



BUILDING A SUSTAINABLE FUTURE: COOPKILIM'S GREEN INITIATIVE



Introduction

Koperasi Komuniti Kampung Kilim Langkawi Berhad, or COOPKILIM for short, is a tourism cooperative based in the northeast of Langkawi Island in Malaysia. The cooperative was established on July 8th, 2010, with a vision to become Asia's leading tourism cooperative, and a mission to implement superior ecotourism services that are sustainable, and to generate dynamic social enterprises. As of 2022, COOPKILIM has 231 members, with 145 females and 86 males. The Board of Directors (BOD) comprises nine persons, while the cooperative has one manager and approximately 19 staff members in management roles, who handle all the operations and administration of the cooperative. The cooperative is 100 percent owned by local people of Kampung Kilim, Langkawi.

COOPKILIM is committed to preventing climate change issues and is regarded as one of the exemplary cooperatives in Malaysia that is directly involved in this effort. This commitment can be seen from their digital communication channels such as their website, Facebook, Instagram, and YouTube. They use these channels to educate their customers and the public about sustainable tourism practices and their efforts to reduce the environmental impact of their operations. COOPKILIM has established many infrastructures and a variety of amazing activities to provide the best and highest quality services for their customers. According to Diagram 1, there are two types of income streams for COOPKILIM. The first type comes from grants and funding from government agencies and NGOs, while the second type comes from activities operated by COOPKILIM, such as rural tourism attractions, mangrove tours (tourist boat services), a tourism

wharf, restaurant management, washroom management, a convenience store, and transport rental.

The cooperative's recorded asset is RM1,140,835, and its accumulated members fund is RM586,029. Meanwhile, the total members' share in COOPKILIM is RM120,362. Business expenses are ordinary and necessary costs that a business incurs in order to operate, and among the expenses for COOPKILIM are payroll, tourist development facilities, operational overhead, maintenance, procurement, and training costs. By investing in

their facilities, services, and staff, COOPKILIM is able to provide high-quality eco-tourism experiences to their customers while remaining financially sustainable.

Overall, COOPKILIM's commitment to sustainable tourism practices, local ownership, and community involvement has allowed the cooperative to thrive in the competitive tourism industry. Their vision to become Asia's leading tourism cooperative is well within reach, as they continue to expand their offerings and provide unforgettable experiences to visitors to Langkawi.

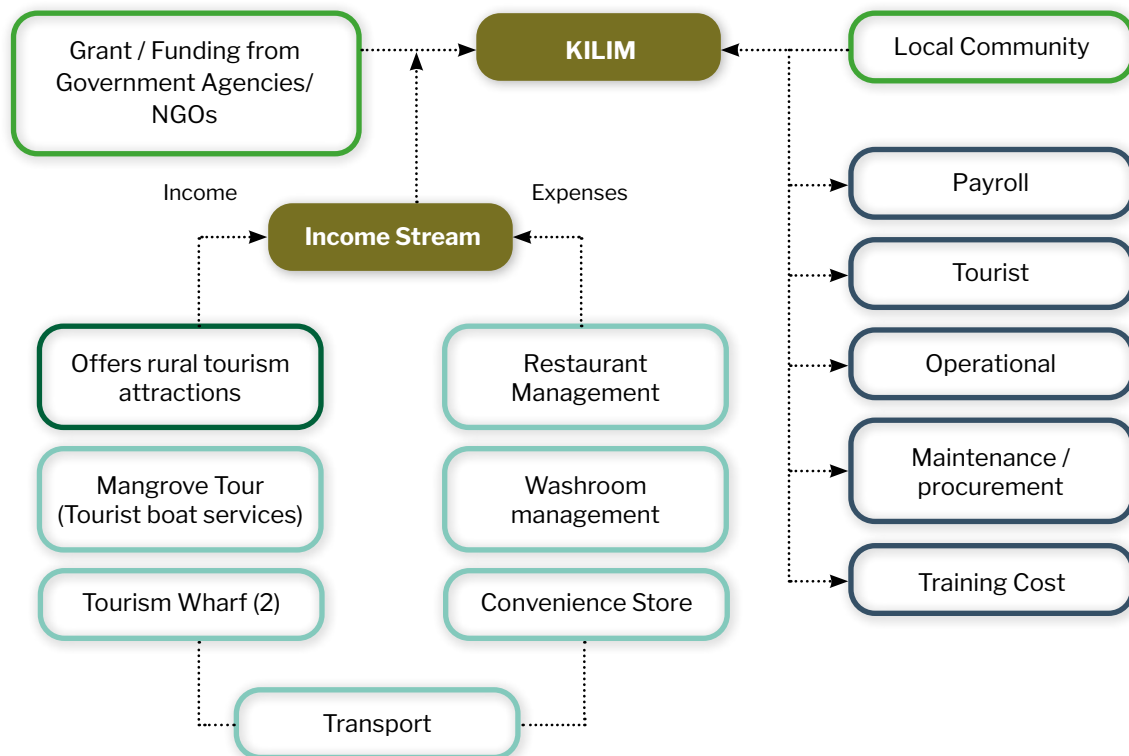


Diagram 1: Business Model of COOPKILIM

As illustrated in Diagram 1, COOPKILIM's business model includes both income streams from grants and funding, as well as from the various activities that they operate. The grants and funding that they receive come from government agencies and NGOs, which can be used to develop their eco-tourism services and social enterprises. This type of funding allows COOPKILIM to expand their operations and improve their services without incurring debt.

In addition to grants and funding, COOPKILIM also generates revenue from a range of activities. One of their popular activities is the mangrove tours, which offer tourists a chance to explore the mangrove forests and observe the unique flora and fauna of the region. They also offer rural tourism attractions, which showcase the local culture and traditions of the Kampung Kilim community.

COOPKILIM has also established a tourism wharf, which serves as a hub for tourists to access various attractions in the area. They manage a restaurant, washrooms, and a convenience store on the premises, which provide necessary amenities for tourists. Additionally, COOPKILIM provides transport rental services, which allows tourists to explore the region at their own pace.

As with any business, COOPKILIM incurs various expenses to operate. Payroll is a significant expense, as they have a team of around 19 staff in management to handle all the operations and administration of the cooperative. They also need to cover the costs of tourist development facilities, operational overhead, maintenance, procurement, and training. These expenses are necessary to ensure that they can continue to provide high-quality services to their customers and remain competitive in the market.



Photo 1: Boat services provided by COOPKILIM and other companies

Overall, COOPKILIM's business model is based on sustainable and eco-friendly tourism practices, which aligns with their mission to implement superior eco-tourism services that are sustainable, to generate dynamic social enterprises. Their approach not only benefits the local community but also helps to prevent climate change issues.

Climate Change Issues

The impact of human activities on the natural environment has been a growing concern globally. Air travel and other modes of transportation are contributing significantly to greenhouse gas emissions, which are causing climate change and global warming. These effects have led to the loss and degradation of various types of environments, including coastal areas, mountains, wilderness areas, rural areas, and small islands.

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In recent years, there has been an increasing demand for ecotourism and nature-based tourism, which has led to more impacts on the natural environment. These changes affecting land, air, and water are also significant to the issue of natural resource conservation in Kilim Karst Geoforest Park, which is one of the Geoforest Parks in Langkawi that has the most natural heritage sites for tourist visits.

To address these issues, COOPKILIM has implemented several eco-friendly initiatives to

reduce the impact on the natural environment. COOPKILIM has implemented restoration work in an ecotourism approach, incorporating efforts to develop coral plantations and mangrove swamps as elements of architectural landscapes. This enhances and beautifies coastal development sites, providing additional value and rationale for ecotourism stakeholders to invest.

However, data from COOPKILIM on tourist arrivals and boat trips in Kilim waterways indicates that there is an increase in both activities after Langkawi received international endorsement from UNESCO as Langkawi Geopark in June 2007. While this endorsement is beneficial for the local economy, it also increases the potential for negative impacts on the natural environment. It is essential to strike a balance between tourism and conservation to ensure that the natural environment is not harmed by tourism activities.

To address this issue, COOPKILIM is promoting sustainable tourism practices, such as using eco-friendly boats and limiting the number of visitors to sensitive areas. Additionally, education and awareness-raising efforts are necessary to encourage tourists and local communities to support conservation efforts and minimize the impact of human activities on the natural environment.

Table 1: Types and total of human activities before and after recognition by UNESCO

Before endorsement by UNESCO (June 2007)		After endorsement by UNESCO (June 2007)	
Type of human activities	Total human activities	Types of human activities	Total human activities
Boating tour	>5,000 per year	Boating tour	>10,000 per year

According to the records retrieved from the Langkawi Development Authority (LADA) from 2006 until 2016, the total number of tourist arrivals at Kilim Karst Geoforest Park was 1,873,345 visitors. Table 2 shows the tourist arrival records retrieved:

Table 2: Total Number of Visitor Arrivals from 2006 – 2016

Year	Number of tourists COOPKILIM
2006	36,460
2007	78,145
2008	114,665
2009	102,060
2010	117,931
2011	321,325
2012	273,449
2013	295,615
2014	274,629
2015	259,066
2016	212,552

Tourism is a vital aspect of the local economy and benefits residents in Langkawi Geopark. However, it is important to recognize that tourism can also have negative impacts on the environment, particularly on the delicate and unique ecosystems such as coral reefs, sandy beaches, and mangroves. These natural resources are threatened by anthropogenic disturbances, and it is essential to take steps to preserve them.

Boats, which are a necessary form of transportation for tourists in Langkawi Geopark, have exacerbated the situation by contributing to the depletion of mangroves and increasing riverbank erosion due to the wake currents produced by boat engines. This has led to the degradation of the environment and loss of habitat for many marine species.

To mitigate these negative impacts, it is crucial to find a balance between tourism and conservation. Sustainable tourism practices should be promoted to ensure that tourism activities do not harm the natural environment. This can include the use of eco-friendly boats that have a lower impact on the environment and the implementation of measures to limit the number of visitors to sensitive areas.



It is also important to raise awareness among tourists and the local community about the importance of conservation efforts. This can be achieved through educational programs, signage, and other means of communication that highlight the unique features of Langkawi Geopark and the need to protect its natural resources.

By adopting sustainable tourism practices and promoting conservation efforts, Langkawi Geopark can continue to attract visitors while preserving its natural beauty and protecting the environment. This will benefit both tourists and the local community, ensuring the long-term sustainability of the tourism industry while safeguarding the natural resources that are the foundation of the park's unique appeal.

COOPKILIM's Green Initiative

COOPKILIM is committed to protecting the natural environment and has implemented several eco-

friendly initiatives to reduce the impact of human activities on the ecosystem. The organization has played an active role in conserving nature by partnering with experts from the Marine Research Station (MARES) at Universiti Teknologi MARA (UiTM) Perlis and the Institute of Environment and Development (LESTARI) at Universiti Kebangsaan Malaysia to develop an ecotourism approach to restoration work.

As part of this initiative, COOPKILIM has implemented the development of coral plantations and mangrove swamps as elements of architectural landscapes. This approach enhances and beautifies coastal development sites, providing additional value and rationale for ecotourism stakeholders to invest. The project integrates a variety of restoration techniques and provides opportunities for rehabilitation monitoring and research.

COOPKILIM's approach expands and complements existing concepts that integrate the restoration of coral reefs and mangrove swamps into tourism



Students from public universities engage in conservation activities at a Mangrove Sanctuary



One of the locations for the mangrove seedling nurseries is situated along the coast



Three volunteers are engaging in reef conservation activities



Coral reef seeding is a method used to restore damaged or depleted coral reefs

projects by creating a public participation platform. This allows for community engagement and involvement in restoration efforts, fostering a sense of ownership and pride in the natural resources of the area. Through these efforts, COOPKILIM has successfully sown 3,725 mangrove seeds, planted around 300 mangrove seedlings, and restored 182 coral plantations. These figures demonstrate the organization's commitment to conserving nature and protecting the environment for future generations.

COOPKILIM's eco-friendly initiatives have not only contributed to the conservation of natural resources but have also provided economic benefits to the local community through the promotion of sustainable tourism practices. The organization's efforts have created a platform for ecotourism stakeholders to invest in the area, promoting the sustainable development of the tourism industry while preserving the natural beauty of the region.

Overall, COOPKILIM's dedication to conservation and sustainable development serves as an example for others to follow. By working in collaboration with experts and the community, COOPKILIM has achieved significant progress in restoring and preserving the natural environment of the region.

The development of coral nurseries and mangrove swamps not only provides socio-ecological benefits but also offers a new concept of agriculture and economic resource for the local community. By creating and selling conservation packages, the community can restore and maintain the health of coral reef ecosystems and mangrove swamp forests, contributing to preserving the ecosystem services that provide coastal protection and food security, including fisheries.

The conservation packages can include a variety of items, such as coral fragments, mangrove seedlings, and other materials needed for restoration and

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maintenance efforts. The community members can sell these packages to interested individuals, organizations, and businesses, creating a new source of income for themselves.

This economic opportunity can have a positive impact on the local community by creating jobs and promoting sustainable practices. Additionally, the program can indirectly increase awareness and change the interactions between humans and the environment. As more people become involved in conservation efforts, they may begin to see the importance of protecting the ecosystem services that provide valuable resources and services.

Overall, the program has the potential to benefit not only the environment but also the local community. By promoting sustainable practices and economic opportunities, it can create a more resilient and self-sufficient community that values and protects the natural resources that support it. With 100 people, consisting of members of the cooperative, able to benefit from this program, it

has the potential to make a significant impact on the community and the environment for years to come.

The Impact of Green Initiative to COOPKILIM's

The impacts of green technology initiatives implemented by COOPKILIM can be categorized into two:

- a) Coral Reef Seeding
- b) Mangrove plantation initiatives

a) Coral Reef Seeding

Coral reef seeding initiatives have significant and complementary impacts on coastal ecosystems, contributing to the overall well-being of our planet. Coral reef seeding focuses on restoring and preserving diverse marine ecosystems, providing benefits such as biodiversity conservation, coastal protection, and carbon sequestration. By actively restoring damaged or degraded coral reefs, it can support the thriving ecosystem that relies on them, protect coastal communities from erosion and storm impacts, and contribute to climate change mitigation through carbon sequestration.

b) Mangrove Plantation Initiatives

Similarly, mangrove plantation initiatives play a crucial role in preserving and restoring coastal ecosystems. Mangrove forests provide essential environmental benefits, acting as natural buffers against erosion and storm surges while sequestering carbon dioxide and mitigating climate change. They serve as critical habitats for marine

species, supporting fisheries and preserving coastal biodiversity. These initiatives also have economic benefits, providing valuable resources and supporting local livelihoods through timber, firewood, non-timber forest products, and mangrove-associated fisheries and aquaculture. Mangrove ecotourism further contributes to sustainable tourism and local economies. Additionally, these initiatives have positive social impacts, enhancing community resilience, improving water quality, and fostering a sense of environmental stewardship and cultural pride.

Together, coral reef seeding and mangrove plantation initiatives address the challenges faced by coastal ecosystems and offer a holistic approach to coastal restoration and conservation. By recognizing the value of these habitats and actively engaging in restoration efforts, we can create more resilient and sustainable coastal regions, benefiting both the environment and the communities that depend on them. These initiatives play a crucial role in ensuring a healthier and more prosperous future for our planet and future generations.

Other cooperatives can adapt to the concept of addressing climate change, preserving ecosystems, and supporting communities by implementing similar initiatives within their cooperative structures. They can start by conducting a sustainability assessment to identify areas for improvement in their carbon footprint and environmental practices. Setting clear environmental goals aligned with reducing emissions and preserving ecosystems is essential.

Cooperatives can foster collaboration and partnerships with local organizations and

stakeholders to leverage resources and advocate for sustainable policies. Engaging employees and members through awareness-raising and eco-friendly activities is crucial. Investing in renewable energy and supporting green technologies can contribute to sustainability.

Cooperatives can also support local ecosystems and communities through initiatives like mangrove plantation and partnering with sustainable producers. Communication of achievements and sharing best practices are vital for inspiring others. Each cooperative should tailor their approach and commit to continuous improvement to make a meaningful contribution to a greener and more sustainable world.

Conclusion

While tourism is vital for the local and global economy, it can also have negative impacts on the environment. So, it is important to recognize the need for balance between tourism and conservation efforts. The article has highlighted the anthropogenic disturbances, such as those caused by tourist boats, which have resulted in the erosion of the riverbank and depletion of mangroves in the area. Such degradation poses a threat to the ecosystem and the livelihoods of the local community in Langkawi Geopark.

To ensure sustainable development, it is essential to implement measures such as the use of electric boats and limiting the number of boats in specific areas. These regulations and sustainable tourism practices can help maintain the natural beauty of the region while continuing to attract tourists and boost the local economy.