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ENGAGING THE LOCAL COMMUNITY IN PARTICIPATORY RESOURCE MANAGEMENT THROUGH LEARNING: THE EXPERIENCE FROM LANGKAWI ISLAND, MALAYSIA

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The role and importance of education and learning as an effective way to ensure a participatory approach in natural resource management and conservation has received considerable attention in recent years. On Langkawi Island, the formation of co-operative community resource management, Komuniti Pengurusan Sumber Perikanan (KPSP), or, formerly, fishermen economic groups, *Kumpulan Ekonomi Nelayan (KEN), in 2001 is a significant attempt to emphasise the value of local involvement in natural resource management. This article aims to examine the importance of local community engagement in resource management through participation in selected fishing communities on the island. To this purpose, concepts from transformative learning theory are applied to understand how interactions among adults, through their participation in resource management, can promote learning and social change. The findings indicate a number of motivators and challenges to education, such as opportunities for dialogues, leadership and changes in behaviour, that occur at the community level. In conclusion, this study concurs that active local participation in resource management would allow members of the community to learn about natural resources and that such learning can lead to concrete actions on the ground towards sustainable solutions. Therefore, further research must focus on improving the forms of local participation in resource management to provide space for more and more effective education.*

Keywords: resource management, local community participation, fisher folks, empowerment, Langkawi Island

INTRODUCTION

The preservation of natural areas was informed by early environmentalism that led to the establishment of the world's first national parks, beginning in the late nineteenth century. These parks propagated a strict human-nature dichotomy, epitomised by the 'Yellowstone model' in the United States of America, which called for the eviction of resident communities to create areas of pristine

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wilderness (Stevens, 1997). However, with an increasing awareness of this dilemma, global conservation discourse has undergone a shift since the 1970s. The main focus has become not only environmental conservation but also matters related to social justice, which brings into play the role of local communities. Thus, the issue of social justice has emerged as an equally important component in the agenda of managing the world's conservation areas (Gustave and Borchers, 2008).

Today, conservation is no longer restricted to protected-area management. There has been a global paradigm shift from protection to the inclusion of sustainable resource utilisation and sustainable regional development in conservation. Past conservation failures have shown that weaknesses in engaging local communities and government have contributed to poor conservation efforts (Ahmad Kusworo and Lee, 2008). As reported by Eghenter (2008), the elitist nature of conservation efforts often reveals a lack of understanding of the local dynamics and the slow process of attuning projects and programmes to local realities. As aptly pointed out by Hood Salleh and Bettinger (2008), the ongoing dialogue over protected areas that is becoming increasingly accepted involves indigenous communities residing in the area are often more successful than protected areas that follow the conventional 'Yellowstone model'.

In Malaysia, the issue of local community engagement and participation in resource management efforts is crucial. In fact, there is still much unexplored potential for conservation-oriented collaboration involving local communities and local authorities. Therefore, engaging local communities in a collaborative manner with local authorities for the joint management of natural resources has the potential to transform values, practices and overall behaviour. This transformation would assist in shifting patterns in natural resource utilisation and governance to ensure sustainability. In Malaysia, studies have shown that the over-exploitation of fishery resources and the degradation of coastal environments in fishing communities has become a pivotal concern. A clear example is the experience of the fisher folks of Langkawi Island in the northern part of Peninsular Malaysia. In fact, the fisher folks (fisher folks here means the same as fishermen) of Langkawi Island and local agencies, both of whom are key stakeholders, have been calling for the introduction of a number of effective measures to improve the situation. With this as the background, this study on resource management in Langkawi Island looks into the role and importance of education and learning in the local community as an effective way to ensure a participatory approach in resource management and conservation.

This is based on the experience of two co-operative community resource management *Komuniti Pengurusan Sumber Perikanan* (KPSP) projects in the Langkawi Global Geopark, a network supported by UNESCO. Langkawi Island

became the first Global Geopark in Malaysia and Southeast Asia in June 2007. The geopark concept strives to balance three components: namely, the need to conserve heritage in an integrated manner; the promotion of local socio-economic development through innovative geopark-based activities and the enhancing of awareness; and education among all stakeholders to ensure Langkawi is developed in a sustainable manner (Ibrahim Komoo, Mazlin Mokhtar and Sarah Aziz, 2010). Drawing from the experiences of KPSP in the Langkawi Geopark, the main objective of this article is to examine the importance of local community engagement in resource management through participation and the challenges faced by such an engagement. This article begins with a discussion on the potential of transformative learning in participatory resource management. Then it describes cooperative community resource management and is followed by a methods section. Next is an analysis of the responses of local community in participatory resource management. In the final section, we conclude with some suggestions that may help local community as well as policy makers to design strategies for encouraging sustainable participatory resource management.

TRANSFORMATIVE LEARNING POTENTIAL IN PARTICIPATORY RESOURCE MANAGEMENT

This article is guided by the theoretical perspectives of transformative learning and the idea that knowledge, understanding and consciousness have an emancipatory role in the every day lives of the people. According to Coombes and Danaher (2006), the theory of transformative learning as conceived by Mezirow (1991) is based on Habermas' (1971) notion of emancipatory knowledge. As learners develop a greater awareness of themselves and a deeper understanding of their own experience, their desire to grow and develop increases. Such knowledge is personal and, therefore, emancipatory. Mezirow conceives of constructions of reality or perspectives as being intensely individual and unique for each person (Jarvis, 1988). The construction of perspectives is dependent upon reinforcement from various sources in our socio-cultural world. In the case of the KPSP in Langkawi Island, the formal institutional arrangement of co-operative management allows local fisher folks to confront issues that they face in dealing with their resources in a sustainable manner and to create solutions that address these challenges with support from the responsible local government agencies.

This process of participation through active learning is instrumental in allowing the fisher folks to take control of their situation. As Mezirow argues, the transformation process begins with a disorienting dilemma and ends with restored equilibrium (Cranton, 2002). Through critical reflection, it encourages

self-awareness to grow among the local participants and helps them to free themselves from former constraints. Although transformative learning is mostly modelled on individual learning behaviour, a study done by Marschke and Sinclair (2009) on participatory resource management in Cambodia suggests that transformative learning can be used to inform group learning processes. Thus, this article works on the premise that local fisher folks who are involved actively in managing their resources will allow processes of transformative learning to occur through critical reflection and will accept the need to change and plan for ways to overcome challenges and obstacles.

CO-OPERATIVE COMMUNITY RESOURCE MANAGEMENT (KPSP)

In Langkawi Island, currently there are six KPSP programmes located in four sub-districts namely, Padang Mat Sirat, Ayer Hangat, Kedawang and Kuah. These KPSP's programmes are KPSP Kuala Teriang off Padang Mat Sirat, KPSP Kilim, KPSP Sungai Chenang, KPSP Tanjung Rhu, KPSP Kuala Temoyong and KPSP Pulau Tuba.

Most of the Langkawi Island fisher folks involved in the KPSP still use traditional fishing methods, such as trammel shrimp gill net, bottom fish gill net and hand lining. The co-operative group is placed under the responsibility of the Department of Fisheries (DoF) and is used as a platform by fisher folks to voice out their opinions and share their experience pertaining to their employment and fishing activities in the area.

The formation of formal KPSP programmes, particularly on fisheries resources in 2001, was a significant attempt by the federal government to emphasize the value of local involvement in natural resource management. It acknowledges the importance of ensuring a continuous learning process for fisher folks in managing their resources to ensure sustainable livelihoods for their community. In order for KPSP to be effective, local fisher folks must be involved, and therefore the learning process must take place through transformative learning.

METHODS

The study areas analysed in this article are KPSP Kuala Teriang and KPSP Kilim (see Figure 1). In this study, 10 key informants from managerial and extension officers, 20 local fisher folks from KPSP Kuala Teriang and 5 from KPSP Kilim involved in the project were interviewed. For both study areas, semi-structured interviews were conducted using an interview guide that identified the principal points to be covered. The qualitative method analysed data based on

interpretations of the informants' narratives. The 'open coding' method of qualitative content analysis identified major themes based on local narratives. Briefly, this method involves a process of repeated questioning and careful understanding of the local narratives to develop an outline of themes. Each of these themes is briefly discussed and illustrated with quotations. Respondents were asked about their perceptions on the planning, implementation and management components of the project. In order to supplement the interview information, data was also taken from secondary sources: mainly from government reports, technical reports, minutes of meetings and reports and publications on coastal resources management gathered through library studies. All data collection took place between 2004–2006 and 2007–2008.

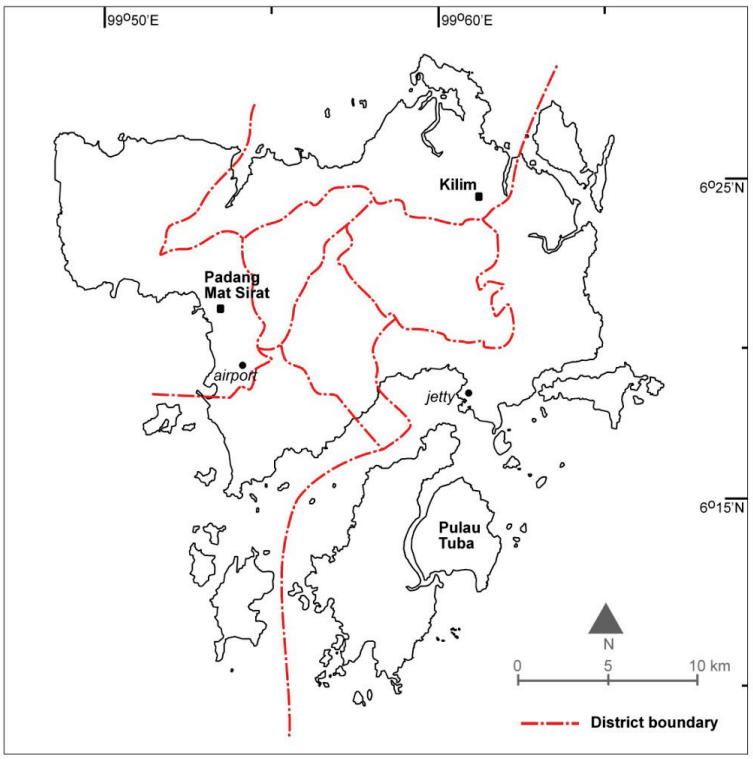

Figure 1: Map of Langkawi with reference to KPSP localities in Kilim and Kuala Teriang (off Padang Mat Sirat)

Background of KPSP Kuala Teriang

KPSP Kuala Teriang was chosen as the study area mainly because of the existence of the fisheries collaborative project that was established in 2003 between local fishing communities, DoF (Malaysia) and Southeast Asian

Fisheries Development Centre/Training Department (SEAFDEC/TD). The overall objectives of the fisheries collaborative project consists of three main components: first, the establishment of sustainable coastal fisheries management at the local level; second, the rehabilitation of coastal fisheries; and, third, the alleviation of poverty in coastal fisheries communities.

Kuala Teriang, Langkawi Island was chosen as the pioneer site for this co-operative project for three reasons (personal communication with Chairman of Kuala Teriang KPSP, 21 April 2006). First, the existing infrastructure facilities needed to accommodate the programme were available. Second, the establishment of KPSP in Kuala Teriang also became the centre of activities for other fishermen from surrounding areas, namely Kampung Batu Ara, Kampung Kuala Melaka, Kampung Ranggut and Kampung Pantai Kok (see Table 1). Finally, the social structure of the village communities is thought to offer incentives that are well-suited for collective action. For instance, among Kuala Teriang fisher folks, traditional communal values are still strongly practiced. On Friday, fisher folks do not go out on the sea out of respect for Islamic Friday prayer and also abstain from fishing during community feasts and deaths.

Table 1: Fishing community in KPSP Kuala Teriang

Village	No. of fisher folks	Members of KPSP
Kampung Kuala Teriang*	485	47
Kampung Kuala Melaka	268	13
Pantai Kok/Sungai Kok	13	–
Total	766	60

*Including Kampung Batu Ara and Kampung Ranggut
Source: Department of Fisheries (2006)

Background of KPSP Kilim

On 1 June 2007, Langkawi Island, a group of 99 islands in the northern waters of Peninsular Malaysia, was named Southeast Asia's first Geopark and the 52nd member of Global Geoparks Network under the auspices of UNESCO. The concept of geopark is in accordance with the 1991 Digne Declaration of the Rights of the Memory of the Earth that called on national and international authorities to protect the unique and inseparable cultural and geological heritage of the Earth.

The most important impact of the Langkawi Geopark is the economic opportunities it affords the people by creating new innovative industries for them to venture into and benefit from without jeopardising their future through nature-resource conservation. The Kilim KPSP is an example of such an economic

success. The association has been able to provide alternative employment for many of its members, from traditional fishermen to tour boat operators, resulting in a net increase in income and increasing their quality of life.

Since its establishment in 2003, KPSP Kilim has been able to collectively set up their business under the registered name of KEN Makmur Enterprise Sdn. Bhd. Currently, there are 61 fisher folks cum boat operators managing the operation of ecotourism activities in the areas of Langkawi Geopark known as Kilim Geoforest Parks (see Table 2). Apart from ecotourism activities, the fisher folks of KPSP Kilim also venture into grouper fish-cage farming as part of their strategy to diversify the source of their livelihoods.

Table 2: Members of KPSP Kilim

Village	No. of fisher folks	Members of KPSP cum boat operators	Members of KPSP cum fish-cage farmers
Kampung Kilim	112	61	10

Source: Department of Fisheries (2010)

RESPONSES OF THE LOCAL COMMUNITY IN PARTICIPATORY RESOURCE MANAGEMENT

Effective and meaningful local community participation in resource management is not easy, and success requires a number of preconditions. It is appropriate to reflect on the overall processes of resource management. Thus, the local fishers and agencies were asked to reflect on what they have learned through participating in various activities undertaken in their respective KPSPs Kuala Teriang and Kilim. Three main issues were addressed, namely, challenges in resources management; awareness, understanding and knowledge; and transformative process and learning outcomes. The issues raised are all related to the planning, implementation and management stages of the project.

Challenges in Resource Management

The local fisher folks face several challenges in their daily activities. Of particular importance is trawling, an issue that they see as beyond their power to control. As a local fisherman in Kuala Teriang observed, tackling the issue of encroachment by trawlers is an important goal of the fishery resources management project:

> They [trawlers] come out at night… if only we had better enforcement to curb encroachment especially at our *tukun tiruan* (artificial reefs) and *unjam* (fish aggregating devices).

Another fisherman observed:

> Some of them [trawlers] are local and some come from neighbouring countries. Illegal trawling activity is also caused by some fishermen that misused their inshore license. It [trawling] is simply more lucrative. To curb this is not easy because it is a socio-political matter.

In practically every case where trawlers are in operation, either legally or illegally, tension is generated within the traditional fishing community. Incidents of trawler infringement into the waters off Langkawi Island have been documented as early as 1963 (Kementerian Perpaduan Negara, 1972). Several measures have been taken by the authorities to control illegal trawling. One example was the 'Exit Plan' dialogue held in 2003 between the Fishermen Association of Kedah, the DoF and the illegal trawlers. The outcome of the dialogue was to buy the illegal trawling boats and compensate them with fibre boats and drift nets as incentive. However, this 'Exit Plan' was unsuccessful. As observed during one of the operations to nab illegal trawlers led by the Fisheries Department together with the Fishermen's Association, it was found that illegal trawlers who attended the dialogue had traded on the incentives in order to purchase back the trawling boat seized in the operation.

The zoning allocation and management of demarcated areas suggested under the KPSP Kuala Teriang project has proper laws, regulations and a local enforcement unit to protect from trawler encroachment. As one extension officer observed:

> Because of these conditions [i.e., legal basis, local enforcement unit] we received their support [fishermen] to participate in this project. This project is the first attempt to establish a community-based fisheries management in a structured manner.

To date, the zoning arrangement as agreed upon by KPSP Kuala Teriang is still waiting to be endorsed and gazetted under Section 61, Fisheries Act 1985 to become a Fisheries Protected Area (Ibrahim Saleh, 2008).

In Kilim, a majority of local fisher folks suggested that the main challenge in managing their resources is the lack of awareness among locals of the importance of conserving the environment. The tourist boat operation for mangrove tours has caused some degradation to the Kilim habitat because it is mostly surrounded by

fragile and pristine mangroves areas. Undoubtedly these tours have increased the incomes for the local fisher folks, but the dilemma they face is to promote sustainable mangrove tours by utilising low-technology boats to reduce their impact on river banks erosion. As mentioned by a local fisher cum boatman:

> What we all must realise is that our livelihood is dependent upon the well-being of Kilim mangrove. We must protect the area, one of the ways by enforcing the carrying capacity and speed limit to the waterways.

Thus, continuous effort by relevant agencies together with local participation in programmes to conserve and rehabilitate coastal environment is paramount in instilling greater awareness among the locals and tourists for Kilim sustainability.

Awareness, Understanding and Knowledge

According to Baticados (2004), encouraging the involvement of the local fishermen in managing fishery resources through education, awareness and training programmes is an effective social force in improving the fisheries management system. When asked what benefits have been gained since the implementation of the project, a member of Kuala Teriang KPSP admitted that "the project helps to train us on how to carry out fish cage culture and improve our fishing gear technology."

This viewpoint was reinforced by another member of Kuala Teriang KPSP, who stated:

> We went on several international and domestic field trips throughout this project, i.e., Chumporn in Thailand, Penang, Kelantan and Terengganu. We learned about fisheries resource management at the same time interacting with different people.

Thus, fisheries co-management implies a shift in the philosophy of management to increasing local participation. This paradigm shift is required not only from government agencies, but also from the community themselves. This means that the role of the government should shift from one of command-and-control to one service provider, facilitator and partner with the community (Hildebrand, 1997: 2). Meanwhile the local community needs to learn to work collectively, becoming proactive in resource management actions and must be willing to improve their knowledge on the subject matter.

Respondents from Kilim KPSP said that the geopark helps them to diversify their traditional fishing activities to include commercial activities, such as providing boat services to tourists who want to cruise around the islands and to other tourist spots. In the course of encouraging traditional fishermen in Kilim to venture into tourism-based activities, the fishermen's committee received significant training in relation to the geoheritage of their area as well as obtaining skills and information on managing geoforest park activities. The following quote illustrates the impact of the establishment of the geopark on their livelihood:

> We are thankful that since Langkawi became recognized as a geopark in 2007, it has encouraged more tourists to Kilim. This has enabled more traditional fishermen to work part-time as boatmen bringing tourists around the mangroves. Each boatman gets extra commission from the floating mangrove restaurants as they bring tourists to these eating places. At least this helps to improve our incomes.

According to Pomeroy (1998: 72), "the establishment and successful operation of fisheries co-management can be complex, costly, multi-year, and sometimes confusing."

During a briefing on the FRM project, one of the fishermen stated:

> Awareness of the importance of resource management will take time because there are fundamental issues that need to be addressed. One of the issues is delay in the issuance of fishermen licensing and vessel registration.

In our coastal waters, some of us feel that marine resources are still in abundance "who says there's no fish in Langkawi?" (*Siapa kata Langkawi tiada ikan?*) resource depletion is not a major concern yet. So it will take lots of effort to convince them to release small fish or releasing artificially raised fish.

The ability of the fisher folks to manage the project depends on their capacity (i.e., business assets), knowledge and experience. The process of empowering individuals in community organisations will be slow, but the progress of building confidence and capability will lead to their ability to assume more powerful roles in resource management.

Meanwhile, in Kilim KPSP, a group of fisher folks expressed their concern about the carrying capacity of the mangrove to accommodate tourists in their area. Issues raised include the following: that the speed limit of boat operators that should be set to low speed in order to reduce impact of erosion on the river banks; vandalism at geosites areas, namely, bat caves; and the extraction of

fossils at Pulau Anak Tikus. Although more tourists would generate more income, they are aware that the need to protect the Langkawi's natural resources for the sake of future income generation and the sustainability of their livelihoods.

A group of Kilim KPSP boat operators have participated in nature guide courses and training workshops organised by team researchers from Universiti Kebangsaan Malaysia and the Langkawi Development Authority (LADA). These activities have enhanced their knowledge of the rich biodiversity of their areas and the proper ways to manage them. This hands-on experience indirectly assists and encourages the local fisher folks to take care of their resources whilst bringing tourists to the geosites within Kilim.

Transformative Process and Learning Outcomes

The social and geographical conditions of a small island, such as Langkawi, facilitate the project. People still mostly live in relatively small and cohesive communities, thus making it conducive to resource-user participation in fisheries co-management. Due to the social conditions, most village leaders have substantial influence upon the daily lives of their community. Resource users must experience a certain sense of ownership in the project in order to guarantee a greater possibility of success through their support and involvement. In this case, most of the fish aggregating devices and artificial reefs located in the demarcated community fishing zone belong to the local fishermen of Kuala Teriang KPSP. Thus, this situation promotes a sense of ownership among them and indirectly develops a sense of empowerment and responsibility towards resources and control over their future.

The locals also participate in a functional manner through the establishment of local enforcement units, fishermen economic groups (KPSP), i.e., business activities and fisheries resource management plan. Hence, the more involved locals in the project tend to experience a high degree of empowerment. However, other variables, such as educational attainment and socio-economic status, may mediate this correlation. This study has identified local responses towards the KPSP's programmes in a qualitative manner rather than quantitatively. Issues that were discussed do not represent the importance of each dimension since no quantitative data were collected. The objective of reporting the results is to enhance the understanding of locals perspectives towards the programme.

In this co-operative project, the fisher folks involved mostly have a common understanding that this project is necessary in the long term to minimise the impact of resource depletion and promote sustainable fisheries management. However, in terms of the extent that they have been empowered in the process

depends on various factors, particularly their socio-cultural background. As Carrier (2004: 4) states, people do not think or act towards their surrounding naively. Rather, their socio-cultural background will shape those thoughts and actions. Thus, people who are engaged with their surroundings in material and practical ways will have a meaningful and consequential relationship with their environs, and, indirectly, they are more empowered than those who are not engaged directly with their surroundings.

These findings show that those dependent upon natural resources for a living have particularly welcomed the geopark status of Langkawi Island. It is also clear that respondents in Kilim are proactive towards the geopark initiatives because they have benefited from the recognition of their area as one of the geopark conservation areas that promote sustainable geotourism and socio-economic development. As one villager in Kilim commented:

> People from other states now know about Kilim because we have been chosen to represent the Northern Region in the Visionary Village Movement (*Gerakan Desa Wawasan*) Competition at the national level.

When the Chairman of Kilim KPSP was asked about his view on the source of motivation to continue the difficult work to ensure sustainable resource management, due to their material dependence on the quality of natural resources, he said:

> Since 2008, we have won many Langkawi tourism awards, such as for Outstanding Eco Attraction Product and Outstanding Boat Operator. These achievements are incentives that boost our confidence and motivate us in our efforts to sustainably manage our mangroves while improving our income through geotourism activities.

To date, Kilim KPSP has made Langkawi Island proud as collectively they were first to win *Anugerah Ilham Desa Peringkat Kebangsaan* 2009 award for their ecotourism initiatives from the Ministry of Regional and Rural Development (*Kementerian Kemajuan Luar Bandar dan Wilayah*, KPLW). Therefore, this co-operative project encourages participatory resource management as a potential strategy to address problems of fisheries management, mainly involving aspects of social empowerment and power sharing.

As Siry (2006: 278) mentioned, to promote decentralisation, co-management and community-based management approaches, the central government should play a crucial role particularly in promoting and providing training for all levels of government in a decentralised administration. Thus, the government must also enhance the involvement of the public, environmental protection organisations

and local community. Hence, the synergy of all actors involved in this project is crucial in order to strengthen commitment and participation. The results show that while the implementation of a fisheries co-management approach must be encouraged, it is essential to keep in mind the possible challenges that this approach might have because it is in the initial development stage. Careful attention must be given to local capacity and needs. Taking this into account will increase the likelihood of effective participation in resource management and support a variety of learning opportunities.

CONCLUSION

This article has explored the ways in which involving and engaging local fisher folks and responsible agencies have proved to be beneficial in terms of encouraging the process of transformative learning (reflection, awareness and action). In the Kuala Teriang KPSP context, the findings reveal that local fisher folks are working to enhance their life by working on a range of inter-connected issues, such as surveillance by a local monitoring unit to control illegal trawlers and assisting in putting up the artificial reef device for coastal environment rehabilitation. Meanwhile in Kilim KPSP, most of a fisher folk's livelihood is dependent upon sustainable tourism activities and fish-cage farming activities as part of diversifying their economic activities. The Kilim KPSP is an example of a pilot project for improving local livelihoods that has shown early signs of success, particularly in providing innovative job opportunities for the local people by aiding participating fishermen in tourism as nature guides and boatmen.

In both KPSPs, local fishermen are working together with local authorities to manage natural resources, ensuring the carrying capacity of the area and improving the socio-economic conditions of the local community. These activities are in harmony with geopark components and have the potential to strike a balance between conservation and development. This study concurs with the view that active local participation in resource management would allow the people to learn about their resources and that such education can lead to concrete actions on the ground towards sustainable solutions (Marschke and Sinclair, 2009; Diduck and Mitchell, 2003). Further research must be focused on improving the forms of local participation in resource management that provide space for this education to occur.

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