

Cardinal Stefan Wyszyński University in Warsaw
Institute of Philosophy
Center for Ecology and Ecophilosophy

STUDIA ECOLOGIAE ET BIOETHICAE



24/3 (2026)

Pemena: Toward a Relational Ecophilosophy of Health Among the Karo People of North Sumatra

Pemena – ku relacyjnej ekofilozofii zdrowia wśród ludu Karo (Północna Sumatra)

Johannes Bastira Ginting, Tri Suci, Chrismis Novalinda Ginting, Kristiawan Indriyanto*

Universitas Prima Indonesia, Indonesia

ORCID JBG <https://orcid.org/0000-0001-8908-0251>; TS <https://orcid.org/0000-0003-2415-1279>;

CNG <https://orcid.org/0000-0003-2269-2717>; KI <https://orcid.org/0000-0001-7827-2506> • kristiawanindriyanto@unprimdn.ac.id

Received: 2025-07-26; Revised: 2025-12-21; Accepted: 2026-01-05

Abstract: This article examines Pemena, the traditional belief system of the Karo people of North Sumatra, as a relational ecophilosophy of health. Pemena—meaning “the first”—defines health not as individual biological function but as balanced relationships among humans, ancestral spirits (*begu*), guardian spirits (*nini*), and vital essence (*tondi*). We analyze healing practices, including *Erpangir Ku Lau* (purification at sacred springs) and the authority of *guru sibaso* (ritual healers) to demonstrate how Pemena treats illness as rupture within cosmic relationships requiring spiritual, ecological, and social repair simultaneously. This ontology challenges biomedical reductionism’s focus on isolated pathology and Western ecophilosophy’s secular rationalism. Pemena recognizes nonhuman agents—springs, forests, ancestral forces—as active participants in health decisions through ritual negotiation. While scholars often categorize such systems as Traditional Ecological Knowledge (TEK), Pemena constitutes a distinct philosophical tradition requiring engagement on its own terms. Existing scholarship catalogs Karo medicinal plants but ignores the cosmological structures making these practices coherent. We examine how Indonesian health policy (Law 36/2009) marginalizes Pemena by conditioning legitimacy on biomedical validation, arguing that genuine health pluralism requires legal frameworks accommodating different healing ontologies rather than forcing Indigenous systems into external categories.

Keywords: Pemena, Karo Cosmology, Ecophilosophy of Health, Indigenous Healing Systems, Relational Ontology, Health Pluralism, Traditional Ecological Knowledge, SDG 3 – Good Health and Well-Being

Streszczenie: Artykuł analizuje tradycyjny system wierzeń ludu Karo z Północnej Sumatry (Pemena) w odniesieniu do założeń relacyjnej ekofilozofii zdrowia. Pemena, dosłownie oznaczająca „to, co pierwsze”, ujmuje zdrowie nie jako biologiczne funkcjonowanie jednostki, lecz jako stan równowagi w sieci relacji między ludźmi, duchami przodków (*begu*), duchami opiekuńczymi (*nini*) oraz esencją życiową (*tondi*). Analiza praktyk leczniczych, w tym rytuału *Erpangir Ku Lau* (oczyszczenia w świętych źródłach) oraz roli *guru sibaso* (uzdrowicieli rytualnych), ukazuje, że Pemena interpretuje chorobę jako naruszenie relacji w porządku kosmicznym, wymagające jednoczesnej naprawy na poziomie duchowym, ekologicznym i społecznym. Tego rodzaju ontologia podważa zarówno biomedyczny redukcjonizm, koncentrujący się na izolowanej patologii, jak i sekularny racjonalizm dominujący w zachodniej ekofilozofii. Pemena uznaje byty pozaludzkie—takie jak źródła, lasy czy duchowe siły przodków—za aktywnych uczestników procesów decyzyjnych dotyczących zdrowia, włączanych w te procesy poprzez mediacje rytualne. Choć systemy tego typu bywają w literaturze klasyfikowane jako tradycyjna wiedza ekologiczna (Traditional Ecological Knowledge, TEK), Pemena stanowi odrębną tradycję filozoficzną, wymagającą analizy na własnych warunkach. Dotychczasowe badania koncentrowały się głównie na katalogowaniu roślin leczniczych

ludu Karo, pomijając kosmologiczne podstawy, które nadają tym praktykom spójność i sens. Artykuł omawia także sposób, w jaki indonezyjska polityka zdrowotna (Law 36/2009) marginalizuje Pemena, uzależniając jej legitymizację od walidacji biomedycznej. Autorzy argumentują, że rzeczywisty pluralizm zdrowotny wymaga ram prawnych uwzględniających odmienne ontologie leczenia, zamiast podporządkowywania systemów rdzennych zewnętrznym kategoriom.

Słowa kluczowe: Pemena, kosmologia ludu Karo, ekofilozofia zdrowia, rdzenne sposoby leczenia, ontologia relacyjna, pluralizm zdrowotny, tradycyjna wiedza ekologiczna, Cel Zrównoważonego Rozwoju 3 – Dobre zdrowie i jakość życia

Introduction

Traditional Ecological Knowledge (TEK) refers to the culturally embedded ways Indigenous communities understand, relate to, and manage their environments. Although widely discussed under various labels such as local knowledge, ethnoecology, or people's science (Ellen and Harris 2000), TEK remains a contested term. Coined within Western academic discourse and lacking a universally agreed-upon definition (Mazzocchi 2006), the term tends to frame Indigenous epistemologies through external categories, potentially obscuring their ontological and ethical coherence. For many Indigenous scholars, TEK is not simply ecological know-how but a lived relationship encompassing ethical, spiritual, and cosmological dimensions (Whyte 2013; D. McGregor 2004). It offers an integrative understanding of nature, culture, and health that arises from embodied experience and reciprocal engagement with land rather than abstraction or laboratory observation (Kimmerer 2013). As LaDuke (2008) argues, TEK is normative, not merely descriptive: it guides how communities should live in balance with human and nonhuman others. Within this framework, health is understood as dynamic equilibrium among persons, places, and spirits (Cajete 2000; J. McGregor 2018).

Despite growing attention to Indigenous knowledge systems, much scholarship isolates TEK's utilitarian aspects—cataloguing medicinal plants—without engaging underlying cosmology and ethical structures (Hanna, Friborg, and Qumsiyeh 2022; Martgrita et al. 2025). This article addresses

that gap by examining Pemena, the traditional belief system of the Karo people of North Sumatra. Pemena—meaning “the first” or “the original”—was deliberately adopted in 1946 by traditional leaders (*tetua adat* and *guru mbelin*) to assert the temporal and philosophical priority of these teachings over introduced religions (Setiawan 2014). While scholars often categorize such systems under TEK, Pemena possesses its own conceptual vocabulary and ontological commitments. This article prioritizes Pamina's own terms while engaging TEK literature, where it illuminates comparative insights. Pemena encompasses a cosmology in which health, social order, and ecological balance are inseparable. Healing practices operate through relationships among humans, ancestral spirits (*begu*), guardian spirits (*nini*), and vital essence (*tondi*), mediated by ritual specialists (*guru sibaso*) who negotiate with nonhuman agents inhabiting springs, forests, and village boundaries.

Ecophilosophy interrogates the moral dimensions of human–nature relationships, asking how we should live on Earth, not simply how we survive or develop. Scholars such as Curry (2006), DesJardins (2013), and Rolston (2012) argue that ecological problems raise fundamentally ethical questions: Do we have obligations to nonhuman beings? What limits should constrain human dominion? What does justice toward nature entail? This article aligns with ecophilosophy emphasizing relationality, moral responsibility, and ethically rooted worldviews, arguing that Pemena offers an embodied form of ecophilosophy—a mode of being in

the world, not only a system of environmental understanding.

The Karo people reside in the highlands of North Sumatra. Their name originates from “*ha-roh*” (“*the first to arrive*”), evolving into “*Karo*” over time (Tibo, Bere, and Tinambunan 2024). Over centuries, the Karo developed sophisticated ecological knowledge through subsistence farming, seasonal observances, and ritual exchanges. Ceremonies such as *cimpa* (cleansing), *urung* (agricultural offerings), and *pepadan* (ancestral dialogue) maintain ecological harmony and social cohesion (Tarigan and Lubis 2022; Setiawan et al. 2018). The traditional clan system (*merga silima*—five clan groups) structures kinship and environmental obligations, reinforcing a worldview in which land, health, and morality are co-constitutive. Contemporary Karo communities continue these practices even as they integrate elements of Christianity and Islam, illustrating the resilience and adaptability of Indigenous epistemologies (Mujiburrahman 2001).

This study examines how Pemena functions as both ecological knowledge and an ecophilosophy of health—an integrated system of ethical values, spiritual orientations, and healing modalities. While previous studies have documented Karo medicinal plants within ethnobotanical frameworks (Martgrita et al. 2025), this article foregrounds the conceptual foundations of healing, exploring how health is understood as relational, place-based, and spiritually mediated. We argue for recognizing Pemena as a valid philosophical and ethical framework that can inform contemporary debates in eco-bioethics, especially in plural or postcolonial health systems. Regarding our positionality, the lead author and one co-author are ethnically Karo, belonging to the Ginting *merga* (clan). This positionality shapes our engagement with Pemena as inheritors of these traditions rather than external observers, though our academic training necessarily mediates how we translate Pemena concepts into philosophical discourse.

Pemena faces dual marginalization. Ecologically, landscapes central to practice—sacred springs like *Lau Debuk-debuk*, village forests (*kerangen kuta*), and volcanic sites—experience degradation due to agricultural expansion and tourism. Epistemically, Indonesian health policy treats Pemena as folklore rather than legitimate healing knowledge. Law 36/2009 recognizes “traditional medicine” only when validated by biomedical criteria, excluding practices grounded in spiritual negotiation and cosmological balance (Indonesia 2009).

The central research question is: How does Pemena inform an ecophilosophy of health that challenges biomedical individualism and anthropocentrism? This inquiry is both philosophical and applied, articulating how Indigenous healing systems conceptualize human–nature relations in ways offering alternatives to extractive, decontextualized models of care. The analysis proceeds in three sections. Section 1 explores Pemena cosmology and the ontological status of nature as a spiritually interactive realm. Section 2 examines how Pemena challenges biomedical reductionism and Western ecophilosophical frameworks. Section 3 reflects on implications for intercultural and pluralistic health models.

1. Pemena Cosmology and Ecophilosophy of Health

Pemena cosmology recognizes three interconnected realms that constitute reality: the microcosm (human and social life), the mesocosm (ritual and moral mediation), and the macrocosm (the divine and spiritual domain). Health emerges not from individual biological function but from proper alignment among these realms, mediated through relationships with spiritual entities. This triadic structure positions humans as spiritual and social beings whose health and survival are intricately intertwined with the vitality of the land, spirits, and ancestral forces (Jackson 2018).

Three categories of spiritual agents are central to Pemena’s health ontology. *Tondi*

represents the vital essence connecting individuals to ancestral and spiritual realms, making personal health inseparable from cosmic relationships. *Begu* are ancestral spirits who maintain protective oversight of descendants, communicating through dreams, illness, or environmental signs when familial obligations are neglected. *Nini* are guardian spirits residing in specific landscapes—rivers, village borders, large trees—that regulate ecological balance and human fate. These entities function as what Philippe Descola identifies as “animist ontology” (Shlyakov 2024). For Karo people, springs, forests, and mountains exercise genuine agency in human health outcomes.

Physical illness often signals spiritual disturbance—ancestors withdrawing protection due to neglected ritual obligations, or guardian spirits responding to ecological violations with bodily affliction. The *Mere Buah Uta-Uta* ceremony exemplifies this relational understanding. This communal offering to *Dibata* (the Creator) and ancestral spirits expresses gratitude for agricultural abundance and collective wellbeing, acknowledging that community health emerges from sustained reciprocity with spiritual forces. As Bangun (1990) notes, “physical illness, environmental degradation, and spiritual discord are related manifestations of systemic imbalance”. Drought, crop failure, and epidemic disease require simultaneous attention to spiritual, ecological, and social dimensions, rather than isolated medical interventions.

Pemena healing operates through specific engagement with sacred geography and ritual timing. Certain landscapes—such as village forests (*kerangen kuta*), hot springs (*Lau Debuk-debuk*), and Mount Sibayak—function as active agents in healing processes rather than passive backdrops (Andayani et al. 2022). Mount Sibayak—These sites house guardian spirits (*nini*) who must be adequately approached through ritual protocols governed by traditional law (*Adat*). As documented across Indonesian contexts, “environmental messages based on local wisdom

are believed and obeyed by the community because their existence has been passed down from generation to generation” (Bedner & Arizona 2019; Yasir et al. 2022).

The *Erpangir Ku Lau* purification ritual demonstrates this place-based healing logic. Practitioners bring specific offerings (*Lau Pangiren*, composed of kaffir lime, citrus, and flowers) to sacred springs, where they cleanse themselves of spiritual contamination. Healing efficacy depends on correct temporal conditions, proper offerings, and respectful engagement with *nini* spirits inhabiting the springs. This practice reveals how Pemena healing requires ecological participation rather than extraction—the landscape itself becomes a therapeutic agent. The ritual instructs participants on fostering harmony among themselves, with nature, and with the Creator (Rosramadhana 2016). Temporal alignment proves equally crucial. Agricultural health rituals, such as *Merdang Merdem*, coordinate human activities with environmental cycles to maintain productive harmony. Crisis ceremonies such as *Mesai Nini* respond to ecological disruption by appeasing spiritual forces to restore rainfall and soil fertility. The drought ritual *Ndilo Wari Udan* demonstrates adaptive capacity—communities invoke spiritual intervention when environmental conditions threaten health and survival.

Pemena health knowledge operates through strict spiritual authorization rather than universal accessibility. The *guru sibaso* (ritual healer) exemplifies this system as an intermediary between the human and spirit worlds. Their healing authority derives from ritual training, moral discipline, and recognition by both community and spiritual entities. They alone can access specialized diagnostic methods like *jenujung* (visionary dreams), trance states, and spirit possession to identify spiritual causes of illness.

This authorization system extends to medicinal practices. Gathering healing plants requires spoken offerings (*tabas-tabas*) to guardian spirits and adherence

to ethical protocols. One example states: “*Nini tudung ras nini bulang arak-arakendu kamu gelas sehat kerina*” “Our ancestors, support us to be healthy” (Gani et al. 2024). The preparation of traditional medicines, such as terites (a ruminant stomach stew) and okup (herbal steam baths), involves detailed ecological knowledge passed down matrilineally through embodied practice (Manalu & Purba 2020; Rahayu et al. 2024). This knowledge transmission integrates sensory observation, spiritual protocols, and ethical reasoning into unified healing epistemology. Access depends on proper lineage, moral readiness, and spiritual approval rather than academic training. Violations risk spiritual retaliation, reinforcing that healing knowledge carries ethical responsibility to cosmic order and community wellbeing rather than individual advancement.

Pemena’s relational ontology exemplifies the characteristics that TEK scholars identify as characteristic of Indigenous knowledge systems. Berkes (2012) describes TEK as integrating spiritual understanding with practical ecological management—precisely what ceremonies like *Mere Buah Uta-Uta* accomplish by linking agricultural success to ritual obligations. Kimmerer’s (2013) emphasis on reciprocal engagement with the land, rather than extractive use, mirrors Pemena protocols that require offerings before gathering medicinal plants. LaDuke’s (2008) argument that TEK is normative, not merely descriptive, directly applies to Pemena’s ethical framework, wherein healing knowledge carries a responsibility to maintain cosmic balance. Yet Pemena extends beyond typical TEK frameworks by explicitly theorizing health as cosmological achievement. While much TEK literature focuses on environmental management or sustainable resource use, Pemena positions human wellbeing within a comprehensive ontology of spiritual agency, ritual mediation, and place-based practice. This makes Pemena not simply ecological knowledge but a complete health philosophy—what we

term ecophilosophy, embodied in practice rather than abstract ethical reasoning.

As ecophilosophy, Pemena addresses fundamental questions about human obligations to nonhuman beings and the limits of human dominion (Curry 2006; Desjardins 2006; Rolston 2012). However, it does so through lived practice rather than philosophical argumentation. Where Western ecophilosophy debates whether nature has intrinsic value or only instrumental worth, Pemena demonstrates value through ritual engagement with *nini* spirits whose agency directly affects human health. Where environmental ethics asks what justice toward nature entails, Pemena enacts justice through protocols ensuring reciprocity with ancestral forces and ecological systems. This represents ecophilosophy as ontology—a way of being in the world wherein ethical relationships with nonhuman agents constitute the conditions for health and life itself.

Pemena healing thus reveals health as fundamentally ecological and relational rather than technological and individualistic. Health emerges through sustained engagement with place, ancestors, and spiritual forces, requiring ongoing ethical responsibility for cosmic balance. This framework challenges Western biomedicine’s focus on individual pathology by demonstrating how health depends on maintaining relationships across multiple domains.

2. Pemena and the Ethical Challenge to Biomedical Reductionism

Modern biomedicine has achieved extraordinary advances in treating physical disease through standardized, evidence-based protocols. However, it operates on a reductionist framework that conceptualizes the body as a mechanical object, health as the absence of measurable pathology, and healing as the correction of molecular errors (Ahn et al. 2006). This orientation limits biomedicine’s capacity to engage with the broader moral, ecological, and relational dimensions of illness. While biomedicine alienates patients from doctors, from their ailments, and from

understanding treatment processes (Sieler 2014), Indigenous healing systems remain more respectful of patients and their experience. Despite ongoing use of traditional healing methods by Indigenous communities, most Western-trained health professionals lack widespread knowledge of these practices (Redvers & Blondin 2020).

The dominance of this paradigm becomes particularly problematic when contrasted with Indigenous health systems operating from ontologically distinct premises. In Pemena, illness represents imbalance within networks of human, spiritual, and ecological relationships rather than merely a clinical condition. This difference is not simply about adding holistic approaches to biomedical treatment—it reflects fundamentally different understandings of what bodies are, how healing works, and what constitutes therapeutic.

The *Erpangir Ku Lau* ritual exemplifies how Pemena operates through fundamentally different ontological assumptions. This cleansing ritual involves bathing at sacred springs to heal various diseases through spiritual purification rather than pharmaceutical intervention (Rosramadhana 2016). The *guru Sibaso* functions as a spiritual mediator who negotiates between human, ancestral, and ecological agencies to restore cosmological balance. This approach directly contradicts biomedical assumptions about therapeutic intervention and healing substances. While biomedicine treats patients as biochemical processes and water as a sterile medium for chemical dissolution (Lab 2020), *Erpangir Ku Lau* recognizes water as possessing sacred agency that actively participates in healing through spiritual purification. The spring itself—inhabited by *nini* guardian spirits—determines healing outcomes through acceptance or rejection of offerings and petitions. Healing efficacy emerges through ritualized engagement with spiritual forces rather than biochemical intervention. Medicine's reductionist philosophy of deconstructing complex processes into parts, despite its obvious limitations

(Beresford 2010), contrasts with Pemena practices that maintain systemic wholeness.

The epistemological implications extend beyond methodological differences to challenge biomedical assumptions about therapeutic mechanisms. Biomedical approaches have been criticized for their reductionist view of health and neglect of psychosocial and spiritual dimensions of illness (Elendu 2024). Pemena demonstrates that therapeutic effectiveness can emerge through ritualized engagement with spiritual forces. This represents not alternative medicine but alternative ontology—a different understanding of what constitutes healing, agency, and the relationship between human bodies and natural forces.

The implications challenge not only biomedical assumptions but also the institutional frameworks that structure contemporary public health systems. These systems are designed around standardized protocols and quantifiable metrics that obscure health's complex, relational dimensions (Kielmann et al. 2022). Global health performance indicators privilege what can be measured over what can be experienced, routinely excluding Indigenous healing traditions or reducing them to “cultural beliefs” rather than legitimate systems of ecological and spiritual knowledge. *Erpangir Ku Lau* does not conform to standardized clinical procedures, yet it fulfills a community's moral, ecological, and cosmological obligations—functions that remain illegible within prevailing health governance frameworks (Fokunang et al. 2011).

Even Western ecophilosophical traditions, which claim to challenge anthropocentrism, remain constrained by secular rationalist frameworks. Arne Naess' deep ecology asserts the intrinsic value of all life forms and emphasizes interconnectedness (1973), yet critics argue it subordinates Indigenous views to Western rationalism and reflects First World environmentalism disconnected from material struggles of communities dependent on ecosystems (Abrha 2019; Guha 1989). Hans Jonas' (1984) responsibility

ethics grounds environmental obligations in human rational capacity to anticipate consequences, positioning humans as sole moral agents rather than recognizing reciprocal relationships with nonhuman entities. Both approaches, despite rejecting anthropocentric hierarchy, privilege human cognitive processes and prevent integration of spiritual agency as constitutive elements of ecological ethics.

Pemena challenges this rationalist foundation by recognizing nonhuman entities as active participants in moral and ecological relationships. The *guru sibaso's* negotiations with *Jinujung spirits demonstrate that healing decisions emerge through dialogue with nonhuman agents, not solely through human deliberation*. The *perumah begu* ritual acknowledges ancestral spirits as ongoing participants in community governance, granting deceased entities continued agency in ecological affairs (Siburian 2019). These practices constitute “ritualized cosmopolitics”—environmental decisions that require ceremonial consultation with more-than-human agents who possess their own interests and decision-making capacities (Latour 2004; Stengers 2010). Where Western ecophilosophy debates nonhuman value theoretically, Pemena enacts multispecies political participation through ritual protocols.

The difference is ontological, not methodological. Pemena assumes ecological relationships require ongoing negotiation with spiritual agents whose agency directly affects human health and community well-being. This transforms environmental responsibility from abstract moral duty into concrete practice of maintaining relationships with spiritual agents inhabiting specific landscapes.

3. Toward Intercultural and Pluralistic Health Models: The Case of Pemena in Karo Regency

The healthcare landscape in Karo Regency demonstrates practical health pluralism, where traditional and biomedical services operate in parallel. Formal infrastructure

includes regional hospitals and *puskesmas* (public health centers) distributed across seventeen subdistricts. Yet traditional healers (*penyehat tradisional*) remain widely consulted, with 67% of practices involving skill-based healing such as fracture treatment (*patah tulang*) and traditional massage, 27% using herbal remedies (*ramuan*), and 6% employing combined methods (Ismedsyah & Sembiring 2019; Sembiring et al. 2020). Research documents approximately 100 registered traditional healers across the regency, although actual numbers likely exceed this, given that practitioners operate without formal recognition.

This dual system reflects genuine community reliance on traditional healing. Karo practitioners utilize 78 species of medicinal plants, processing them into preparations like *minyak Karo* (therapeutic oil applied through massage), *tawar* (herbal solutions consumed for wellness), and *kuning* (dried herbal preparations for respiratory ailments) (Ismedsyah & Sembiring 2019). Knowledge transmission occurs primarily through intergenerational transfer—research shows the majority of practitioners acquired expertise *turun temurun* (passed down through family lineages), with others learning through apprenticeship (*magang*) with senior practitioners. This mirrors broader patterns: one study found that Karo medicinal knowledge passes from parents or grandparents to descendants deemed talented enough to continue the practice, resulting in multi-generational healer families (Ismedsyah & Sembiring 2019).

Despite this widespread practice, traditional healing remains peripheral within official health planning. Indonesian Law No. 36 of 2009 recognizes traditional medicine as part of the national health system but conditions this recognition upon conformity with biomedical criteria for safety and efficacy (Indonesia 2009). Minister of Health Regulation No. 61/2016 requires traditional healers to obtain *Surat Terdaftar Penyehat Tradisional* (STPT—Traditional Healer Registration Certificate) and limits

permissible practices (Minister of Health 2016). Research in Karo Regency reveals significant implementation gaps: only eight of seventeen subdistricts have practitioners with STPT, and in the subdistrict with the highest concentration of healers (Mardingding, with 26 practitioners), zero possess legal registration (Ismedsyah & Sembiring 2019). Geographic distance from registration offices, lack of awareness about requirements, and perceptions that obtaining STPT is difficult all contribute to low compliance.

This regulatory framework fundamentally excludes Pemena practices. The STPT system recognizes skill-based methods (manual techniques, energy work) and herbal remedies, but makes no provision for spiritual mediation. Pemena healing, centered on guru sibaso negotiating with *begu* and *nini* spirits cannot be registered under categories designed for physical therapies. The practical result is nominal rather than transformative pluralism. Traditional healing exists alongside biomedicine but remains legally marginal, economically unsupported, and epistemically unrecognized. Practitioners operate in gray zones—tolerated but not legitimated, used but not integrated. For Pemena specifically, the cosmological foundations that make healing coherent simply do not exist within regulatory categories.

Recognizing Pemena as legitimate health knowledge demands more than bureaucratic accommodation. It requires institutional frameworks accepting fundamentally different ontologies of healing. Three principles offer guidance for such transformation.

Epistemic Integrity requires engaging knowledge systems holistically rather than extracting isolated components. Current approaches catalog Karo medicinal plants within ethnobotanical frameworks (Aritonang et al. 2024; Rahayu et al. 2024) but ignore the cosmological structures making plant use efficacious. One cannot extract *Erpangir Ku Lau* water therapy from the ontology of *nini* spirits inhabiting springs without rendering the practice incoherent. Biomedical validation studies asking

whether ritual bathing “works” according to clinical endpoints misunderstand what Pemena healing accomplishes—it restores cosmic relationships, not molecular pathways. Epistemic integrity would require recognizing that healing effectiveness in Pemena emerges through spiritual-ecological engagement, assessed by criteria internal to that system: restored social harmony, successful agricultural cycles, community well-being over time.

Intellectual Sovereignty safeguards Indigenous peoples’ rights to exercise control over their cultural and intellectual heritage, reflecting international instruments such as the United Nations Declaration on the Rights of Indigenous Peoples, which affirms rights to protect traditional knowledge and self-determine its use (United Nations General Assembly 2007). For Pemena, this means practitioners and communities—not biomedical validators or government bureaucrats—determine which practices are legitimate, how knowledge is transmitted, and under what conditions it may be shared or documented. Current regulations invert this: the state defines permissible “traditional medicine,” while Pemena practitioners must conform or risk being illegal. Intellectual sovereignty would position Pemena communities as authorities on their own healing systems, with regulatory frameworks that accommodate rather than constrain those systems.

Participatory Consent involves ongoing, dialogical processes in which Indigenous communities are active drivers throughout research and policy development, rather than merely being consulted (Beall 2022). There is no evidence that Pemena practitioners participated meaningfully in the design of Law 36/2009 or Regulation 61/2016. Genuine participation would involve Pemena representatives in regional health planning, budgeting for sacred site conservation, and developing legitimacy criteria appropriate to spiritual healing practices. These principles collectively respond to critiques of extractive research paradigms—termed epistemic

colonialism—where Indigenous knowledge was appropriated and disconnected from its social and cultural contexts (Smith 1999; Stanley et al. 2020).

For Pemena in Karo Regency, transformation would require amending Law 36/2009 to recognize legitimacy criteria beyond biomedical efficacy. This means creating registration pathways for *guru sibaso* that acknowledge their authority as spiritual mediators, whose healing works through cosmological negotiation, rather than clinical measurement. Sacred sites like *Lau Debuk-debuk* Springs, Kerangen Kuta Village forests, and Mount Sibayak require legal protection as healthcare infrastructure—their degradation destroys the healing capacity. Institutional practices would need to shift from superficial cultural competence toward genuine ontological education: biomedical practitioners in Karo communities must understand that *Erpangir Ku Lau* operates through the sacred agency of water and the participation of nini spirits, not through a placebo effect. Policy integration means Pemena representatives holding decision-making authority in regional health planning, positioned as co-architects rather than token consultants.

This requires funding for Pemena knowledge transmission—resources for apprenticeships, ceremony maintenance, and intergenerational teaching—which are currently unsupported, while biomedical students receive scholarships and professional pathways. *Guru Sibaso* spent years developing spiritual authorization through practices incompatible with market healthcare: this work sustains community health but generates no billable services. Ceremonies like *Merdang Merdem* serve as a form of health infrastructure that requires protection and support. Documentation projects should be led by Pemena practitioners who determine what knowledge gets recorded and accessed, reversing extractive research patterns. Health pluralism beyond rhetoric means recognizing and resourcing multiple healing ontologies, not forcing practitioners

into biomedical economics while celebrating diversity as abstraction.

Implementing these principles demands concrete legal and institutional reforms. International precedents demonstrate possibilities while revealing challenges. Malaysia's Traditional and Complementary Medicine Division, established under the Ministry of Health, recognizes traditional Malay healers (*bomoh*), Chinese medicine practitioners, and indigenous healers through separate registration pathways, acknowledging different knowledge systems. While imperfect, spiritual practices still face scrutiny; this plural framework avoids forcing all traditions into a single biomedical mould. The Philippines' Traditional and Alternative Health Care Act (1997) created the Philippine Institute of Traditional and Alternative Health Care, mandating research, development, and integration of traditional systems, including spiritual healing. These examples show state recognition of multiple healing ontologies remains possible within modern governance.

The deeper challenge is ontological: Can modern state institutions accommodate the radical pluralism required? Current health governance assumes health itself is universal—a biological state measurable through standardized indicators. Pemena reveals health as contextual, relational, and ontologically variable. Genuine pluralism means accepting that different communities inhabit different realities, where healing works through different mechanisms and requires different evaluation criteria. This challenges state desires for standardization, measurement, and control.

Realizing Pemena's potential requires institutional reform beyond academic recognition. Current Indonesian health legislation marginalizes Indigenous healing by conditioning legitimacy on biomedical validation, thereby undermining the epistemic foundations making these systems coherent. Legal frameworks must accommodate different ways of knowing rather than forcing Indigenous practices into biomedical categories. The Karo case demonstrates that ecological

and health ethics must emerge from lived relationships with place and community. Whether Indonesia's health governance can achieve this transformation remains an open question—but the philosophical possibility has been clearly demonstrated.

Conclusion

This article has demonstrated that Pemena, the traditional belief system of the Karo people, operates as a health philosophy grounded in relational ontology and spiritual agency. Where biomedical models treat health as individual and physiological, Pemena defines health through balanced relationships among humans, ancestral spirits (*begu*), guardian spirits (*nini*), and vital essence (*tondi*). Healing practices such as *Erpangir Ku Lau* and rituals mediated by *guru sibaso* restore balance through negotiation with nonhuman agents inhabiting springs, forests, and landscapes. Pemena challenges both biomedical reductionism and Western ecophilosophical frameworks anchored in secular rationalism. This represents not alternative medicine but alternative ontology—a fundamentally different understanding of what constitutes healing, agency, and therapeutic efficacy.

The case of Karo Regency reveals gaps between nominal and transformative health pluralism. Despite widespread reliance on traditional healing, Indonesian Law No. 36/2009 marginalizes these systems by conditioning legitimacy on biomedical validation, excluding practices grounded in spiritual negotiation. Realizing Pemena's potential requires institutional reform: legal frameworks accommodating different ways of knowing, protection for sacred sites essential to healing, formal recognition of *guru sibaso* as practitioners, and meaningful Pemena participation in health policy development. The Karo case demonstrates that ecological and health ethics must emerge from lived relationships with place and community, offering philosophical alternatives urgently needed as environmental and health crises intensify.

Statements

Author Contributions: Conceptualization, C.N.G. and K.I.; Methodology, J.N.G., T.S.; Validation, C.N.G.; Formal Analysis, J.N.G., C.N.G. and K.I.; Investigation, J.G.N. and C.N.G.; Writing – Original Draft Preparation, J.G.N., T.S. and K.I.; Writing – Review & Editing, K.I.; Visualization, T.S.; Supervision, C.N.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Data Availability Statement: Not applicable.

AI Tools Declaration: The authors declare that no artificial intelligence tools were used in the preparation of this manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Abrha, Mulafa. Hiluf. 2019. "Experiences of Deep Ecological Thinking in African Traditional Environmental Thought: A Philosophical Reflection in Perspective." *Journal of Philosophy, Culture and Religion* 45: 1–10. <https://doi.org/10.7176/JPCR/45-01>.
- Ahn, Andrew C., Muneesh Tewari, Chi-Sang Poon, and Russell S. Phillips. 2006. "The Limits of Reductionism in Medicine: Could Systems Biology Offer an Alternative?" *PLoS Medicine* 3 (6): e208. <https://doi.org/10.1371/journal.pmed.0030208>.
- Andayani, Trisni, Rumapea, Murni Eva and Sulian Ekomila. 2022. "Eksplorasi Kearifan Lokal Etnik Karo Dalam Pelestarian Ekosistem Sumber Mata Air Panas Sebagai Daya Dukung Wisata Alam Lau Sidebuk-Debuk Kabupaten Karo." *Buddayah: Jurnal Pendidikan Antropologi* 4 (2): 9–15.
- Aritonang, Anggi Chatie Yunida Lubis, Muhammad Fauzan, and Wawan Sujarwo. 2024. "Ethnopharmacology of Karo Oil as Traditional Medicine by the Karo Ethnic Group in Berastagi (North Sumatra), Indonesia." *Ethnobotany Research and Applications* 27: 1–43. <https://doi.org/10.32859/era.27.17.1-43>.
- Beall, Katherine M. 2022. "The Global South and Global Human Rights: International Responsibility for the Right to Development." *Third World Quarterly* 43 (10): 2337–2356. <https://doi.org/10.1080/01436597.2022.2098711>.

- Bedner, Adriaan, and Yance Arizona. 2019. "Adat in Indonesian Land Law: A Promise for the Future or a Dead End?" *Asia Pacific Journal of Anthropology* 20 (5): 416–434. <https://doi.org/10.1080/14442213.2019.1670246>.
- Beresford, Mark J. 2010. "Medical Reductionism: Lessons from the Great Philosophers." *QJM* 103 (9): 721–724. <https://doi.org/10.1093/qjmed/hcq057>.
- Berkes, Fikret. 2012. *Sacred Ecology*. New York: Routledge. <https://doi.org/10.4324/9780203123843>.
- Curry, Patrick. 2006. *Ecological Ethics: An Introduction*. Cambridge: Polity Press.
- Desjardins, Joseph R. 2006. *Environmental Ethics: An Introduction*. Belmont, MA: Wadsworth.
- Elendu, Chukwuka. 2024. "The Evolution of Ancient Healing Practices: From Shamanism to Hippocratic Medicine: A Review." *Medicine* 103 (28): e39005. <https://doi.org/10.1097/MD.00000000000039005>.
- Fokunang, C., V. Ndikum, O. Tabi, R. Jiofack, B. Ngameni, N. Guedje, E. Tembe-Fokunang, P. Tomkins, S. Barkwan, F. Kechia, E. Asongalem, J. Ngoupayou, N. Torimiro, K. Gonsu, V. Sielinou, B. Ngadjui, I. Angwafor, A. Nkongmeneck, O. Abena, and J. Lohoue. 2011. "Traditional Medicine: Past, Present and Future Research and Development Prospects and Integration in the National Health System of Cameroon." *African Journal of Traditional, Complementary and Alternative Medicines* 8 (3). <https://doi.org/10.4314/ajtcam.v8i3.65276>.
- Gani, Abdul Rasyid Fakhrun, Hastuti, Utami Sri, Sulisetijono, Sulisetijono and Frida Kunti. Setiowati. 2024. "Ethnobotanical Study of Medicinal Plants among the Karo Tribe in Kuala Sub-district, Langkat District, North Sumatra, Indonesia." *Biodiversitas Journal of Biological Diversity* 25 (7). <https://doi.org/10.13057/biodiv/d250717>.
- Government of Indonesia. 2009. Law No. 36 of 2009 on Health. <https://peraturan.bpk.go.id/Details/38778/uu-no-36-tahun-2009>.
- Guha, Ramachandra. 1989. "Radical American Environmentalism and Wilderness Preservation: A Third World Critique." *Environmental Ethics* 11 (1): 71–83.
- Ismedsyah, and Sri Agustina Sembiring. 2019. "Evaluasi Implementasi Regulasi Pelayanan Kesehatan Tradisional Empiris Oleh Penyehat Tradisional Di Kabupaten Karo." In *Seminar Nasional Teknologi Komputer & Sains (SAINTEKS)*, edited by Mesran, 182–186. Medan: STMIK Budi Darma.
- Jackson, Zakiyyah Iman. 2018. "Introduction: A Critical Bridging Exercise." In *Coloniality, Ontology and the Question of the Posthuman*, edited by Zakiyyah Iman Jackson, 1–17. New York: Routledge.
- Jonas, Hans. 1984. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*. Chicago: University of Chicago Press.
- Kielmann, Karina, Eleanor Hutchinson, and Hayley MacGregor. 2022. "Health Systems Performance or Performing Health Systems? Anthropological Engagement with Health Systems Research." *Social Science & Medicine* 300. <https://doi.org/10.1016/j.socscimed.2022.114838>.
- Kimmerer, Robin Wall. 2013. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*. Minneapolis: Milkweed Editions.
- LaDuke, Winona. 2008. "Traditional Ecological Knowledge and Environmental Futures." *Colorado Journal of International Environmental Law and Policy* 5 (1): 127–148.
- Latour, Bruno. 2004. "Whose Cosmos, Which Cosmopolitics? Comments on the Peace Terms of Ulrich Beck." *Common Knowledge* 10 (3): 450–462.
- Manalu, Rosliana Karolina, and R.M. Purba. 2020. "Overview of Health Behaviors Using Karo Traditional Medicine in Karo People in Medan City." *Indonesian Journal of Medical Anthropology* 1 (1): 22–25. <https://doi.org/10.32734/ijma.v1i1.4550>.
- Minister of Health. 2016. Minister of Health Regulation No. 61 of 2016 Concerning Empirical Traditional Health Services. <https://peraturan.bpk.go.id/Details/114472/permenkes-no-61-tahun-2016>.
- Naess, Arne. 1973. "The Shallow and the Deep, Long-Range Ecology Movement: A Summary." *Inquiry* 16 (1–4): 95–100. <https://doi.org/10.1080/00201747308601682>.
- Rahayu, Mulyati, Kalima, Titi, Martgrita, Merry Meryam and Muhamad. Nikmatullah. 2024. "Ethnobotany and Diversity of Citrus spp. (Rutaceae) as a Source of 'Kem-kem' Traditional Medicine Used among the Karo Sub-ethnic in

- North Sumatra, Indonesia." *Heliyon* 10 (9): e29721. <https://doi.org/10.1016/j.heliyon.2024.e29721>.
- Redvers, Nicole, and Brenda Blondin. 2020. "Traditional Indigenous Medicine in North America: A Scoping Review." *PLOS ONE* 15 (8): e0237531. <https://doi.org/10.1371/journal.pone.0237531>.
- Rolston, Holmes. 2012. *Environmental Ethics: Duties to and Values in the Natural World*. Philadelphia: Temple University Press.
- Rosramadhana. 2016. "Ritual Erpangir Ku Lau pada Etnis Karo di Desa Kuta Gugung Kecamatan Naman Teran Kabupaten Karo." *JUPIIS: Jurnal Pendidikan Ilmu-Ilmu Sosial* 13 (1): 8. <https://doi.org/10.24114/jupiis.v8i1.5111>.
- Sembiring, Sri Agustina, R. Hamdani Harahap, and Amri Amir. 2020. "Traditional Healthcare and Patient Response Services in Karo Regency." *Indonesian Journal of Medical Anthropology* 1 (1): 26–30. <https://doi.org/10.32734/ijma.v1i1.4551>.
- Setiawan, Bambang. 2014. "Ketahanan Budaya Penganut Pemena Pada Etnis Karo, Sumatera Utara." In *Ketahanan Budaya: Pemikiran dan Wacana*, 69–95. Jakarta: Pusat Penelitian dan Pengembangan Kebudayaan Balitbang.
- Shlyakov, Aleksey V. 2024. "Identification Strategies in Poststructuralist Anthropology by Philippe Descola." *Chelovek* 35 (3): 63–79. <https://doi.org/10.31857/S0236200724030044>.
- Siburian, Esra Pt. 2019. "Music in Perumah Begu Ritual of Karo Tribe (Study of Form and Music Functions)." *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences* 2 (2): 313–320. <https://doi.org/10.33258/birci.v2i2.265>.
- Sieler, Roman. 2014. "Patient Agency Revisited: 'Healing the Hidden' in South India." *Medical Anthropology Quarterly* 28 (3): 323–341. <https://doi.org/10.1111/maq.12067>.
- Smith, Linda Tuhiwai. 1999. *Decolonizing Methodologies: Research and Indigenous Peoples*. London: Zed Books. <https://doi.org/10.2307/2653993>.
- Stanley, Linda R., Randall C. Swaim, Joseph Keawe'aimoku Kaholokula, Kathleen J. Kelly, Annie Belcourt, and James Allen. 2020. "The Imperative for Research to Promote Health Equity in Indigenous Communities." *Prevention Science* 21 (S1): 13–21. <https://doi.org/10.1007/s11121-017-0850-9>.
- Stengers, Isabelle. 2010. *Cosmopolitics*. vol 1. Minneapolis: University of Minnesota Press.
- The Merck Research Lab. 2020. "Philosophy of Biomedicine." *Stanford Encyclopedia of Philosophy*. <https://plato.stanford.edu/entries/biomedicine/>.
- United Nations General Assembly. 2007. United Nations Declaration on the Rights of Indigenous Peoples. <https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html>.
- Yasir, Y., Y. Firzal, C. Yesicha, and A. Sulistyani. 2022. "Environmental Communication Based on Local Wisdom in Forest Conservation: A Study on Sentajo Forbidden Forest, Indonesia." *Journal of Landscape Ecology* 15 (2): 127–145. <https://doi.org/10.2478/jlecol-2022-0014>.