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# THE ROLE OF HEXA HELIX IN THE DEVELOPMENT OF SUSTAINABLE TOURISM IN KOTO SANI VILLAGE SOLOK REGENCY

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## ABSTRACT

Development tourist moment This No only improvement - oriented amount visit tourists , but also have to notice aspect sustainability through balance between interest economic , social culture , environment , and governance destination . Nagari Koto Sani, Solok Regency is an area that has various potential tour nature , culture , and economy society , but its development Still face challenge especially in aspect stakeholders interests . Research This aim For analyze role Hexa Helix actor in development tourism in Nagari Koto Sani, Solok Regency and identify the role of each actor inner hexa helix support sustainability destination . Research use approach qualitative with method studies case . Data obtained through observation , interviews , and documentation with involving element government , academics , actors business , society , media, and institutions local . Data analysis was carried out through stages data reduction , data presentation , and data extraction conclusion . Research results show that all over Hexa Helix actor has own role in development Koto Sani Village Tourism . Government play a role as regulator and facilitator , the community as manager destination , academics as provider knowledge and innovation , actors business as driving force economy local , media as supporters promotions , as well as institutional local as amplifier mark social culture . However , the role of each actor Still not optimal because Not yet existence coordination integrated , division clear roles and work programs sustainable togetherness .

**Keywords:** Hexa Helix; Tourism Sustainable; Stakeholders;

## INTRODUCTION

Tourism sector is one of the sector strategic that has contribution important to development area through improvement income society, creation field work, and development potential local (Kurniawan, 2024; Mauliyanti et al., 2024; Rangkuti, 2023). However, the paradigm development tourist moment. This experience change from an approach that only growth - oriented economy going to a more approach sustainable tourism sustainable emphasize balance between utilization source Power economy, conservation social culture public local, protection environment, as well as sustainability of governance destination (UNWTO, 2017). According to the Global Sustainable Tourism Council (GSTC), sustainability destination tour can seen through a number of aspect main , namely management

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destination in a way sustainable management, sustainability social economy (socio-economic sustainability), sustainability culture (cultural sustainability), and sustainability environmental sustainability (GSTC, 2025). Therefore that , development destination tour No only need Power pull tourism, but also requires system capable management involving various stakeholders interest .

Complexity development tourist cause government No can Work in a way Alone in manage destination . Involvement various actor like community , perpetrators businesses , academics , media, and organizations social become factor important in create development sustainable tourism. Roxas (2020), explains that success development destination tour sustainability is greatly influenced by the ability of stakeholders in operate their respective roles through coordination, regulation, conservation and empowerment public. Stakeholder theory explains that success something development influenced by ability in manage connection with various the party that owns interest to a program. Freeman et al (2019), stated that connection between stakeholders is necessary directed at creation mark together (shared value creation) through Work same and management diverse interests. In the field tourism, the role of Hexa Helix is increasing Lots used For understand pattern connection inter-actor in management destination. Fajri et al (2022), stated that application of Hexa Helix in tourist aim build collaboration synergistic through distribution clear roles between actors. Next, Octavianto et al (2024), showed that success development tourist sustainability is greatly influenced by the ability of stakeholders in build integration, coordination and commitment together.

Nagari Koto Sani is one of the areas that has potential big For developed as destination tour based community. This village located in X Koto Singkarak District, Solok Regency, West Sumatra, and has various potential tour natural and culture. Some Power pull main thing that is owned namely Aia Angek in Jorong Padang Belimbing and Lake Tuo in Jorong Ujung Ladang which have been set as object tour featured by the Tourism Office Solok Regency (Nofrion et al., 2023). Besides tourism nature, Nagari Koto Sani also has potential culture in the form of tradition Malamang , grilled fish, culinary typical area, Adok Dance, Randai Ilau, and House the tower that is still maintained as part from identity Minangkabau culture. Potential the become important capital in development tourist based culture and society. Although own great potential , development tourism in Nagari Koto Sani is still face a number of problem. Based on observation beginning research , found that management Power pull tour not optimal, capacity source Power man tourist Still limited, promotion destination Not yet maximum, and the role of stakeholders has not integrated in a way systematic. Condition the show that challenge main development tourist No only related with potential destination , but also how building governance interfactors.

The application of the Hexa Helix model in Nagari Koto Sani also has characteristics individual elements sixth in Hexa Helix no only understood as organization formal non-governmental , but customized with condition local through approach institutional local . Institutional local like The Village Customary Council (KAN) and Bundo Kanduang, have role important in guard mark social culture, regulate connection society , and strengthen action collective (SCOTT, 2014). Based on condition said , research This aim For analyze role Hexa Helix actor in development tourism in Nagari Koto Sani, Solok Regency.

## LITERATURE REVIEW

### Hexa Helix

The Hexa Helix is an evolution of the Triple Helix model. Originally proposed by Etzkowitz and Leydesdorff in 1995, the Triple Helix model focused exclusively on collaboration between government, academia, and the business sector. In 2010, it evolved into the Quadruple Helix model, which introduced civil society and the media as a fourth helix. By

2014, the Quintuple Helix model emerged, expanding the scope further by incorporating the natural environment as a fifth helix (Fajarudin et al., 2024; Firmansyah et al., 2021). Subsequently, in 2017, the Penta-Helix model was introduced; it simplified the Quintuple Helix by subsuming the "natural environment" into the "society" helix. The Penta-Helix model comprises academia, business, the community, government, and mass media (Azwar et al., 2025; Basri et al., 2025; Fajarudin et al., 2024; Sufandy, 2024; Zakaria et al., 2022). Rachim et al (2020), defined the Hexa Helix as consisting of government, the business sector, universities, NGOs (non-governmental organizations), mass media, and society.

In the development of sustainable tourism, the "Hexa Helix" approach is considered capable of strengthening synergy among stakeholders, ensuring that development is not solely oriented toward economic growth but also accounts for social, cultural, and environmental aspects. Each actor performs a complementary function ranging from policy formulation, scientific advancement, investment, and community empowerment to information dissemination, advocacy, and oversight. The Hexa Helix concept serves as a development alternative that can address the intersection of tourism and environmental sustainability while fostering prosperity (TODA et al., 2024). According to Warsono (2020), the Hexa Helix collaboration represents a new paradigm involving six key actors: (1) the government; (2) the business sector; (3) universities; (4) non-governmental organizations (NGOs); (5) mass media; and (6) the community. Engaging stakeholders from various sectors extending beyond the government to include tourism operators and local communities allows for a more effective enhancement of the benefits derived from tourism (Komalasari & Herwangi, 2023).

Based on these expert perspectives, it can be concluded that the Hexa Helix is a multi stakeholder collaboration model involving six primary actors government, academia, the business sector, the community, the media, and non-governmental organizations (NGOs) who work synergistically through collaboration, coordination, participation, communication and the division of roles to achieve sustainable development goals. In this study, the Hexa Helix model is used as a framework to analyze collaboration among stakeholders in the development of sustainable tourism in Nagari Koto Sani, Solok Regency.

**The Role of the Hexa Helix**

The government plays a key role in the tourism "hexa helix" framework, acting as both a regulator and a facilitator (Syahbudi & Ma., 2021). Through strategic policies, regulations, and budget allocations, the government establishes a framework that supports the development of sustainable tourism. It functions as a regulator and facilitator by formulating policies, conducting development planning, and providing infrastructure as well as institutional support (Fajarudin et al., 2024). The government's role is primarily directed toward tourism development policy (Sufandy, 2024) and the creation of regulations (Agatha & Pratama, 2025; Yuningsih et al., 2019). According to Sufandy (2024), Kartika et al. (2024), and Fajarudin (2024), the government's role as a regulator involves crafting policies, preserving local culture, and establishing the legal framework for tourism encompassing regulations at both the national (central) and regional levels, as well as standards that support collaborative programs. Furthermore, the government acts as a facilitator by enhancing infrastructure development such as road access, public utilities (electricity and water), and tourism-related facilities (transportation)—while also providing administrative support and handling permits for tourism management. Additionally, the government serves as a budget provider, offering financial assistance and allocating funds to tourism destinations.

The role of academics encompasses the advancement of knowledge (Agatha & Pratama, 2025; Yuningsih et al., 2019). Academics contribute through research, development, and the dissemination of insights and best practices in education to foster the progress of the tourism sector. Furthermore, they provide essential data and expertise, helping to identify

challenges and opportunities within the tourism industry, while offering advice and recommendations for further development (Agatha & Pratama, 2025; Azwar et al., 2025; Fajarudin et al., 2024; Kartika et al., 2024; Rinjani et al., 2025; Yudithia et al., 2024). Sumarni (2025), within the "hexa-helix" strategy, academics contribute by offering perspectives, concepts, frameworks, and ideas implemented through the "Tri Dharma" (three pillars) of higher education, specifically in the areas of research and community service. Research findings can be translated into applied models for "partner villages" (desa binaan) that are developed into tourist villages. Sufandy (2024), notes that academics act as catalysts for innovation based on their research outcomes, while Firmansyah (2021), highlights their role as educational institutions. In summary, academics serve as key actors in the Hexa-Helix framework, generating knowledge, research, and evidence-based innovations and recommendations, while also contributing to human resource development through education, training, and community service. By executing the Tri Dharma of higher education, academics support the development of sustainable tourism by providing data, scientific studies, concepts, and innovative solutions applicable to destination management, while simultaneously strengthening collaboration among stakeholders.

Business entities serve as the driving force of the economy within the tourism sector by providing relevant products and services, such as accommodation, transportation, tourist attractions, and food (Serviani et al., 2024). They frequently act as partners in government initiatives designed to promote specific tourist destinations (Wirdawati, 2024). Businesses play a role in fostering local economic progress (Agatha & Pratama, 2025; Yuningsih et al., 2019). and act as catalysts for investment, promotion, and job creation (Kartika et al., 2024). Sufandy (2024), notes that business units function as economic facilitators. Furthermore, Firmansyah (2021) describes business entities including micro, small, and medium-sized enterprises (MSMEs) as enterprises that are connected to the market. It can therefore be concluded that business entities are key actors within the "Hexa Helix" framework, driving the economy through the provision of tourism products and services, job creation, increased investment, and the development of innovations and business partnerships.

The community, according to Hidayaturrahman (2021), refers to groups of people living in the vicinity of a tourist destination. In a broader sense, this can encompass youth organizations (youth organization or village youth groups), tourism awareness groups (Pokdarwis), women's groups, or the general public. Azwar (2023) identifies the local community as a significant tourism stakeholder. Sufandy (2024), states that the community acts as an actor that experiences the direct impacts of tourism development while also performing a monitoring (oversight) function. The community can participate actively in the planning and implementation phases from the initial drafting of plans and decision-making to the execution of tourism development programs. The local community serves as the primary actor in identifying the potential, needs, and challenges of a destination, thereby providing input for both the planning and implementation of tourism activities (Fajarudin et al., 2024; Kartika et al., 2024; Sumarni et al., 2025). It can thus be concluded that the community is a key actor within the "Hexa Helix" framework, acting simultaneously as a participant in and a beneficiary of tourism development. The community contributes to the planning, execution, management, monitoring, and preservation of a destination's natural, cultural, and environmental resources. Furthermore, the community acts as a bridge between various stakeholders through active participation in organizations such as Tourism Awareness Groups (Pokdarwis), youth groups, family welfare organizations (PKK), and other community-based groups.

Media acts as a strategic player in the dissemination of information, the promotion of destinations, and the shaping of tourism imagery at both local and global levels ((Fajarudin et al., 2024). Media plays a key role in spreading information (Agatha & Pratama, 2025; Yuningsih et al., 2019). Sumarni (2025)asserts that media is vital as a promotional tool, ensuring that information is delivered more effectively reaching consumers and relevant

stakeholders for instance, through collaborations with influencers. Sufandy (2024) notes that media functions as an actor responsible for disseminating information and promoting destinations, helping to cultivate a positive regional image through storytelling, branding, and publication (Sumarni et al., 2025). It can therefore be concluded that media serves as one of the actors within the "hexa helix" framework, acting as a conduit for information, a promotional instrument, and a shaper of a positive image for tourism destinations. Through various channels both conventional and digital media conveys information regarding the potential, attractions, and development of tourism destinations to the public and travelers. Furthermore, media contributes to building a destination's image through promotional activities, branding, storytelling, and publication, thereby enhancing its appeal, fostering trust, and stimulating tourist interest.

Non-Governmental Organizations (NGOs) act as social facilitators, bridging the interests of the community, the government, and other stakeholders through empowerment, guidance, advocacy, and the strengthening of community capacity for sustainable development (Rachim et al., 2020; Warsono, 2020). Nevertheless, the specific roles of actors within the "hexa helix" model can be adapted to the local conditions and needs of a given region (Sufandy, 2024). In Nagari Koto Sani, this function is represented through local institutions such as the *Kerapatan Adat Nagari* (KAN) and *Bundo Kanduang*, which serve to uphold customary values, provide input for development policies, and strengthen community engagement in various locally-based development programs (Syafril et al., 2021). It can therefore be concluded that non-governmental organizations (NGOs) act as social facilitators, guardians of local values, and catalysts for collaboration among stakeholders in the development of sustainable tourism.

**Sustainable Tourism Development**

Tourism development can be described as efforts or activities undertaken to enhance the quality and quantity of tourist attractions (Wirdawati, 2024). Chaerunissa (2020), tourism development consists of coordinated initiatives designed to improve services and infrastructure, with the goal of increasing the number of tourists. Such development requires a "hexa-helix" collaboration to foster integrated economic, social, and environmental sustainability (TODA et al., 2024). Sustainable tourism refers to tourism that considers its economic, socio-cultural, and environmental impacts both in the present and for the future (Wibowo & Belia, 2023).

In essence, sustainable tourism involves developing the sector to meet the needs of tourists while ensuring that the environment remains preserved and that benefits are generated for both the present and the future (Sulistyadi et al., 2017). Sustainable tourism is defined as a development process that accounts for economic, socio-cultural, and environmental impactsfor both current and future generations while simultaneously addressing the needs of tourists, the industry, and local communities (Wibowo & Belia, 2023). Minister of Tourism Regulation Number 9 of 2021 states that sustainable tourism is tourism that takes into account current and future economic, social, and environmental impacts; addresses the needs of visitors, the industry, the environment, and local communities; and can be applied to all forms of tourism activities across all types of tourist destinations, including mass tourism and various other types of tourism activities.

Komalasari (2023), the reduction of sustainable tourism indicators yields four primary dimensions: economic, socio-cultural, environmental, and management. As stated by the UNWTO (2020), the management of sustainable tourism requires a system capable of maintaining a balance between the needs of tourists, the interests of local communities, the protection of natural resources, and the economic sustainability of a destination. Destination management is not solely oriented toward increasing the number of tourist visits; it also takes into account the quality of management, environmental capacity, and the socio-economic benefits for the community. Furthermore, Bramwell and Lane (2018)

explain that sustainable management in tourism necessitates collaborative governance, as the management of a destination involves various actors with differing interests. Consequently, the success of sustainable tourism management is heavily influenced by coordination, communication, and cooperation among the government, the community, business operators, academics, the media, and local institutions. Based on the expert perspectives mentioned above, it can be concluded that the development of sustainable tourism is a process of developing and managing tourist destinations in a planned, integrated, and sustainable manner, while maintaining a balance among the economic, socio-cultural, environmental, and management (governance) dimensions. This development aims to meet the needs of tourists, the tourism industry, and local communities today, without compromising the ability of future generations to meet their own needs.

## METHOD

This study employs a qualitative research approach with an exploratory design. It seeks to explore the meanings, experiences, roles, and interaction processes among the "hexa-helix" actors involved in the management of a tourism destination (Stebbins, 2019). An exploratory design is utilized because the study aims to identify and gain a deeper understanding of the specific roles played by each of these hexa-helix actors. According to Sugiyono (2019:7), qualitative research is a methodology rooted in post-positivist philosophy, designed to examine phenomena in their natural setting, with the researcher serving as the primary instrument for data collection and analysis. This approach emphasizes understanding phenomena through the perspectives of informants, social contexts, and the actual conditions present in the field. The research was conducted in Nagari Koto Sani, Solok Regency.

The study utilizes both primary and secondary data. As stated by Sugiyono (2019:296), "Primary data refers to sources that provide data directly to the researcher." Primary data may be derived from observations and interviews; examples include conducting interviews with research subjects and performing direct field observations (Sulung & Muspawi, 2024). Sugiyono (2019:296) states that secondary data refers to sources that do not provide data directly to the researcher for instance, through other individuals or existing documents. According to Sugiyono (2019:296), data collection techniques are the most critical step in research, as the primary objective of any study is to obtain data; in qualitative research, these techniques include observation, interviews, and documentation.

To ensure the validity of the data, the study employs source triangulation and technique triangulation. Source triangulation is a method used to verify data credibility by cross-checking information obtained from multiple sources. Technique triangulation, meanwhile, aims to assess the credibility of data gathered from informants by re-examining it through different methods, such as observation and documentation (Nurfajriani et al., 2024; Yumnah et al., 2023). Qualitative data analysis is conducted in an interactive and continuous manner until the data reaches a point of saturation. The activities involved in this analysis include data reduction, data display, and data verification (drawing conclusions) (Sugiyono, 2019:321).

## RESULTS AND DISCUSSION

Nagari Koto Sani is one of the nagari in X Koto Singkarak District, Solok Regency, West Sumatra Province. Administratively, Nagari Koto Sani has an area of around 7,000 hectares consisting of four jorongs, namely Jorong Padang Belimbing, Jorong Limo Niniak, Jorong Kasiak, and Jorong Ujung Ladang. Nagari Koto Sani has quite diverse tourism potential including natural tourism potential, cultural tourism potential, agrotourism potential.

Based on the results of observations, the natural tourism potential in Nagari Koto Sani is Lake Tuo, Aia Angek Baths, Pincuran Sati/Gadang, Panorama of Bajanjang Rice Fields, Puncak Gabuih, Batu Pipisan, Lurah Aia Bareh, Cangkong, Guo Japan, Puncak ac, Puncak Kamuniang. Then there is the potential for cultural tourism such as Adok Dance, Randai Ilau, Silek Tuo, Rumah Gadang Carving, Malamang, Grilled fish, Bubua Bakilia. Furthermore, there is potential for agrotourism such as cultivating tilapia and goldfish, processing galo-galo honey, animal husbandry, agriculture and plantations.



Figure 1. Aia Angek, Lake Tuo, Bajanjang Rice Fields, Pincuran Gadang, Adok Dance And Rumah Gadang
Source: Personal Documentation January- July 2026

The management of tourism potential in Nagari Koto Sani is carried out through the involvement of the local community, organized into tourism awareness groups. These groups serve as a form of community-based institution that plays a crucial role in managing, developing, and ensuring the sustainability of community-based tourism destinations. In Nagari Koto Sani, there are two primary tourism awareness groups Danau Tuo and Aia Angek which are instrumental in managing natural tourism potential and empowering the surrounding community. Based on interviews, observations, and documentation, the roles of the six hexa-helix actors are as follows:

First, the government in the context of sustainable tourism development in Nagari Koto Sani acts as a regulator, facilitator, and provider of programmatic support; however, its implementation has not yet been optimal across all tourism destinations. Regarding tourism regulations and policies, the government has established a legal framework through national and regional policies, such as the Regulation of the Minister of Tourism and Creative Economy Number 9 of 2021, the Tourism Law, and the Solok Regency Regional Regulation on Tourism. Nevertheless, at the village level, there are no specific regulations or a master plan for tourism development to serve as a guide for all stakeholders. Furthermore, the implementation of sustainable tourism programs which primarily consist of mentoring groups, providing administrative support, and constructing basic facilities remains concentrated in the Aia Angek area, leaving the development of Danau Tuo without balanced attention. Regarding infrastructure and budgetary support, the government has assisted in the construction of access roads, public facilities, and certain tourism amenities; however, limited budget allocations have hindered the optimal development of these destinations. Finally, environmental management is currently handled through (communal self-help) by the local community and the provision of a limited number of trash bins. Collaboration with the Environmental Agency has also yet to reach its full potential, resulting in a lack of integrated waste management. The government has played a supportive role across several dimensions: the economic dimension, by fostering local

business activity; the socio-cultural dimension, through the preservation of local culture; the environmental dimension, by maintaining the cleanliness of tourism areas; and the management dimension, through cross-stakeholder coordination. Nevertheless, these efforts still require further strengthening in terms of regulation, coordination, funding, and the institutional framework for tourism management.

Second, the role of academics can be manifested through research, community service, training, and capacity building. However, such contributions remain incidental rather than sustainable. Research findings indicate that academic studies on the tourism potential of Nagari Koto Sani are still very limited, leaving much of this potential undocumented from a scientific perspective. Existing research has largely focused on the Aia Angek area, while Danau Tuo has received relatively little attention as a subject of study. Academics have provided recommendations regarding the mapping of tourism potential, community capacity building, and data-driven destination development. Community service initiatives have included training in tourism services, communication, ticketing, waste management, and human resource development. Nevertheless, these activities have not been sustained due to limited funding and a lack of long-term collaboration. Academics have contributed to the economic dimension by enhancing the capacity of local enterprises; to the socio-cultural dimension by raising awareness of cultural preservation; to the environmental dimension through education on waste management; and to the management dimension by offering research-based recommendations. Even so, the involvement of academics needs to be expanded through applied research and ongoing mentorship.

Business operators serve as the drivers of local economic activity, supporting the existence of tourism destinations. In Nagari Koto Sani, micro, small, and medium-sized enterprises (MSMEs) and the local economy are dominated by culinary businesses, traditional snack production, fish farming, eateries, homestays, and local transportation. Regarding support for tourism, most of these businesses primarily cater to the needs of the local community and are not yet fully oriented toward tourists. In terms of tourism product development, local offerings have the potential to serve as souvenirs or educational tourism attractions; however, product innovation and marketing remain limited. Business partnerships involving collaborations among entrepreneurs, the government, and the local tourism awareness group (Pokdarwis) have yet to be established in a systematic manner. Business operators make a significant contribution to the economic dimension by creating jobs and increasing local income. However, contributions to the socio-cultural, environmental, and management dimensions still require strengthening through product innovation, business partnerships, and integration with tourism activities.

The Role of the Community: The community serves as the primary actor in the management of community-based tourism destinations. Community participation is evident through involvement in Tourism Awareness Groups (Pokdarwis), communal work, the maintenance of tourism facilities, and the provision of tourism services. The Tourism Awareness Groups in Aia Angek remains active in managing the tourism area, whereas the Tourism Awareness Groups in Danau Tuo is not yet functioning optimally. Youth groups have assisted in maintaining cleanliness and supporting tourism activities, while the Family Welfare Empowerment (PKK) organization’s involvement in tourism product development remains limited. The community acts as planners, implementers, and overseers of tourism activities. Their contribution is most prominent within the socio-cultural dimension, while the economic, environmental, and management dimensions still require improvement through community empowerment and the strengthening of Tourism Awareness Groups institutions.

The role of media serves as a means for promotion, information dissemination, and the shaping of a tourist destination's image. Promotion currently relies on Facebook, Instagram, TikTok, online news, and posts shared by tourists. As publications are not yet produced on a regular basis, the reach of these promotional efforts remains limited. Furthermore, there

is no planned or integrated branding strategy for the destination. While media has supported the enhancement of tourism promotion, its contribution to the economic, socio-cultural, environmental, and management dimensions has yet to reach its full potential, largely due to the absence of an integrated digital communication strategy.

In this study, the role of local institutions specifically the KAN (Kerapatan Adat Nagari) and Bundo Kanduang functions as a representation of civil society within the Hexa Helix framework. First, they act as a bridge between the community and development stakeholders, channeling public aspirations to the government and maintaining social communication. Second, as guardians of socio-cultural values, the KAN and Bundo Kanduang oversee the implementation of customs and norms, as well as the preservation of Minangkabau culture. Third, regarding community empowerment, their efforts such as community guidance—remain more focused on customary matters than on tourism development. Fourth, in terms of support for tourism development, there are currently no specific programs within these local institutions directly aimed at fostering sustainable tourism. These local institutions serve as advocates and social enablers, safeguarding cultural values, strengthening community participation, and supporting the governance of the traditional village. Their contribution is most prominent within the socio-cultural dimension; however, their impact on the economic, environmental, and tourism management dimensions requires further strengthening through more active involvement in destination development programs.

The research findings indicate that each actor has contributed to the development of tourism in Nagari Koto Sani; however, the level of involvement and the capacity of these actors vary.

**The Role of the Government as Regulator, Facilitator, and Coordinator**

The research results show that the government holds a strategic position within the Hexa Helix model, acting as the entity that directs the tourism development process through policies, facilities, and coordination. The government plays a role in providing institutional legitimacy to the Tourism Awareness Group (Pokdarwis), offering guidance, and providing administrative support for the management of tourist destinations. Nevertheless, the findings also suggest that the government's role remains largely focused on administrative facilitation and has not yet fully evolved into a driver of collaboration among the various actors. The government currently lacks a robust coordination mechanism to bring all Hexa Helix actors together within a unified tourism development system. This indicates a need for the government to strengthen its position as a collaborative leaderan actor that does not merely establish regulations but also fosters a cohesive network among all stakeholders. This aligns with the theory of Destination Governance, which posits that the success of a tourist destination is heavily influenced by the stakeholders' ability to build networks, coordinate, and engage in collective decision-making.

**The Role of Academics as a Source of Knowledge and Innovation**

Academics play a crucial role in providing a scientific foundation for sustainable tourism development. The research shows that the involvement of academics in Nagari Koto Sani has taken the form of research, community service, and training for the local population. However, these contributions lack sustainability, as most initiatives have been limited to short-term programs. There is a need to strengthen support in areas such as applied research, the formulation of destination development strategies, the creation of tourism product innovations, and capacity building for tourism managers. Within the Hexa Helix framework, academics should function not only as providers of theory but also as generators of innovations that can be applied to destination management. Consequently, the relationship between academics, the government, and the local community should be directed toward long-term, sustainable support programs.

### The Role of Business as a Driver of the Local Economy

Business operators play a role in creating economic value from tourism activities. Research findings indicate that Nagari Koto Sani possesses economic potential through MSMEs (micro, small, and medium enterprises), local culinary offerings, fish farming, homestays, and community-based transportation services. However, these business sectors currently operate independently and are not yet fully integrated into the broader tourism system. Local products have not been sufficiently developed into tourism offerings that provide added value for visitors. This suggests that the contribution of businesses to sustainable tourism remains primarily focused on the economic dimension, while areas such as product innovation, promotion, and partnerships require further strengthening.

### The Role of the Community as the Primary Manager of the Destination

The community serves as the central actor in the concept of community-based tourism, given its direct connection to local resources. Research results reveal a disparity in capacity between the Aia Angek Tourism Awareness Group (Pokdarwis) and the Danau Tuo Tourism Awareness Group (Pokdarwis). The Aia Angek group demonstrates more active management, characterized by established operational systems, self-funding, clear division of tasks among members, and mutual cooperation. This reflects a strong sense of local ownership toward the destination. Conversely, the Danau Tuo group has yet to fully optimize its institutional functions, resulting in inconsistent tourism management. Such differences highlight that the success of community-based tourism management is heavily influenced by institutional capacity, group leadership, and the level of member participation.

### The Role of Media in Strengthening Destination Promotion

Media plays a crucial role in shaping a destination's image and disseminating tourism-related information. Research findings show that tourism promotion in Nagari Koto Sani currently relies on social media platforms such as Facebook, TikTok, and Instagram. However, this usage remains suboptimal due to the absence of a well-planned digital communication strategy. Promotion is still largely dependent on content posted by visitors rather than being guided by a consistent destination branding strategy. In the context of modern tourism development, media should function not merely as a tool for publication, but as a strategic partner in building a destination's identity.

### The Role of Local Institutions in Preserving Sociocultural Values

Local institutions serve as a crucial element in the adaptation of the Hexa Helix model in Nagari Koto Sani. The presence of the KAN (Kerapatan Adat Nagari) and Bundo Kanduang demonstrates that the Minangkabau community possesses a social system capable of supporting tourism development. These local institutions play a role in upholding customary values, strengthening social ties within the community, and acting as a bridge between the community and the government. However, their involvement in tourism development remains primarily focused on sociocultural aspects, with limited participation in destination management strategies.

## CONCLUSIONS

The research findings indicate that all six actors within the "Hexa Helix" framework have fulfilled their respective roles in the development of sustainable tourism; however, their levels of engagement remain uneven:

1. The government acts as a regulator, facilitator, and funding provider by formulating policies, developing infrastructure, and supporting the growth of tourism destinations. Nevertheless, there is a need to strengthen specific regulations at the nagari level, as well as improve funding mechanisms and cross-sectoral coordination.

2. Academics contribute through research, community service, training, and direct assistance to the local population. While their involvement has enhanced human resource capacity, these contributions have largely been incidental rather than sustainable, and have yet to be fully integrated into the policy-making process.
3. Business operators provide tourism-related services and products such as culinary offerings, homestays, local transportation, and various micro, small, and medium enterprises (MSMEs) that support tourism activities. However, product innovation, marketing efforts, and business partnerships remain limited, preventing these actors from reaching their full potential in contributing to destination development.
4. The local community is the most highly engaged actor, participating in destination management, collective community work, cultural preservation, and the provision of services to tourists. That said, the level of community participation varies across destinations, as not all community-based tourism awareness groups are functioning optimally.
5. The media plays a role in promoting destinations through social media and the dissemination of tourism-related information. Currently, however, such promotion remains basic and lacks the support of a well-planned destination branding strategy.
6. Local institutions specifically the KAN (Kerapatan Adat Nagari) and Bundo Kanduang (an organization of traditional female leaders) play a role in upholding customary values and social norms, while also strengthening community participation. Yet, the involvement of these local institutions in tourism development programs remains limited, as their focus is primarily directed toward the preservation and guidance of traditional customs.

## LIMITATIONS AND IMPLICATIONS

### Limitations

This study focuses on identifying the roles of six "Hexa Helix" actors: the government, academia, business entities, the community, the media, and local institutions representing non-governmental organizations (NGOs). Consequently, the research emphasizes mapping the roles and involvement of each actor, rather than conducting an in-depth assessment of the effectiveness of their collaboration, the extent of their contributions, or the tangible impacts of their participation on the sustainability of the tourism destinations.

Another limitation concerns the uneven nature of actor involvement. Certain tourism development activities remain incidental rather than sustained or continuous. Furthermore, there are disparities in institutional capacity between the Aia Angek Tourism Awareness Group and the Danau Tuo Tourism Awareness Group (Pokdarwis), resulting in an imbalance in management dynamics and levels of community participation across the two destinations. As such, the observed collaboration reflects a tourism development process that is still in its ongoing, evolving stage.

This study does not specifically examine the collaborative relationships between actors by measuring their long-term impact on economic, socio-cultural, environmental, or destination management dimensions. Therefore, the findings primarily outline the contributions and challenges associated with each actor, based on data gathered through Observations, Interviews, And Documentation Collected During The Research Period.

### Implications

The theoretical implications of this study reinforce the application of the Hexa Helix concept in the development of community-based sustainable tourism at the nagari. Furthermore, the study confirms that the effectiveness of collaboration is influenced by role clarity, coordination, communication, institutional capacity, and program sustainability. Additionally, it demonstrates how the role of NGOs is adapted through local institutions—

specifically the KAN (Kerapatan Adat Nagari/Village Customary Council) and Bundo Kanduang (an organization of traditional female leaders) in alignment with the socio-cultural characteristics of the community.

The practical implications of this research suggest that the government can strengthen policy, planning, coordination, and the division of responsibilities among various stakeholders. Academics can enhance applied research, training, mentoring, and human resource capacity building. Business operators can develop local products, expand marketing efforts, and establish partnerships. The community can increase its participation and capacity in managing tourist destinations. The media can optimize digital promotion and build a cohesive destination image. Meanwhile, the KAN (Kerapatan Adat Nagari) and Bundo Kanduang can strengthen their involvement in preserving socio-cultural values and supporting the development of tourism.

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## DECLARATIONS

### Competing Interests

The author declares that there are no competing interests—whether financial, personal, professional, or otherwise that could influence the conduct of the research, the writing of the article, or the publication process. The entire research process and the preparation of the manuscript were carried out independently and in accordance with the principles of academic integrity.

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### Generative AI Disclosure

During the preparation and refinement of this manuscript, the author utilized generative artificial intelligence (Generative AI) to assist with language editing, grammatical corrections, translation, and the enhancement of the structure and clarity of the academic writing. The use of this technology was limited to linguistic aspects and the presentation of the manuscript; it did not replace the processes of data collection, research data analysis, or the drawing of conclusions based on field findings. The author assumes full responsibility for reviewing, verifying, and ensuring the accuracy of all information, the originality and integrity of the work, and its adherence to academic ethical standards.

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