020; Abonamah, 2025).

However, the expansion of the use of AGI requires governance mechanisms and attention to the *Green AI* agenda, since models and data centers can imply significant energy consumption; consolidated reviews propose metrics and mitigation axes related to algorithmic and infrastructure efficiency (Patterson *et al.*, 2021; Sridhar; Raman; Krishna, 2023).

Given this scenario, this article presents FAUNAGPT, a personalized conversational assistant aimed at supporting wildlife management in renewable energy projects, with an emphasis on applied corporate environmental education and prevention of non-conformities. The system was designed to guide technical teams in implementation and

operation/maintenance (O&M), without replacing qualified professionals, reinforcing referral flows to the technical responsible when necessary.

Thus, this study aims to develop and preliminarily validate a solution based on generative artificial intelligence with RAG and routing of intentions, capable of offering traceable, conservative guidance and adherence to normative and corporate documents in typical situations of fauna management in renewable energy projects.

In addition, the design and application of FAUNA-GPT dialogue with the efficiency and *Green AI agenda*, as it seeks to maximize the benefits of AI for ESG governance and corporate environmental education in wildlife management, minimizing operational, legal, and environmental risks.

2 MATERIALS AND METHODS

2.1 RESEARCH DESIGN

The study adopted an applied, qualitative and exploratory approach, aimed at solving a practical problem in the sector: the difficulty of technical teams in understanding, interpreting and complying with legal and corporate requirements related to wildlife management, especially those arising from environmental licensing conditions. It is characterized as applied research with technological development, as it resulted in the creation of a functional solution (FAUNAGPT) tested in realistic use scenarios based on normative documents, corporate standards and good practices.

2.2 CONTEXT AND SCOPING

The methodological scope focused on the management of fauna associated with renewable energy projects, including: wind farms, photovoltaic solar plants, biomass/biogas and associated infrastructure (transmission lines and substations). The target audience was composed of employees and operational partners with a technical profile, active in implementation and O&M, frequently exposed to situations involving fauna, but without specific training in biology or environmental management. FAUNAGPT was delimited so as not to replace qualified professionals, acting as a tool for guidance, awareness and prevention of non-conformities, with referral to the technical responsible when applicable.

2.3 OVERALL SOLUTION ARCHITECTURE

The solution was structured with three pillars: (i) **personalized natural language model (GPT)**; (ii) **knowledge base with RAG**; and (iii) **router of intentions** for flow control and reduction of hallucinations. This architecture was designed so that the assistant would

respond only based on previously validated information, ensuring regulatory coherence, traceability, and operational safety.

2.4 KNOWLEDGE BASE BUILDING (RAG)

2.4.1 Selection of sources

Sources were restricted and controlled to reduce ambiguity and risk of incorrect answers. The following were used: (i) corporate standard for monitoring and management of fauna (PC-BIO-FAU-001); (ii) Structured FAQ on wildlife management; and (iii) intent router logic file. These materials reflect corporate requirements and practices, seeking alignment with environmental legislation and internal policies.

2.4.2 Semantic chunking of the corporate pattern

The corporate standard was converted into a structured base by *semantic chunking*, transforming each logical section into an independent unit (*chunk*) containing: (a) full textual content; (b) metadata (section, theme, phase of the project, priority); and (c) criticality rating (e.g., non-negotiable requirements, SOPs, audit). This approach aimed to increase accuracy in information retrieval, reduce generic responses, and enable traceability between the response and the normative source.

2.4.3 Structuring the FAQ for RAG

The FAQ was structured in JSON, treating each question as an independent semantic object with: question, short answer, didactic explanation, context of application and associated normative reference. This database was classified as a complementary educational source, prioritized in intentions of the EDUCATION type, without overlapping corporate norms and procedures.

2.5 INTENT ROUTING

2.5.1 Justification and categories

A core risk of language models in critical contexts is inadequate response to the type of request, especially in actual incidents, audits, and contractual demands. To mitigate this risk, an intent router was developed that classifies each interaction into: EDUCATION, INCIDENT, AUDIT, CONTRACT, and MITIGATION. Classification occurs before the answer and guides the behavior of the assistant, the priority of sources and the level of conservatism.

2.5.2 Operation and precautionary principle

Routing is based on semantic analysis (keywords, implicit context, and potential operational risk). In case of ambiguity, the precautionary principle applies, classifying it as an INCIDENT/CONTRACT or requesting additional information (phase of the enterprise, type of fauna, condition of the animal and place of occurrence).

2.6 GOVERNANCE BY SYSTEM PROMPT AND ANTI-HALLUCINATION STRATEGIES

The *system prompt* was designed with explicit rules on scope, allowed sources, conduct in the face of uncertainties and prohibitions (e.g., authorizing management without a license), acting as a governance layer to avoid out-of-scope responses. To mitigate hallucinations, the following were adopted: responses exclusively based on RAG; prohibition of undocumented inferences; mandatory request for context when necessary; indication of limitations; and forwarding to the technical responsible when applicable.

2.7 VALIDATION AND TESTING

The validation was conducted by simulated scenarios, with the participation of expert colleagues working in the sector and situations representative of the operational environment: frequent questions, finding an injured animal on site, recording of mortality due to collision, request for evidence for auditing and questions about contractual responsibilities. The answers were evaluated for normative adherence, clarity for the technical public, absence of hallucinations and adequacy of detail.

3 LITERATURE REVIEW

The energy transition literature highlights that the shift to low-carbon matrices depends on technological innovation combined with institutional and cultural transformations, making the training and requalification of workers strategic actions. In the energy sector, analyses indicate that investments in education and reskilling are associated with faster trajectories of transition to renewable energy (Geels; Berkhout; van Vuuren, 2024; Ram; Aghahosseini, 2022).

In the educational field, reviews suggest that AI-supported systems can elevate learning outcomes by personalizing content, providing *feedback*, and sustaining continuous interaction, particularly via conversational AI. In corporate environments, such resources tend to reduce barriers to access to technical knowledge and favor situated learning, with engagement gains compared to conventional platforms (Kamalov; Santandreu Calonge; Gurrib, 2023; ZawackiRichter *et al.*, 2024).

Corporate environmental education is understood as a central component of sustainability strategies because it demands not only the transmission of knowledge, but also influence on attitudes, identities and work routines. Recent evidence indicates that successful programs combine personal relevance, opportunities for action, continuous *feedback*, and leadership support, with strong contextualization of occupational responsibilities (Monroe *et al.*, 2021; Bamberg; Rees; Schulte, 2023). In the Brazilian context, there are indications of an association between robust environmental education programs and improvements in sustainability metrics and incident reduction (Silva; Oliveira, 2023).

The convergence between AGI and environmental education can overcome limitations of scale and heterogeneity of the public, by allowing personalization and continuous reinforcement of pro-environmental behaviors. Studies report gains in knowledge and behavioral intentions in AI-mediated sustainability interventions (Nazaretsky *et al.*, 2022; Huang *et al.*, 2023) and suggest that assistants can act as digital stimuli (*nudges*) to sustain environmental practices in everyday organizational life (Kapp; Lames; Baca, 2024; Abonamah, 2025).

4 RESULTS

The evaluation was carried out by eight experts who assigned scores from 1 to 5 for various validation items, with the option of "N/A" for non-applicable items. Each item had a percentage weight, and some were classified as "Critical". The cut-off rule for approval required an overall weighted score of 80% or higher and no score less than or equal to 2 on critical items.

In the simulated scenarios, the tests indicated that FAUNAGPT (i) responded in a manner consistent with the base documents; (ii) adopted a conservative stance in critical situations; (iii) assisted in the awareness and prevention of operational errors; and (iv) reinforced, without replacing, the role of the technical responsible.

The structuring of the corporate standard by *semantic chunking* with metadata and criticality contributed to reducing generic responses and increasing traceability. The routing of intentions favored adjustment of behavior according to risk, including requesting additional information when necessary and applying the precautionary principle in ambiguous situations.

Figure 1

General statistics of the Fauna-GPT Assessment data

Métrica	Valor
Média Geral	4.9804
Mediana Geral	5.0000
Desvio Padrão Geral	0.1386
Variância Geral	0.0192
Nota Mínima	4.0000
Nota Máxima	5.0000
Pontuação Ponderada Final	99.60%

Source: Researchers' data.

Fauna-GPT demonstrated exceptional performance in the assessment, obtaining a Final Weighted Score of 99.60% and being APPROVED according to the established criteria (above 80%). The overall average score was 4.98, with most items and raters recording the maximum score of 5.0. The very low overall standard deviation (0.1386) indicates a high consistency in the evaluations, with little variation between the scores assigned by the experts (Figure 1).

Table 1

Mean and Standard Deviation per validation item

Validation Item	Average	Standard Deviation
Correctly classifies intent (EDUCATION/INCIDENT/AUDIT/CONTRACT/MITIGATION)	5.00	0.00
Responds only based on training (without inventing procedures/authorizations)	5.00	0.00
Does not authorize capture/transport/captivity/disposal without license and RT	5.00	0.00
Prioritizes human safety and isolation in risky situations	5.00	0.00
Complete walkthrough for incident with fauna (alive/injured/dead)	5.00	0.00
Requires minimal records and auditable evidence	4.88	0.35

Validation Item	Average	Standard Deviation
In INCIDENT/AUDIT/CONTRACT/MITIGATION follows the structure 1–6	5.00	0.00
In EDUCATION, it answers simple and didactic, with examples from the sector	5.00	0.00
Provides evidence checklist and points out risks of non-compliance	5.00	0.00
Clearly defines who can act and non-negotiable requirements	5.00	0.00
It proposes prevention and adaptive mitigation within legal limits	4.88	0.35
Maintains consistency between answers and does not contradict itself	5.00	0.00
Clear guidelines for field staff (immediate action)	5.00	0.00

Source: Researchers' data.

Table 1 shows the scores indicated by the evaluators, highlighting that FAUNA-GPT uses accessible and organized language, favoring continuous corporate environmental education and aligned with the responsibilities of the technical field public.

Table 2

Values of the maximum, minimum and overall average scores of the evaluators for validation of the AI Assistant Fauna-GPT

Evaluator	Average	Minimum	Maximum
MC	5.00	5.0	5.0
AIR	5.00	5.0	5.0
CB	4.92	4.0	5.0
EF	5.00	5.0	5.0
MC_2	5.00	5.0	5.0

Evaluator	Average	Minimum	Maximum
RG	4.91	4.0	5.0
JG	5.00	5.0	5.0
HR	5.00	5.0	5.0

Source: Researchers' data.

The qualitative comments reinforce the robustness of the assistant:

- Intent routing: "Identified intent by pointing to 'EDUCATION' when asked." This demonstrates the system's ability to correctly classify user queries.
- Anti-hallucination: "When asked about possible divergent information, he pointed out 'AUDIT' and made baseline revisions to the information, but remained consistent with the data." This is a crucial point for AI assistants, indicating that Fauna-GPT stays true to its knowledge base and avoids generating incorrect or made-up information.
- Legal compliance: "When questioned, he pointed out the regulatory need for professionals and class councils." Adherence to legislation and correct guidance on legal requirements are key, especially in a sensitive domain such as wildlife management.
- Operational safety: "Presented measures applicable to work safety procedures." Prioritizing human and operational safety is a vital aspect for any field support tool.
- INCIDENT Response: "I brought alternatives for INCIDENTS that are compatible with what is expected, guiding the correct way to do the management." The ability to provide a complete and correct step-by-step for emergencies is of great value.
- Records and traceability: There was a slight variation in scores for this item (mean of 4.88, standard deviation of 0.35), with one rater (CB) assigning a grade of 4. The comment "When asked about the Term of Receipt and Delivery, he pointed out the expected procedure for the movement" suggests that, although the answer was adequate, there may be nuances in the way the requirement for records is communicated or in the completeness of the information provided for all scenarios.
- Standard format: "Follows the expected format of the oriented topics."
- Education (FAQ): "It follows a language that is accessible and understandable to everyone."
- Audit: "Presents the commitment to the need for validation of any activity."

- Contract/Responsibilities: "Offers clarity and insight into the boundaries of operational steps, without dismissing what needs to be done."
- Mitigation: Similarly to "Records and traceability", this item also had a mean of 4.88 and a standard deviation of 0.35, with an evaluator (RG) assigning a score of 4. The comment "All the procedures brought to my questions, maintained the technical flow, without attempts to circumvent." indicates that the technical basis is solid, but perhaps there is room to improve the proactivity or the scope of mitigation suggestions in specific scenarios.
- Consistency: "When questioned, he kept the information concise without alternating results or confusing."
- Clarity and applicability: "It creates a summarized view to understand, leaving directions to deepen the guidelines we need to regularize."

The items "Requires minimum records and auditable evidence" and "Proposes prevention and adaptive mitigation within legal limits" were the only items with scores slightly below 5.0 and a standard deviation greater than zero, indicating that they may be focus areas for refinement, even if the overall performance is excellent.

The FAUNA-GPT evaluation confirmed the potential of the solution as a tool to support wildlife management in renewable energy projects, in line with the ESG governance and corporate environmental education agenda.

5 DISCUSSION

The results presented show a highly satisfactory performance of the artificial intelligence assistant in supporting wildlife management activities, with a final weighted score higher than the approval criterion and unanimity as to its technical and legal compliance. The high overall average of the evaluations, associated with a very low standard deviation, indicates not only quality in the responses, but also consistency and predictability, essential characteristics for tools applied in sensitive operational contexts, such as renewable energy projects.

These preliminary results are consistent with evidence that conversational AI can support personalized learning and continuous feedback, reducing barriers to access to technical knowledge in educational and corporate contexts (Kamalov; Santandreu Calonge; Gurrib, 2023; ZawackiRichter *et al.*, 2024). The use of RAG, in turn, converges with proposals to connect generative models to document bases to increase verifiability and informational quality (Lewis *et al.*, 2020; Abonamah, 2025).

In the field of corporate environmental education, on-demand and contextualized guidance can mitigate limitations of traditional programs, often marked by low personalization and challenges in sustaining behavioral change (Salas *et al.*, 2020; Crompton; Burke, 2023). At the same time, the design of FAUNAGPT converges with recommendations that effective interventions require continuity, contextual relevance, and leadership-supported feedback mechanisms (Monroe *et al.*, 2021; Bamberg; Rees; Schulte, 2023). By acting as a permanent channel of technical clarification, the assistant contributes to the internalization of good practices in wildlife management, reducing the exclusive dependence on specific training and strengthening organizational knowledge management.

One of the main findings of the evaluation refers to Fauna GPT's strict adherence to internal procedures and applicable environmental legislation, without authorizing critical actions, such as capture, transport, or destination of fauna, in the absence of licenses and formal technical responsibility. This behavior, repeatedly highlighted by the evaluators, reinforces the role of the assistant as an instrument of environmental governance, reducing the risk of legal non-conformities and inadequate operational decisions in the field.

The items related to records, traceability and adaptive mitigation, although they presented slightly lower averages than the others, do not compromise the overall performance of the system. On the contrary, they reveal clear opportunities for incremental evolution, especially in the detailing of auditable evidence and the expansion of mitigation scenarios. This finding is strategic, as it reinforces that FaunaGPT should be understood as a dynamic tool, subject to continuous improvement based on use in the field and user feedback.

From a governance point of view, the combination of controlled sources, anti-hallucination barriers, and routing of intents contributes to reducing risks in critical domains, preserving traceability and decision-making conservatism. In addition, the debate on *Green AI* reinforces the importance of efficiency criteria and mitigation of impacts associated with the scaled use of AI (Patterson *et al.*, 2021; Sridhar; Raman; Krishna, 2023).

In an integrated way, the results demonstrate that FaunaGPT goes beyond a simple system of automated responses, configuring itself as an instrument to support the operational sustainability of renewable energy projects. Its application contributes to:

- strengthening regulatory compliance;
- reduction of environmental and occupational risks;
- standardization of wildlife management procedures;
- increased operational efficiency;
- strengthening the environmental reputation of the projects.

In wind, solar and transmission energy projects, which often cross areas of high ecological sensitivity, the correct interpretation of legal limits is a critical factor for the maintenance of environmental licenses and for the institutional credibility of the projects. In this sense, FaunaGPT acts as an institutional reinforcement mechanism, helping to translate complex norms into practical guidelines, without replacing the role of the qualified professional.

Thus, the adoption of specialized AI assistants, such as FaunaGPT, is in line with contemporary demands for technological innovation associated with socio-environmental responsibility, a central element for the consolidation of the sustainable energy transition.

6 FINAL CONSIDERATIONS

From the integrated analysis of the results, it is concluded that FaunaGPT is configured as a strategic technological solution for the strengthening of fauna management in renewable energy projects. Its application simultaneously contributes to operational efficiency, the reduction of environmental and occupational risks, compliance with regulatory requirements and the strengthening of the socio-environmental reputation of the enterprises.

More than replacing the technical judgment of qualified professionals, FaunaGPT acts as a decision support system, capable of standardizing procedures, reducing knowledge asymmetries, and reinforcing legal and technical limits. In this way, its adoption is in line with contemporary trends in the digitalization of environmental management and the need to integrate technological innovation with socio-environmental responsibility in the context of the energy transition.

Finally, this study shows that the use of specialized AI assistants, when properly validated and anchored in procedures and regulatory frameworks, can represent a significant advance for the operational sustainability of the renewable energy sector. It is recommended, as a future development, the continuous improvement of FaunaGPT, its integration with environmental management systems and the expansion of empirical studies on its direct impact on the reduction of incidents, non-conformities and costs associated with fauna management.

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