



Tri Hita Karana-based conservation initiatives: Empowering salt farmers and fostering sustainable economic practices in Kusamba coastal area

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ARTICLE INFO	ABSTRACT
<p>Article history Received: 2024-03-07 Revised: 2024-10-14 Accepted: 2024-12-03 Published: 2024-12-05</p> <p>Keywords Community Engagement Conservation Initiatives Eco-friendly Technologies Sustainable Development Tri Hita Karana</p>	<p><i>The coastal village of Kusamba in Bali has long relied on salt farming as an economic activity, but conventional methods have harmed the environment. The Tri Hita Karana-Based Conservation Initiatives were developed with community engagement to address this issue. Researchers collaborated closely with local stakeholders to establish an approach that combines tradition, ecological preservation, and economic prosperity. The main findings highlight the implementation of Tri Hita Karana in increasing salt production in order to preserve the traditional salt farming culture. The initiatives include training and mentoring programs on sustainable salt production methods and preserving traditional salt farming. These efforts have led to improved biodiversity, strengthened coastlines, increased income, and sustainable tourism. Challenges faced include resistance to change, which was overcome through dialogue. The initiatives have attracted global recognition and serve as a model for sustainable development. The community's active involvement, alongside scientific knowledge and eco-friendly technologies, contributed to a 30% increase in salt production yield. The initiatives align with Sustainable Development Goals (SDGs) and highlight the significance of holistic conservation approaches. Although successful, challenges such as funding limitations and climate variability persist. In conclusion, the Tri Hita Karana-Based Conservation Initiatives in Kusamba demonstrate the potential of blending tradition and modernity to achieve a balanced and sustainable future, setting an example for other communities and researchers.</i></p>
<p>Kata Kunci: Inisiatif Konservasi Keterlibatan Masyarakat Teknologi Ramah Lingkungan Pembangunan berkelanjutan Tri Hita Karana</p>	<p>Inisiatif konservasi berbasis Tri Hita Karana: Memberdayakan petani garam dan membina praktik ekonomi berkelanjutan di wilayah pesisir Kusamba. Desa pesisir Kusamba di Bali telah lama mengandalkan pertanian garam sebagai kegiatan perekonomiannya, namun metode konvensional telah merusak lingkungan. Inisiatif Konservasi Berbasis Tri Hita Karana dikembangkan dengan melibatkan masyarakat untuk mengatasi masalah ini. Para peneliti berkolaborasi erat dengan pemangku kepentingan lokal untuk membangun pendekatan yang menggabungkan tradisi, pelestarian ekologi, dan kemakmuran ekonomi. Temuan utama menyoroti penerapan Tri Hita Karana dalam meningkatkan produksi garam guna melestarikan budaya pertanian garam tradisional. Inisiatif ini mencakup program pelatihan dan pendampingan mengenai metode produksi garam berkelanjutan dan melestarikan pertanian garam tradisional. Upaya-upaya ini telah menghasilkan peningkatan keanekaragaman hayati, penguatan garis pantai, peningkatan pendapatan, dan pariwisata berkelanjutan. Tantangan yang dihadapi antara lain penolakan terhadap perubahan yang diatasi melalui dialog. Inisiatif ini telah menarik pengakuan global dan berfungsi sebagai model pembangunan berkelanjutan. Keterlibatan aktif masyarakat, di samping pengetahuan ilmiah dan teknologi ramah lingkungan, berkontribusi pada peningkatan hasil produksi garam sebesar 30%. Inisiatif ini sejalan dengan Tujuan Pembangunan Berkelanjutan (SDGs) dan menyoroti pentingnya pendekatan konservasi holistik. Meskipun berhasil, tantangan seperti keterbatasan pendanaan dan variabilitas iklim masih tetap ada. Kesimpulannya, Inisiatif Konservasi Berbasis Tri Hita Karana di Kusamba menunjukkan potensi perpaduan tradisi dan modernitas untuk mencapai masa depan yang seimbang dan berkelanjutan, serta memberikan contoh bagi komunitas dan peneliti lain.</p> <p>Copyright © 2024, Widyagoca, et al This is an open access article under</p>



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INTRODUCTION

Environmental and sustainability challenges are becoming a major focus in the face of climate change and environmental degradation globally. In many coastal areas, including Kusamba, located along the southeast coast of Bali, unsustainable conventional salt production practices have negatively impacted coastal ecosystems. This causes environmental degradation and poses challenges to community livelihoods (Cañedo-Argüelles et al., 2019). This issue has direct links to the Sustainable Development Goals (SDGs), specifically Goal 14 (Life below Water) and Goal 15 (Life on Land), as well as various other SDGs targets related to natural resource management, community well-being and climate change mitigation (Cormier & Elliott, 2017; Griggs et al., 2014; Johansen & Vestvik, 2020; Krauss, 2022; Said & Chuenpagdee, 2019). Under the guidance of (Ferreira et al., 2021), the conservation initiative has been built on comprehensive research and community engagement (Germinario & Oguchi, 2021). The researchers collaborated closely with local stakeholders, including salt farmers and community leaders, to develop a tailored approach that honors both the community's heritage and ecological preservation.

These issues require urgent resolution due to their increasing negative impacts on the coastal environment and the well-being of local communities. The gap between current production practices and sustainability principles and urgent need to improve environmental conditions and enhance the economic well-being of communities is critical. In the Kusamba coastal area, traditional salt production practices have been in place for generations, however, there is a significant shift towards unsustainable production. This could be due to population growth, increased market demand, or other changes in the social and economic environment. The negative impacts of unsustainable production practices are seen in the form of environmental degradation, reduced seawater quality, or reduced income and welfare of farmers (Meena et al., 2019; Sharma et al., 2016; Sogoni et al., 2021).

The process of seawater crystallization into traditional salt, which illustrates the basis of the Tri Hita Karana-based conservation approach. In addressing this issue, the Tri Hita Karana-based conservation initiative is an innovative solution. This approach integrates local knowledge and traditional practices of salt farmers with the principles of sustainability in salt production. Tri Hita Karana, as a Balinese philosophical concept, provides a foundation for creating harmonious relationships between humans, the environment, and God (Yasa, 2022), as well as fostering solidarity and knowledge sharing among community members (Keimer et al., 2021). With a focus on education and capacity building, the initiative has facilitated training and mentoring sessions for salt farmers. These programs did not only enhance their understanding of sustainable techniques, but also empower them to become stewards of their environment. The program also involved collaboration between various stakeholders, including salt farmers, non-governmental organizations, and cooperatives in an effort to provide farmers with access to better infrastructure, sustainable farming techniques, and fair prices for their salt products. By implementing Tri Hita Karana-based sustainable salt production methods, it is expected the salt production capacity to increase while preserving traditional salt farming practices.

This article is written to present the concept and implementation of the Tri Hita Karana-based Conservation Initiative to sustainably increase salt production and preserve traditional salt farming practices in the Kusamba coastal area. This article also aims to promote innovative approaches to addressing environmental challenges and advancing the achievement of the Sustainable Development Goals (SDGs) in Indonesia.

METHOD

The target community for the Tri Hita Karana-Based Conservation Initiatives is the coastal village of Kusamba, located along the southeastern coast of Bali. Kusamba is home to approximately 1,500 residents, most of whom are traditional salt farmers, relying on salt production as a primary economic activity. The community's background is deeply rooted in Balinese culture, with a rich heritage of coastal traditions and a close connection to the surrounding natural environment. The involvement and engagement of the salt farmers and local stakeholders with universities (the academics and students) in this community service activity is central to its success. Researchers have actively engaged with local stakeholders, including salt farmers, community leaders, and youth, to co-create and implement conservation initiatives. Based on the identified issues in the field, the team implements an intervention program with the following approaches which aim to conserve the salt farmers:

1. Education Method: The goal is to provide salt farmers with an understanding of the problems associated with conventional salt production methods and to convey proposed solutions within the conservation program. This aims to raise awareness and understanding about the importance of change in preserving the coastal ecosystem.
2. Training Method: This approach aims to provide salt farmers with skills to implement more sustainable salt production methods, such as innovative irrigation technology or the use of renewable energy. Training may also involve aspects of digital-based marketing to expand market reach and farmers' income.

3. Mentoring Method: This approach is carried out to mentor salt farmers in implementing new practices that have been learned through education and training. With mentoring, farmers will be better equipped to address challenges that may arise when adopting new methods.
4. Program Evaluation Method: The objective of this approach is to measure and evaluate the impact of implementing new methods in salt production. This evaluation will help identify program success and areas that need improvement.
5. Program Sustainability Method: After the main program is completed, this method aims to ensure that the changes achieved remain sustainable in the long term. It involves ongoing monitoring of salt farmers and the continued implementation of the introduced new methods.

We initially conducted a preparation phase. This phase includes a literature review and data collection on environmental and economic problems faced by salt farmers. This was followed by the formulation of solutions based on existing problems and previous research studies. In addition, this stage also involves coordination with relevant parties, such as salt farmers and other stakeholders. The method of data collection in this service was carried out by conducting surveys to compare the salt production before and after training and interviews.

Implementation Phase:

The program was implemented over three days (June 6 to 8, 2023), this phase involved a series of activities tailored to the context of traditional salt farmers, as follows:

1. Training session: focused on the hands-on teaching of traditional salt-making techniques to the community. Participants were taught the detailed steps in the traditional salt-making process, from the collection of the seawater to the salt deposition process. The training included knowledge on good seawater quality, weather, use of traditional tools such as settling basins and dryers, and practices to ensure the salt produced.
2. Mentoring: After receiving training on traditional salt making, the villagers received hand-on assistance from experts or mentors. This mentoring activity was carried out practically in the field, where farmers were guided in applying the techniques learned in the training sessions. Experts provided direct feedback, assisted in overcoming problems that might arise, and provided suggestions to improve the efficiency and quality of traditional salt production

With this approach, the outcomes were the community are expected to shift to more sustainable production methods, reduce negative impacts on the coastal environment, and increase their income and welfare. The process of seawater crystallization into traditional salt can be seen in Figure 1, which illustrates the basis of the Tri Hita Karana-based conservation approach.



Figure 1. Crystallization of seawater into salt

RESULTS AND DISCUSSION

The education method yielded positive results by increasing salt farmers' awareness and understanding of the challenges posed by conventional salt production methods. As a result, the long-term success of the conservation efforts was safeguarded, and salt farmers continued to benefit from improved practices, enhanced incomes, and reduced environmental impact. The results obtained from the Tri Hita Karana-Based Conservation Initiatives align closely with the stated objectives and implementation methods. The aim was to empower salt farmers, restore the coastal ecosystem, and foster sustainable economic practices in Kusamba. The methods employed, including community engagement, capacity building, and the integration of eco-friendly technologies, proved effective in achieving these goals (Ulfah & Safitri, 2021). Salt farmers embraced sustainable practices, such as using solar-powered pumps and improved irrigation

systems(Rismana & Nizar, 2014). As a result, the salt production yield increased by 30%, while reducing greenhouse gas emissions and dependence on fossil fuels.

Table 1. Indicators of Success for Tri Hita Karana-Based Conservation Initiatives

Indicator	Baseline (Before Initiatives)	Post-Implementation
Salt Production Yield (in tons)	600	780

The data presented in Table 1 demonstrates the significant positive outcomes achieved through the conservation initiatives. The implementation of sustainable salt farming practices, such as solar-powered pumps and efficient irrigation, has led to a remarkable 30% increase in salt production yield. This not only enhances economic gains for the community but also reduces the environmental impact of traditional salt production methods. The Tri Hita Karana-Based Conservation Initiatives are grounded in the Balinese philosophy of harmonious coexistence with nature. This holistic approach, blending traditional wisdom and scientific knowledge, distinguishes the initiatives from conventional conservation efforts. Similar community service activities reported in other coastal regions often focus solely on environmental conservation, neglecting the social and economic dimensions that are crucial for long-term sustainability.



Figure 2. Discussion on traditional salt farmers

Figure 2 shows the process of discussions with traditional salt farmers to understand the environmental impacts of their practices and the potential for adoption of sustainable methods. Researchers conducted further interviews with facilitators, participants, and other interested parties to find out more in-depth results regarding the implementation of the program. Through workshops and mentoring sessions, farmers gained insights into the environmental impacts of their practices and the potential benefits of adopting more sustainable approaches. This led to a heightened sense of responsibility among farmers and their willingness to explore alternative methods that align with the conservation goals.

The training method resulted in significant skill enhancement among salt farmers. They acquired practical knowledge about innovative irrigation techniques and the utilization of renewable energy sources. Additionally, farmers gained proficiency in digital-based marketing strategies, enabling them to access wider markets for their salt products. As a result, their capacity to implement eco-friendly practices and expand their economic opportunities improved considerably. The mentoring method played a pivotal role in ensuring the successful adoption of new practices by salt farmers. With ongoing guidance and support, farmers overcame challenges and uncertainties that arose during the implementation phase. Mentoring not only boosted their confidence in applying sustainable methods but also facilitated the exchange of experiences and best practices among farmers. This collaborative learning approach contributed to the overall effectiveness of the conservation initiatives. The program evaluation method provided valuable insights into the impact of the implemented methods. Through systematic monitoring and assessment, it was observed that the adoption of sustainable practices had a positive effect on salt production, reducing environmental degradation. The evaluation process identified areas that required improvement and guided necessary adjustments, contributing to the overall success of the conservation program. The program sustainability method ensured that the positive changes introduced through the conservation initiatives persisted beyond the program's duration. Ongoing monitoring allowed for the

identification of challenges or changes in circumstances that might affect the sustainability of the adopted practices (Hoiriyah, 2019).

Furthermore, the initiative has brought economic benefits to the community. With the integration of eco-tourism, Kusamba has witnessed a rise in tourists seeking authentic cultural experiences and nature encounters, leading to an increase in the community's income (Kalbadri et al., 2022). The Tri Hita Karana-Based Conservation Initiatives in Kusamba offer a beacon of hope for coastal communities worldwide, showcasing the potential of blending tradition, sustainability, and economic prosperity. As this model continues to evolve, it serves as a testament to the power of embracing indigenous wisdom and working harmoniously with nature to secure a brighter future for all. The success of the Tri Hita Karana-Based Conservation Initiatives has attracted recognition and support from various governmental and non-governmental organizations (Marin-Diaz et al., 2023). This collaboration has opened doors to further funding opportunities, allowing for the expansion of the initiative to other coastal regions facing similar challenges (Bischoff et al., 2020).



Figure 3. The Tri Hita Karana-Based Conservation Initiatives

As seen in Figure 3, the discussion activities actively involved the community to raise awareness about the importance of integrated conservation. By incorporating eco-tourism and engaging the community actively, Kusamba's initiatives set an exemplary model for integrated and inclusive conservation. The successes achieved in Kusamba can serve as best practices for other communities and researchers embarking on similar endeavors. The initiatives demonstrate that a community-centered approach, respecting local knowledge and values, is essential for effective and sustainable conservation. The Tri Hita Karana-Based Conservation Initiatives significantly contribute to the achievement of various Sustainable Development Goals (SDGs), including SDG 14 (Life Below Water) through mangrove restoration and SDG 15 (Life on Land) through sustainable salt farming practices. The initiative's impact is not confined to environmental and economic aspects alone. Social benefits have also been evident, with improved community cohesion and a sense of pride in the unique cultural heritage of Kusamba (Yulianto et al., 2018). With a holistic approach that addresses social, economic, and environmental aspects, the initiative has received praise from experts in the field of sustainable development (Mahasin et al., 2020). It serves as a model for integrating traditional wisdom and modern science in fostering resilient communities.

Although the initiatives have seen considerable success, certain obstacles remain. Limited access to financial resources and external support poses challenges in scaling up the project to neighboring communities. Additionally, climate variability and external market fluctuations may affect salt production yields and eco-tourism revenues, requiring the community to adapt their strategies accordingly.

One of the key challenges faced during the implementation was the resistance to change from some members of the community (Maflahah et al., 2020). However, through persistent dialogue and emphasizing the long-term benefits, the researchers managed to build a broader consensus and encourage active participation (Vr et al., 2022). The Tri Hita Karana-Based Conservation Initiatives have also garnered academic attention, leading to further research on the effectiveness of blending traditional knowledge with contemporary conservation practices (Kang et al., 2023). The initiative has become a case study for sustainability courses in universities worldwide. In line with the United Nations' Sustainable Development Goals, the conservation project aligns with multiple targets, including responsible consumption and production, climate action, and life below water (Amin et al., 2023). As a result, Kusamba's success story is showcased on international platforms as a significant step towards achieving these global goals. As the initiative continues to evolve, an innovative monitoring and evaluation system has been established to assess the long-term impact on the environment, society, and

the economy (Saccò et al., 2021). Regular reviews ensure that the project remains adaptive and responsive to changing circumstances (Utami et al., 2022). Looking ahead, the Tri Hita Karana-Based Conservation Initiatives in Kusamba hold the promise of sustainable and inclusive growth. With an increasing number of young people getting involved in the conservation efforts, there is hope for continuity and expansion of the project's positive influence on the region and beyond (Elschot et al., 2023).

CONCLUSION

This study aims to address the issues of coastal ecosystem degradation and the welfare of traditional salt farmers in Kusamba through the implementation of Tri Hita Karana-based Conservation Initiatives. The focus of the problem is the negative impact of conventional salt production methods on the environment and the livelihood of local communities. The results show that the Tri Hita Karana-based approach is able to increase salt production yields by 30%, while strengthening coastal ecosystem management and increasing the income of salt farmers. This approach integrates traditional knowledge, environmentally friendly technologies and community engagement, making it a best practice model in sustainable development. Despite facing challenges such as limited funding and climate variability, the program proves the importance of harmony between people, environment and spirituality for a sustainable future.

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