

**Research Article**

## **Enhancing Community Commitment in Conservation through Participatory Approach**

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## **ABSTRACT**

Kg. Tudan is a village situated in the buffer zone of Crocker Range Biosphere Reserve (CRBR). About 402 people live in Kg. Tudan, and majority are farmers. However, the steep terrain and infertility of the soil has affected the livelihood of communities, making them dependent on the surrounding forest to support their living. The Sabah State Government, Japan International Cooperation Agency (JICA), and Universiti Malaysia Sabah (UMS) implemented a project in Kg. Tudan, Tuaran, Sabah from 1<sup>st</sup> July, 2013 until 30<sup>th</sup> June 2017, under a programme called "Sustainable Development for Biodiversity and Ecosystem Conservation" (SDBEC). The project's main focus was to develop sustainable livelihoods through a participatory approach and the concept of living in harmony with the environment. After the project ended, a qualitative study was conducted to evaluate the effectiveness of the SDBEC project implementation in Kg. Tudan and its implication towards the local communities' conservation awareness. Thirty-three villagers of Kg. Tudan were interviewed. The data was analysed using Leximancer software with results illustrated in the form of a conceptual map. The study's findings indicated that the knowledge and commitment of the community in Kg. Tudan on conservation was enhanced through a participatory approach. The study also identified that the community of Kg. Tudan required capacity building and integration of sustainable livelihoods with community-based natural resource management. We recommended for ministries and NGOs engaged in environmental and biodiversity conservation to direct more efforts

towards developing sustainable practices that facilitate local communities' participation in preserving natural resources.

**Keywords:** participatory approach, capacity building, conservation, natural resources, sustainable livelihoods

## Introduction

The creation of protected areas usually exacerbates poverty due to the closure of some sites they require as natural capital for livelihood (Adams et al., 2004). Therefore, Da Fonseca et al. (2005) have stressed that in managing these protected areas (PAs), we should focus on the overall matrix in which the region is embedded within and to not neglect what is happening outside the PAs, because what happens at the exterior will influence the interior of PAs. Many local communities are depending on forests for their livelihood (IUCN, 2012). Displacement in PAs establishment can impoverish the people through landlessness, joblessness, homelessness, marginalisation, food insecurity, increased morbidity and mortality. Apart from these, there is loss of access to common property and social disarticulation (Cernea & Schmidt-Soltau, 2006; Borrini-Feyerabend et al., 2004). Strict protection of PAs incapable of micromanaging biodiversity conservation across the human-influenced landscape accelerates this new approach that allows some human activities within the PAs (Barrow & Murphree, 1998). An emerging understanding of adaptive management recognises the right and livelihoods of local communities living nearby PAs (Borrini-Feyerabend et al., 2004).

The conservation objective is difficult to achieve without considering the voice of local communities in such areas. The local community must actively participate in distribution of power (Arnstein, 1969). One of these benefits of allowing local community participation in PAs management is recognition of their autonomy. Autonomy is the ability to attribute the events caused in one's life to internal causes rather than external causes, such as own skills and preferences. Autonomous motivation also enhance the individual's emotional, physical and psychological well-being (Decaro & Stokes, 2008). Emotion has a crucial role in decision-making; thus, it is essential in public participation, especially when interpreting and summarising complex information and motivating people towards action (Vining & Tyler, 1999). Participation also helps in enhancing motivation for cooperation through the recognition of stakeholder's choices and the inclusion of individual and cultural identity (Decaro & Stokes, 2008). Most participation in biodiversity conservation induced aspects benefit human interests, such as the requirement for open space, aesthetics, and clean water, consistent with human-centred interests (Stokes et al., 2009). However,

participation persuaded by heteronomous motivation will not last long, and it is very costly to maintain (Decaro & Stokes, 2008).

The participation process has three stages: the decision to participate, the initial participation, and to sustain participation. The desire to participate in conservation is influenced by (a) the existence of opportunity, (b) whether the opportunity fits with their interest and (c) motivation (West & Pateman, 2016). The Strategic Plan for Biodiversity 2011–2020 and Aichi Biodiversity Target include two targets that directly address the importance of protected areas: Target 5 and Target 11. In contrast, Target 14 deals with biodiversity services that contribute to the people's health and livelihoods (Secretariat of the Convention of Biological Diversity, 2013). This strategic plan will be reviewed at next CBD conference of parties meeting in Kunming, China.

Therefore, in a conservation project, the local community must be involved in the whole process of the initiation, design and implementation (Brooks et al., 2013). Participatory Rural Appraisal Training (PRA) is progressive learning with the local community to investigate and evaluate constraints and opportunities and make decisions on development projects (Chambers, 1994; Alam & Ihsan, 2012). PRA approaches were used intensively in participatory appraisal and planning for natural resources management, agriculture, poverty and social programmes and health and food security (Chambers, 1994). The advantages of PRA are as follows: (1) allow local communities to present their development priorities and ideas to be incorporated in the development plan; (2) the facilitators involved in PRA will be more motivated, and the government workers can understand the priority of other workers and local communities; and (3) establish better cooperation between communities, government agencies and other facilitators. However, there are also several limitations of PRA such as (1) PRA process prolongs the implementation of development; (2) specific individuals can take advantage of PRA to bring forth their problems; (3) most of the time, local communities expectations are too high, and it is difficult to meet their expectations; (4) misunderstandings between agencies; (5) domination of a specific sector of communities in the consultation and planning process and marginalisation of less or uneducated people, and (6) failure to consider the strata of society such as gender and social status (Mohd Yusof et al., 2012). To ensure the success of PRA, we have to distinguish between the different types of local community participation, the segregation of data produced in group interviews, and the knowledge and social competencies of the local community (Campbell & Vainio-Mattila, 2003).

## Methodology

### Study Area

Kg. Tudan, Tuaran District in the state of Sabah is located at 5°55' 45" N, 116°19'53" E on steep terrain of western slope of Crocker Range. The area of the village is about 540 hectares. The village is accessible by a 3.8 km sealed road off the Penampang-Tambunan highway at kilometre 27 (Figure 1). Kg. Tudan is located in Crocker Range Biosphere Reserve (CRBR) which was designated as a Biosphere Reserve under the Man and Biosphere Reserve programme in June 2014 by UNESCO (core zone: 144,492ha, the buffer zone: 60,313 ha, the transition zone: 145,779ha) (Figure 2A). Under the zoning system of CRBR, Kg. Tudan is within the buffer zone of CRBR, which mainly follows the water catchment areas proposed by the state government. The village area also borders the core zone (consisting of Crocker Range Park and Crocker Range Forest Reserve) of CRBR (Figure 2B).

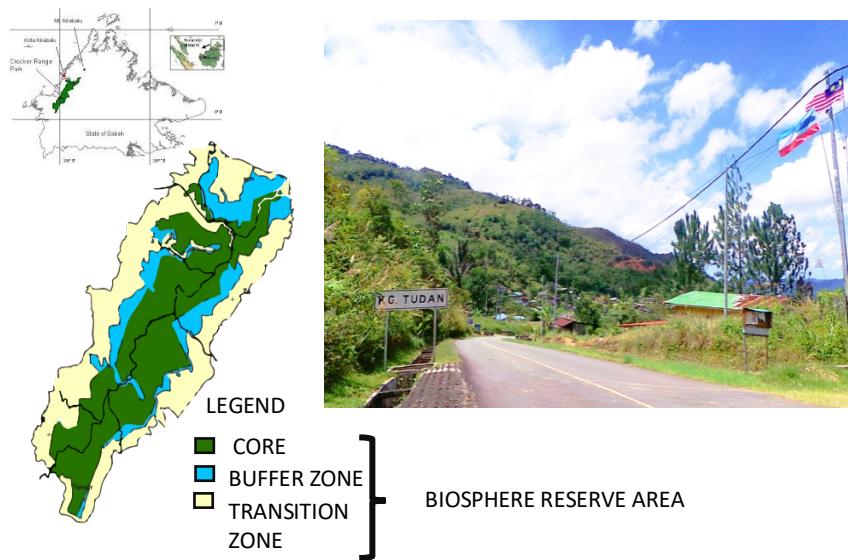


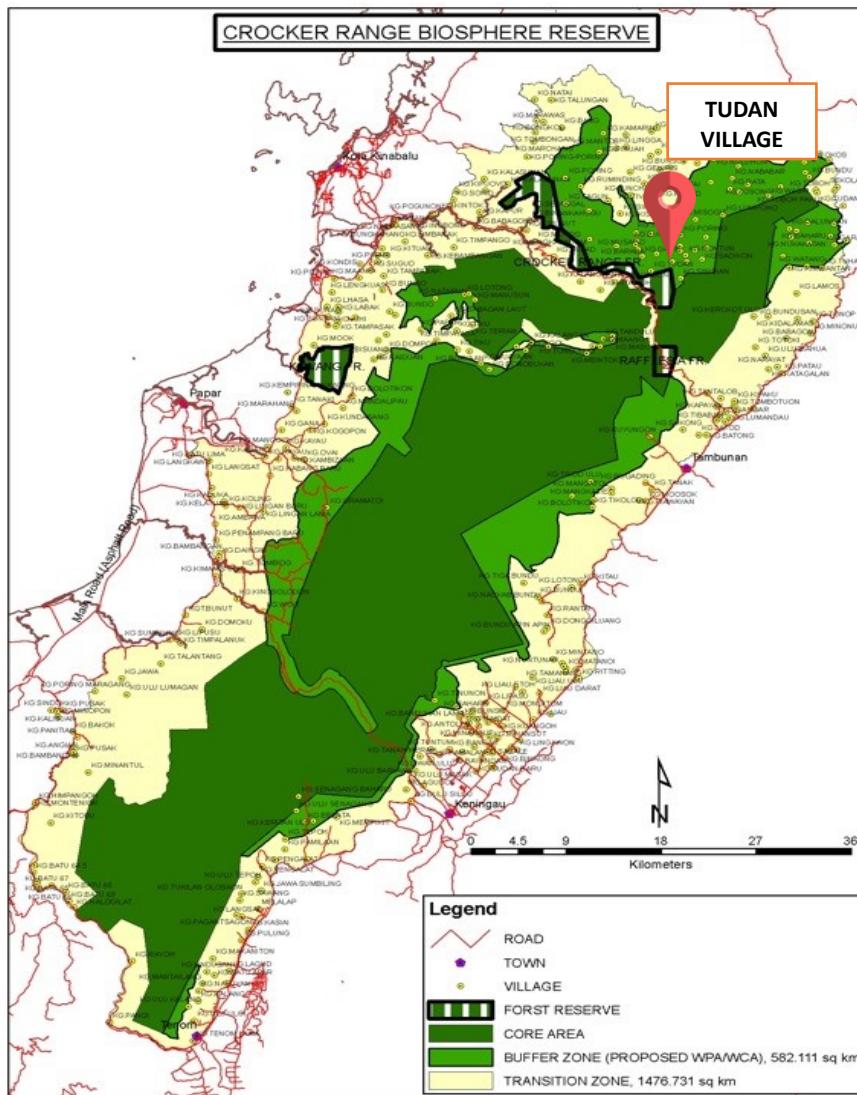
Figure 1. Map of Kg. Tudan, Kiulu and photo of the village

Generally, the landscape of Kg. Tudan consists of farmland, secondary forests and settlement areas. Secondary forests are areas left under long fallow, and the farmland is currently in use, and it is left under fallow in the future. Based on the landscape, the land use of Kg. Tudan's acreage can be classified as follows: (1) agriculture land (260.59 hectares); (2) secondary forest (189.90

hectares); and (3) settlement area (30.33 hectares) (Ere Consulting Group, 2015). Suzuki et al. (2015) found Kg. Tudan's soil to be low in nutrient content such as nitrogen, phosphorus, calcium, potassium, and cation exchange capacities (CEC) with low base saturation. By factoring the slope gradients, they concluded that only about 150 hectares or 27 per cent of Kg. Tudan is suitable for agriculture activities, with 130 hectares for medium to long-term crops and about 20 hectares for short-term crops (Jetony et al., 2021).

Kg. Tudan has a population of 402 persons (as of 2018) with 42 households. However, the number of 'permanent residents and occupied houses is less as many adults work in larger towns such as Tambunan and Penampang. These residents only come back to the village on weekends. At the same time, youngsters have also moved out to seek jobs elsewhere, including Peninsular Malaysia (Fiffy et al., 2017). The agriculture sector is the primary source of livelihood for a majority of households in Kg. Tudan. As opposed to paid employment, the income from agriculture can vary substantially for each family based on crops harvested each week and sales generated at markets. Previous findings show that the agriculture activities in Kg. Tudan are based on the Satoyama concept, where recycling and traditional use of resources are within the carrying capacity (Dublin et al., 2014). As a typical village, most of the income generated each month as cash from sales is collected daily, much of which is spent immediately on necessary expenses. For the 25 households solely involved in agriculture, the data collected showed an average income of just over RM400 per month for each household which was substantially less than what was spent. Cash income was primarily derived from the sale of crops and supplemented from time to time with the sale of livestock such as domesticated pigs, and the income derived from forest-based products such as bushmeat, jungle durian, bee-keeping etc. (**Figure 3**) (Fiffy et al., 2017).

A project under Sustainable Development for Biodiversity and Ecosystem Conservation in Sabah Malaysia (SDBEC) was implemented in Kg. Tudan, Tuaran. SDBEC is a technical cooperation project between the Sabah State Government, Japan International Cooperation Agency (JICA), and Universiti Malaysia Sabah (UMS), which started in July 2013 and ended in June 2017 (Jetony et al., 2021). The programme's main focus was to develop sustainable livelihood and other capacities for villagers in selected villages. These selected villages will then become models for living in harmony with the environment. The programme's primary objectives were to enhance the local communities' capacity and livelihood and improve their knowledge and awareness of the need to live in harmony with the environment.



**Figure 2A.** The location of Kg. Tudan in Crocker Range Biosphere Reserve (Source: Kementerian Air, Tanah dan Sumber Asli, 2019).

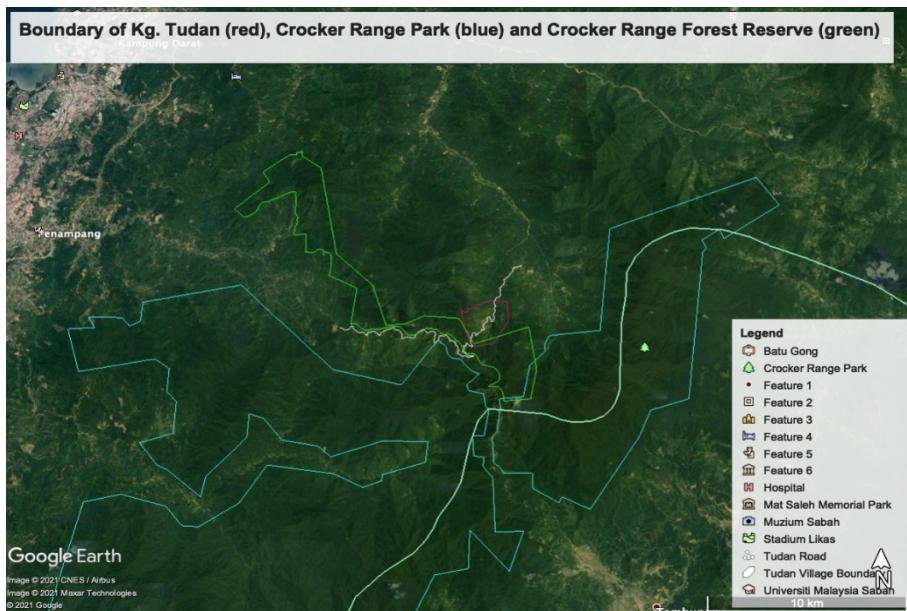


Figure 2B. The Google map of location of Kg. Tudan within CRBR.

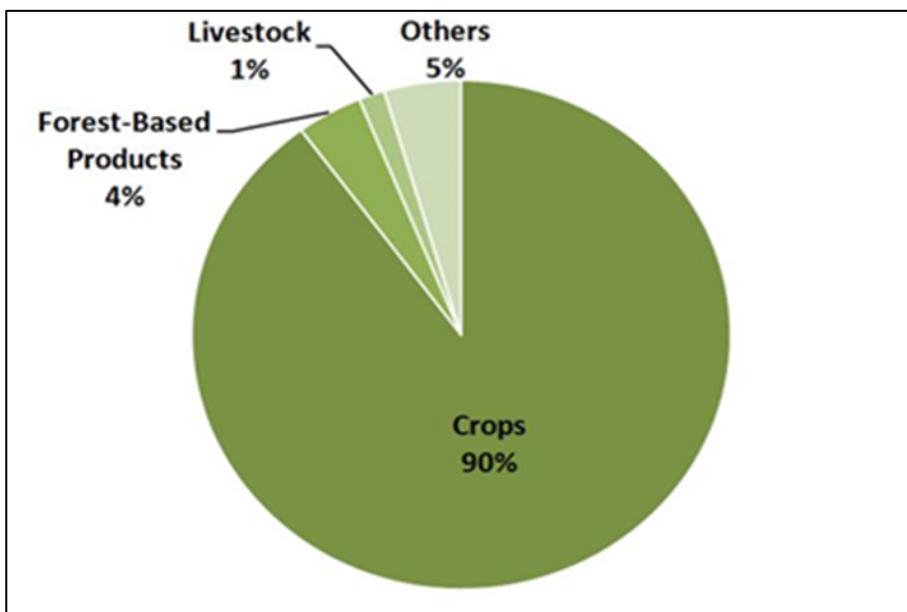


Figure 3. Sources of income for households involved in agriculture (Source: Fiffy et al., 2017).

The programme is aligned with the characteristics and objectives of UNESCO's Man and the Biosphere (MAB) programme in CRBR with the following criteria. Among the factors for consideration in selecting project areas for SDBEC are: important biodiversity; project has good potential to succeed; the villagers' willingness to participate in the programme; accessible; no similar ongoing programme in the site (SDBEC, 2013). Kg. Tudan was selected as one of two villages to implement the above project because it fulfils the above criteria. Under the SDBEC project, they carried out many activities. Among these activities were: (1) baseline survey; (2) Participatory Three-Dimensional Modelling (P3DM); (3) River Environmental Education Programme; (4) Participatory Rural Appraisal (PRA); (5) making compost and charcoal; (6) bee-keeping; (7) mulberry planting and juice and jam; and (8) strategies and action plans for Kg. Tudan (Ere Consulting group, 2015). The researcher was involved directly both as a project manager and chairman of the SDBEC Management Committee. Therefore, this study is to investigate the effectiveness of SDBEC in enhancing community commitment in conservation activities.

### ***Data Collection and Analysis***

A total of 33 data were collected from the field using a questionnaire and an in-depth interview. An ethic committee was formed to evaluate the question items used to interview and distribute to respondents. The ethic committee comprised the Sabah Biodiversity Council and the village head of Kg. Tudan. All respondents were provided with an informed consent form prior to the interview and questionnaire survey. Some secondary data from previous studies, namely by Suzuki et al. (2015), and Fiffy et al. (2017), were used to complement data collected.

As qualitative research generates a significant volume of rich data, especially with 33 in-depth interview transcripts. The data sets were subject to analysis via Leximancer; a software programme that facilitates thematic content analysis techniques (Loosemore & Galea, 2008). It provides the framework for discussing the identified themes, concepts and patterns that are the basis for all qualitative research analysis (Berg, 2001). The software is a proprietary mathematically-based text mining and text analytic tool that can visually identify the true meaning from text and visually display the extracted information. In addition to quantifying and coding text segments, Leximancer develops a thesaurus of words around a set of initial seed words. By incorporating the words' proximity in the transcripts, Leximancer displays the data in a "concept map" (Loosemore & Galea, 2008).

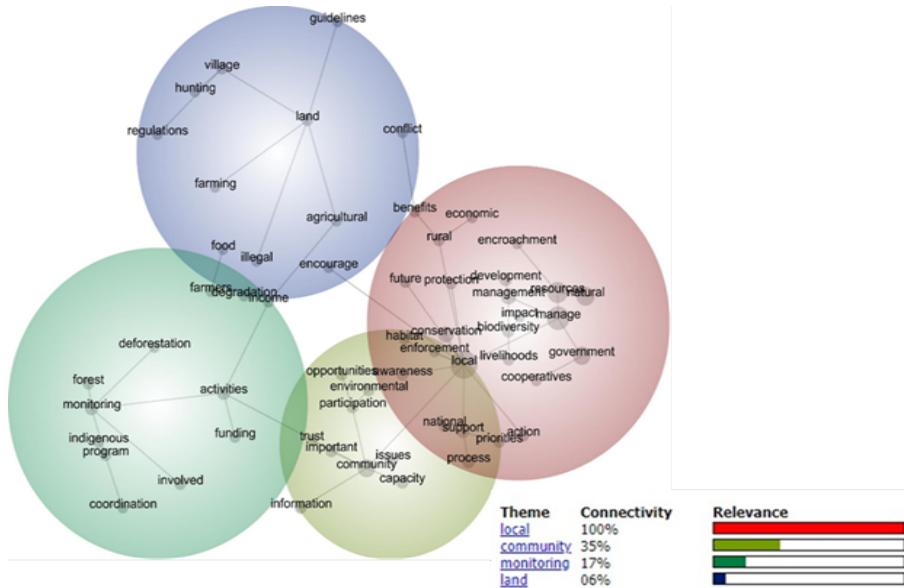
In the Leximancer concept map, the themes are represented by the circles, with the size and depth of colour used to indicate the theme's dominance. The overlap between the circles signifies these themes' co-occurrence in the data and the theme name derived from the most significant concept within the theme circle. Overlapping theme circles indicate a close association between concept groups. Leximancer was used to generate a "first-pass" visualisation of the survey from all qualitative or "free text" survey questions to identify connectivity or co-occurrence responses. Each theme circle comprises one or more concepts represented as nodes on the visualisation. Each themed circle's size denotes its relative importance; for example, the larger the circle, the greater the degree of concept interconnectedness.

This study investigated the community's commitment through their capacity requirements on conservation and their understanding of conservation activities. By analysing the capacity and their understanding of the environment, we can qualitatively correlate it with their eagerness to protect the environment surrounding them.

## Results and Discussion

**Figure 4** presents the "local" theme with 100% connectivity to be one of the main features of the community's capacity requirement. The main concept associated with "local" includes "conservation", "biodiversity", "protection", "manage", "habitat", "enforcement", and "action". All these are sub-notions of conservation of natural resources. Thus, the theme "community" appeared during the analysis with 35% connectivity. "Trust", "participation" and "information" are the concepts of importance for the theme "community".

It indicates trust and information are crucial for eliciting the local community's participation in conservation because values influence participation. Values are indicators for feelings and emotions, which help interpret and organise information and summarise complex information that can be the source for motivation (Vinning & Tyler, 1999). People need information, and they need to assess the programme for them to commit to the activities. Therefore, one way for them to learn is through participation in the project. In the interview, "deforestation" is also a concern for respondents. It shows that "monitoring" with 17% connectivity must ensure "deforestation" problems are curbed. However, respondents stated that they require the capacity to monitor.



**Figure 4.** Concept map of capacity requirement of local community in Kg. Tudan

Figure 5 shows the Leximancer conceptual map related to respondent conservation perspectives. There are nine (9) themes that emerged from the data set. The themes are “conservation”, “community”, “local”, “information”, “work”, “forest”, “guide”, “financial” and “leadership”. The themes show that “conservation” is the highest connectivity with respondents' perspectives at 100%. It indicates that the respondents have a good comprehension of conservation. The respondents also stated that conservation is always associated with the community because almost all rural communities in Sabah live adjacent to forested areas. However, most of the respondents agreed that conservation is important for the community (92%) as it brings development. The respondents also revealed that locals (72 %), especially youth, are always keen to participate in conservation activities, probably because they are looking for new knowledge and employment opportunities. They also believe that conservation can generate new knowledge through the dissemination of information (18%), especially of the forest (3%) and giving more work prospects (4%), opportunity to be involved in guiding the conservation project (3%), financial aid for the community and leadership (2%), and capacity development (1%).

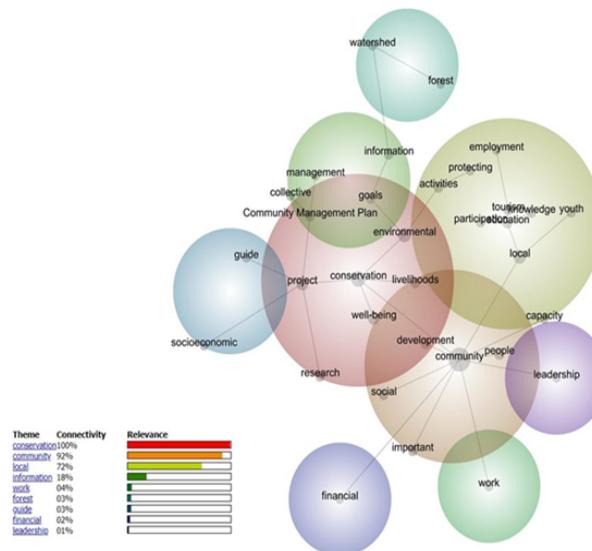


Figure 5. Leximancer visualisation of themes and concepts on the respondents

The results indicate that the community is aware of the importance of conservation of their natural village. They also have reasonably good knowledge of the required action and process of biodiversity conservation. These were illustrated in their use of keywords in an interview that correlates well with their excellent understanding and comprehension of conservation.

Their significantly good understanding of conservation could have contributed to SDBEC activities conducted through a participatory method in the village. Participation in the baseline study under SDBEC has enabled the community to get accurate and reliable information about their village. Participation in “three-dimension modelling”, formulation of strategies and formulation of action plans allowed them to visualise and realise the constraints and opportunities for development in the village. The participatory activities have reinforced their understanding as biodiversity protection is crucial for their survival due to the challenging steep terrain and infertile soil of Kg. Tudan. Bee-keeping, mulberry, and juice making activities have no disturbance to the environment and do not depend on soil fertility. These activities are generally in harmony with the environment. Participating in the formulation of strategies and action plans for the village has a very significant positive impact, thus enhancing commitment to managing their village sustainably. The community shared vision for their village development plan with an interlinked goal, thus

consolidating their efforts in achieving multiple objectives of the programme (UNU-IAS & IGES (eds.), 2016). Participation in the River Environmental Education Programme has allowed them to connect their development strategies in protecting the river system. Kg. Tudan is part of the CRP water catchment area. In Figure 5, one of the concepts is related to the watershed. This information indicates a community connected to watershed protection due to the knowledge that they have obtained previously. Participation in training can change people's behaviour if they apply skills locally and in a productive manner (Metha & Heinen, 2001).

## **Conclusion**

In conclusion, there is a strong indication that activities under SDBEC in Kg. Tudan conducted through a participatory approach managed to enhance the community's understanding and commitment. The community wanted not only to participate in the SDBEC but also in the management of the PA which is part of their socio-culture and economic domain. The participatory approach is the most feasible way of engaging the Kg. Tudan community. Hands-on practical learning and participatory peer-to-peer learning is the best option for the population residing in Kg. Tudan, as 67% of the population possess low literacy skills. They may have never been to school, or they may have only achieved primary-level schooling. It is multidimensional and multi-level, involving both natures with scale, uncertainty and multiple stability domains. Besides, human societies are influenced by values, perceptions, knowledge systems, traditions, rules, and diverging societal interest that guide their thinking and actions (Salasfsky et al. 2002; Berkes 2004). However, the study has shown that even with the local community's low education level, we can enhance their behaviour towards conservation and indirectly enhance their commitment to protecting and conserving biodiversity through a participatory approach. Therefore, an appropriate strategy is needed. To assist the local communities in the whole process of initiation, implementation, and monitoring, it must be based on their capabilities. If an intervention to implement a project does not consider the local communities' capacity to participate, the project will fail (Tiwari, 2006).

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