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Performance of Community Based Conservation Projects in Kenya: A Case of Laikipia Conservation Region Conservancies

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Abstract

Community-based conservation (CBC) projects are essential in the promotion of biodiversity conservation and livelihood development. Despite significant financial and institutional investment, performance of CBC interventions is mixed, with shortcomings especially evident in wildlife-based CBC in Africa. The study was a convergent mixed methods design where quantitative and qualitative data were collected and analyzed and integrated for triangulation purposes. In this study, systems theory and theory of change were adopted to help explain the performance of CBC projects. Based on circular causality, project designers provide alternative livelihood means to lessen the pressure on biodiversity. Specifically, economic outcomes were measured in terms of community empowerment; attitudinal change in terms of acceptance of wildlife conservation as an economic activity; behavioral outcomes in terms of change of behavior towards sustainable resource use; and ecological outcomes in terms of the realized biodiversity regeneration due to CBC implementation. Well-designed asset based conservation projects that put the local community at the center breeds positive outcomes for both conservation and local development. Conservation and development, although perceived as conflicting goals have been found to be mutually reinforcing.

Keywords: Community-based Conservation, Empowerment, Behavioral Change, Sustainable resource use, Attitudinal Change, Ecological Change, Biodiversity Regeneration.

Introduction

Project performance is defined and perceived differently, giving it varied connotations based on experience, knowledge, and context. The crosscutting theme however is that it is seen as the progression towards intended project goals and outcomes. This study was based on CBC projects and views project performance as the achievement of set conservation and development project goals as well as progression towards their realization. Due to nested social, political, ecological, and cultural dynamics, CBC projects are in

practice complex undertakings whose performance is highly dependent on the interplay between project design and these factors. The interface of interaction between these nested factors and project design vary with stakeholder types, vested interests, geographic scope, and local circumstances. Pursuant to this, the performance of CBC projects is highly depended on how well their design addresses the nested complexity.

The complexity reality renders the performance of CBC projects to be a multidimensional construct composed of economic, ecological, and even human dimensions. The design of CBC projects link maintenance of ecosystems to poverty alleviation within communities where biodiversity occurs. In this study, ecological, economic, attitudinal, and behavioral outcome constructs are used measure CBC project performance. Specifically, economic outcomes were measured in terms of community empowerment; attitudinal change in terms of acceptance of wildlife conservation as an economic activity; behavioral outcomes in terms of change of behavior towards sustainable resource use; and ecological outcomes in terms of the realized biodiversity regeneration due to CBC implementation.

Performance of Community Based Conservation Projects

Project performance is largely perceptual and contemporary view is wider encompassing. Project management literature gives much attention to project success, which is based on traditional triple constraint (scope, time and budget), a rather reductionist view in a complex world. Taken as attainment of project goals as well as progression towards their realization, project performance was measured by achievement of the main objectives of CBC project, that is, conservation of wildlife, habitats, and improvement of local community welfare through local development. The researchers used levels of community empowerment, acceptance of wildlife conservation as an economic activity, sustainable resource use and biodiversity regeneration in community conservation areas as the indicators of CBC project performance.

Performance was seen to be anchored on circular causality of the systems theory. The main theoretical link that provides justification for CBC projects is that vices against biodiversity conservation emanate from fulfilment of sustenance needs (Shereni & Saarinen, 2021). Based on this, CBC projects are designed to provide alternative livelihood needs that dependence on biodiversity, putting local community at the center of simultaneously conserving nature and spurring local development. Brichieri-Colombi, McPherson, Sheppard, Mason and Moehrenschrager (2018) opine that the CBC projects must provide socioeconomic and biological benefits, connected through effective resilience mechanisms. So in essence, achievement of conservation and development goals cannot be delinked and must be concurrently achieved.

In the last three decades, several CBC projects have been implemented in various parts of developing world. Literature from the first decade culminated to publications based on learnt lessons. Early analyses (Wells, Brandon & Hannah, 1992; Western, 1994) could not reveal much about CBC project success, giving the main reason as short duration of operation. However, later reviews were more critical, pointing that CBC projects had identity crisis, lacked of purpose to the degree that the most optimistic of them achieved merely a fleeting success due to major deficiencies in their design (Garnett, Sayer & Du Toit, 2007; Dressler, Buscher, Schoon, Brockington, Hayes, Kull, *et al.*, 2010). Recent reviews like Stephenson (2019) are paradoxical, pointing out that CBC projects have had success in conservation and sustainable development, but also discredited the projects for having no impacts on a larger scale to reverse threats and trends. Gurney, Pressey, Cinner and Pollnac (2015) however concludes that CBC projects met the required goals. These divergent views do not seem to have solved the CBC impasse as division of opinion is evident and point to mixed

success stories. The purported success seems to be fleeting and fragile since no lasting improvement in the biodiversity and welfare of communities in areas where CBC projects were implemented.

The CBC project performance is described in typically anecdotal case studies, which appears to be idiosyncratic, fleeting, and contingent on local history, society, and environment. For instance, Lee and Bond (2018) quantified ecological success of CBC projects and pointed out that there were problems that afflicted these initiatives and therefore bogged down the performance. The authors identified onerous bureaucratic demands, revenue collection by the government that goes to the exchequer, influence of outside conservation agencies and economic and human right failures. The literature however fails to mention that given the underlying circumstances and dismal results, focus should now be on the means, the design of CBC projects, not the ends.

Further, Galvin, Beeton, and Luizza (2018) adopted a mixed-method approach that entailed inductive and deductive textual analysis of cases to review CBC literature based on geospatial visualization, descriptive statistics, and correlational analysis. The study found that CBC projects implemented in Africa had positive results in less than half of the cases that the authors evaluated, (35 of the 73 cases assessed had positive outcomes). The shortcoming of Galvin *et al.* (2018) is that the study exclusively emphasized on social outcomes and employed qualitative methods. These results are therefore not conclusive owing to the lack of triangulation in the methods employed and cannot be relied upon to pass the judgement on the performance of CBC projects.

Other studies have however redeemed some image for CBC projects as a vehicle for linking conservation and development in Africa. Silva and Mosimane (2012) used a mixed methods approach on assessment of economic benefits of CBC projects in Namibia to survey communal conservancies. The results indicate that members realized some direct economic benefits, however, indirect benefits that promote improvements for all residents were not realized. Although the results were positive, the regression analysis showed that participation in projects stood to economically benefit households but did not show community-wide benefits. In addition, the data was a snapshot at a point in time in only two projects, hence the need to investigate these assertions in a larger scope of projects. The results of Galvin *et al.* (2018) and those by Silva and Mosimane (2012) suggest that often, CBC projects implemented in Africa have led to combination of positive and negative or negative social outcomes, but surprisingly, ecological outcomes have been mainly positive.

Furthermore, engaging local community in conservation and development initiatives empowers community to design, implement, monitor, and control projects effectively and efficiently. Shereni and Saarinen (2021) surveyed households in three purposively selected wards out of the twenty in Hwange National Park communities in Zimbabwe. Based on the performed quantitative analysis, income generating alternative livelihood projects, specifically handcraft making, gardening, beekeeping and livestock keeping, were perceived as important empowerment options by communities. The communities also appreciated other CBC empowerment benefits such as revenue sharing, local infrastructural development, and game meat. The paradox of this study was that the results show that a section of respondents had negative perceptions towards the CBC projects. This further confirms the fleeting and fragile argument, meaning, in some

cases, the performance of CBC projects is depended on different stakeholders' perceptions.

Moreover, ecological indicators are the outcomes associated with habitat, or wildlife species of interest being in better condition following the CBC project intervention such as increase in population size of a species, or the abundance of a given resource. Suich (2013) reported to the increase of wildlife population numbers during the project implementation period of CBC projects in Mozambique and Namibia. Lee and Bond (2018) argued that since CBC projects in Africa were implemented in pastoral communal areas, an important indicator for ecological success would be significant greater wildlife densities and significant lower livestock densities in conservation areas. Positive ecological change is likely when the project engages with traditional knowledge systems such as governance institutions and cultural traditions and builds capacity in the local communities. These forms traditional ecological knowledge systems which are vital to sustainability of projects and will most likely spur regeneration of biodiversity in zones where CBC projects are implemented.

The acceptance and attitude towards wildlife depends on the empowerment the local community derives from conservation which could be in terms of benefit sharing from the enterprises present in conservation areas. Groom and Harris (2008) used a semi-structured questionnaire survey to investigate the importance of unbiased revenue sharing in two community ranches in Amboseli Ecosystem in Kenya. The authors tested two hypotheses; (i) whether the amount of money paid to households was significant in affecting attitudes to wildlife conservation, and (ii) whether wildlife revenue distribution was significant in affecting attitudes to conservation of wildlife. The ordinal logistic regression statistical analysis performed revealed that it was the presence or absence of benefit sharing to the community and not the amount of revenue received which determined the attitude of the people towards conservation of wildlife. This is a prove that community empowerment through benefit sharing could have significant social and environmental consequences and therefore important in CBC design. It underscores acceptance of wildlife and conservation on community land as an important indicator of CBC project performance owing to provision of incentives to the local community.

However, provision of public goods such as infrastructural benefits and financial benefits from conservancies are important CBC project performance indicators but do not necessarily improve the welfare of the local community. Using a quasi-experimental design that Riehl, Zerriffi, and Naidoo (2015) applied regression models and statistically compared temporal trends between non-conservancy and conservancy units on a variety of social and economic outcomes. Results indicated that conservancy economic benefits did not trickle to individual households. Wealth index of conservancy members was the same as non-conservancy member (not significant at 0.05, *p-value* = 0.06). This shows that empowerment alone could not be relied as the only measure of CBC project performance.

Material and Methods

The study was a convergent mixed methods design where quantitative and qualitative data were collected and analyzed and integrated for triangulation purposes (Creswell & Plano Clark, 2018). A cross-sectional survey of members of CBC livelihood projects in Laikipia conservation region was conducted in 2020. In

the survey tool, the following verbal anchors were used; 1= Not at all (NA); 2 = To a little extent (LE); 3 = To a moderate extent (ME); 4 = To a great extent (GE); 5 = To a very great extent (VGE). The judgment rule in this study had an equidistance of 0.8 and was created based on Lantz (2013), where; Not at All was for the values that lied between $1 < NA > 1.8$; To a little extent for values between $1.8 < LE > 2.6$; To a moderate extent for values between $2.6 < ME > 3.4$; To a great extent for values between $3.4 < GE > 4.2$; To a very great extent for values between $4.2 < VGE > 5.0$

In the qualitative strand of the study, focused group discussion and document analysis were used. Focused group discussion schedule was used to collect in-depth information from eight respondents (n=8) composed of conservancy officials, specifically chairmen of conservancy boards and conservancy managers. For the document analysis exercise, 47 documents were collected, however, based on the quality of information and reliability, 11 documents were selected for the final analysis (n=11). The documents were, State of Conservancies (SOC) Reports by NRT and Kenya Wildlife Conservancies Association (KWCA), Conservancy Management Plans and Project reports.

Table 1: Data Collection Instruments, Respondents and Data Type

Instrument	Respondents	Data
Questionnaire	Members of the CBC projects in the community conservancies	The extent of the Performance of CBC projects.
Focused Group Discussions	Conservancy Board Chairs Managers of conservancies	Voices Performance of CBC projects
Document Analysis	N/A	Published information on Performance of CBC projects

Descriptive techniques, specifically means, frequencies, and standard deviations were used to depict occurrences in the population under study. To analyze qualitative data from the focused group discussions, framework-based approach was used. The framework-based approach used in this study comprised five interconnected steps as outlined by Hackett and Strickland (2018). Core to this approach was the generation of a 'thematic framework' particularly for this study. This study looked at the collected qualitative data from aprioristic view, based on the indicators of the variables under study and therefore did not adopt an open-minded stance that could allow categories to emerge. Moreira and Costa (2016) argue that aprioristic approach was ideal as it not only complied with research questions and objectives but was also flexible enough to allow unforeseen categories to emerge.

Theoretical Framework of CBC Projects

This study adopted systems theory and the theory of change to help explain the performance of CBC projects. Community welfare and biodiversity conservation are conflicting goals but highly interlinked as they affect each other. Based on circular causality, project designers provide alternative livelihood means to lessen the pressure on biodiversity. In reverse, unsustainable use of biodiversity affects community welfare in the long run. Further, based on the theory of change, (Weiss, 1995 in Msila & Setlhako,

2013) positive feedback from these two goals of conservation and local development will lead to project performance. Galvin *et al.* (2018) pointed to myriad factors that must be right for positive social and ecological outcomes of CBC projects. These factors include and not limited to exogenous economic, historical, socio-political, and biotic and abiotic factors, besides the local circumstances and processes in areas where these projects are implemented.

Within the complex mission of CBC project design, the concept of theory of change system hinges upon defining the entire essential and enough conditions required to result in the lengthy-term period

CBC projects are designed to generate earnings and non-cash advantages for stakeholders. On accomplishing this, they offer an inducement and ability for stakeholders to change their conduct, consisting of enhancing their control of resources or discontinuing overuse. This way, community participation in the conservation activities and enterprises ties idle labor and consequently reducing threats and enhancing the status of biodiversity, the ecosystems, and species that CBC project is geared to conserve. This idea is represented *Figure 1*.

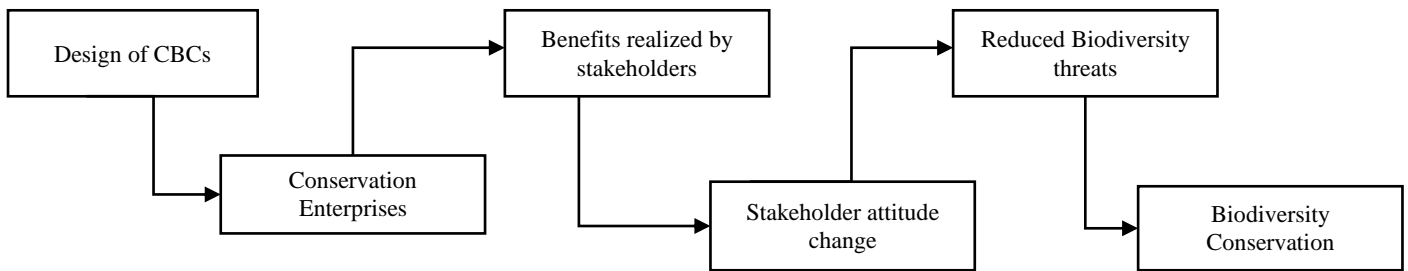


Figure 1: Theory of change

(Adapted from USAID, 2016)

Results

This study established the CBC project performance in community conservancies in Kenya, specifically targeting Laikipia conservation region. The indicators included, community empowerment, behavioural change to sustainable resource use, acceptance of wildlife conservation, and ecological change in terms of biodiversity regeneration.

Table 2: Descriptive Analysis of the Performance of CBC Projects

Statement	NA %	LE %	ME %	GE %	VGE %	μ	Σ
Community Empowerment							
Conservancy employees are from our community	0	20.2	7.6	54.6	17.6	3.70	.986
My CBC project been initiated by the conservancy	0.4	14.7	11.3	48.7	24.8	3.83	.981
Conservancy management helps CBC projects run its activities	0	21.0	18.5	47.1	13.4	3.53	.971
I now earn money from the projects initiated	0.4	13.4	13.4	58.4	14.3	3.73	.884
Improved infrastructure can be attributed to projects	0	27.3	26.9	42.9	2.9	3.21	.881
Acceptance of Wildlife Conservation							
Acceptance of conservation as a viable land use activity	0	10.1	14.7	45.4	29.8	3.95	.922
Agreed to presence of wildlife on their land	0	11.8	17.2	49.6	21.0	3.80	.906
Acceptance of wildlife to support tourism	0	13.4	8.0	53.4	25.2	3.90	.930
Sustainable Resource Use							
I have embraced new ways of supporting my family	0.4	15.1	12.2	50.0	22.3	3.79	.972
No more poaching of wildlife in the conservancy	1.3	13.9	17.2	52.5	15.1	3.66	.939
No more charcoal burning in the conservancy	0.4	11.3	11.8	52.5	23.9	3.88	.916
We now graze our cattle in designated areas only	0.4	8.0	13.0	63.9	14.7	3.84	.783
Tourism is now accepted as a way of income	0.4	8.4	11.8	63.9	15.5	3.86	.793
Biodiversity Regeneration							

There is increased sighting of wildlife	0.4	11.8	12.6	45.4	29.8	3.92	.965
There is increased grass and tree coverage	0.4	10.1	18.5	56.7	14.3	3.74	.840
Increased wildlife species in the conservancy	0.8	13.9	22.3	53.4	9.7	3.57	.877
Composite Mean						3.745	.454

NA = Not at All; LE = To a Little Extent; ME = To a Moderate Extent; GE = To a Great Extent; VGE = To a Very Great Extent; μ = Mean; σ = Standard Deviation

From the findings in Table 2, CBC project performance was rated to be to a great extent given that $\mu = 3.745$. The standard deviation $\sigma = 0.454$ meaning that scores were clustered around the mean, an indication that project performance was to a great extent across all the conservancies. All but one CBC project performance statements were to a great extent (means = $3.4 < GE > 4.2$). This was an indication that CBC projects in Laikipia conservation region were designed to have conservation and local development to mutually reinforce one another.

All community empowerment statements were to a great extent (means = $3.4 < GE > 4.2$), except one. Community empowerment through initiation of local projects ($\mu=3.83$; $\sigma= 0.981$) scored the highest. However, despite being to great extent, empowerment of community through employment ($\mu=3.70$; $\sigma= 0.986$), earnings from the CBC projects initiated ($\mu=3.73$; $\sigma=0.884$), and facilitation of running of CBC projects by the conservancy management ($\mu=3.53$; $\sigma=0.971$) had their scores less than the composite mean ($\mu=3.745$). This is an indication of a room of improvement in these project activities. The least rated community empowerment statement was whether improved infrastructure could be attributed to CBC projects, the results show that it was to a moderate extent ($\mu=3.21$; $\sigma=0.881$), an indication that respondents could not attribute the local infrastructure improvement to the CBC projects *per se*. This was probably due to the presence of other actors such private investors who lease and construct tourism facilities and the county government of Laikipia in its effort to improve the local infrastructure.

The findings tabulated in Table 2 show the acceptance of wildlife conservation indicator cluster statements were to a great extent ($\mu=3.80$ to $\mu=3.95$). The findings further show that there was acceptance of conservation as a viable land use activity to a great extent ($\mu=3.95$; $\sigma = 0.922$). Acceptance of wildlife conservation for tourism purposes in the community conservancies ($\mu=3.90$; $\sigma = 0.930$). Overall, all statements on the acceptance of wildlife conservation had means above the composite mean ($\mu=3.745$; $\sigma= 0.454$) indicating attitudinal change towards conservation and wildlife was very well on course due to the CBC projects.

The findings in Table 1 also revealed that the means of sustainable use of resources indicator ranged from 3.66 to 3.88, an indication that there was behavioural change and that sustainable resource use had been embraced in the conservancies to a great extent (means = $3.4 < GE > 4.2$). Except the statement on poaching, all other sustainable resource use statements were above the composite mean ($\mu=3.745$; $\sigma= 0.454$), indicating their pivotal contribution to the performance of CBC projects. The results show that there was cessation of exploitation of habitats through charcoal burning ($\mu =3.88$; $\sigma = 0.916$) and acceptance of tourism as an economic activity in the community areas ($\mu = 3.86$; $\sigma = 0.793$). Furthermore, the results of the survey showed that there was adoption of sustainable grazing in designated areas ($\mu = 3.84$; $\sigma = 0.783$) and embracement of diversifies economic activities ($\mu = 3.79$; $\sigma =$

0.972). The results further show that to a great extent ($\mu = 3.66$; $\sigma = 0.939$) there was no more poaching of wildlife in the community conservancies. This mean is however below the composite mean ($\mu=3.745$; $\sigma= 0.454$), meaning that though to a great extent respondents agreed that there was no poaching, more could be done on the matter to improve CBC project performance.

The results tabulated in Table 1 revealed that biodiversity regeneration of species and habitats cluster statements were all to a great extent since the means were within the range of $3.4 < GE > 4.2$. Increased sighting of wildlife ranked the highest and to a great extent ($\mu = 3.92$; $\sigma = 0.965$), indicating an increase of wildlife populations in the community areas. The other two biodiversity regeneration statements had means below the CBC performance composite mean ($\mu=3.745$; $\sigma= 0.454$), an indication that there was a room for their improvement. Biodiversity regeneration based on increased grass and tree coverage was to a great extent ($\mu = 3.74$; $\sigma = 0.840$) and regeneration based of increased wildlife species during the CBC projects period was also to a great extent ($\mu = 3.57$; $\sigma = 0.877$).

Convergent mixed method approach was used in the study, where a qualitative strand of focussed group discussions and document analysis was used to triangulate the results from the cross-sectional survey. The qualitative analysis registered the same trends in the CBC projects implementation areas. Thematic framework analysis conducted on the focussed group discussion shows that local community was empowered through employment, tourism enterprises and youth oriented *moran* enterprises. Moreover, traditional enterprises such as women bead making and livestock works were a major source of local empowerment. These results point to an empowerment that was designed to not only utilise traditional strengths (bead making and livestock rearing) but also build on new sustainable opportunities. The end goal being to concurrently conserve wildlife and natural ecosystems and improve community welfare. One chairman of a conservancy said.

"We have seen preservation of our local culture and empowerment especially for women as they benefit from bead works a lot.... and we encourage people to join the conservancy projects to earn a living."

Though the survey found that infrastructure could be associated with the CBC projects to a moderate extent, focused group discussion participants still attributed the growing infrastructure and shopping centers to the existence of the conservancy projects. For instance, Ilpolei center and road grading in Naibunga Upper conservancy were given as best examples. Thematic analysis of the focused group discussions gave prominence to empowerment through support of education and health sectors in the community. Participants identified education bursaries, constructions, staffing, equipping and maintenance of schools in the conservancy areas. The participants further noted that health of the local community had been improved through immunizations, nutrition and family planning training and construction of clinics.

The results of the survey were further confirmed by the document analysis. The secondary data in the documents points to local empowerment through employment, that has increased in the conservancies over the years. For instance, NRT (2023) reports that in 2004, there were only five employees, one driver, and a vehicle, today there are 1,366 permanent employees across the conservancies. To add on to that, NRT (2019) reported 2,737 temporary jobs ranging from road projects to classroom construction were created in the NRT affiliated conservancies.

To reduce pressure on natural resources and alleviate poverty, the design of the conservancy projects results to more indirect employment anchored in conservation related enterprises, mainly bead works, livestock works and youth enterprises. This is through utilization of local assets and traditional skills to drive asset based community development. One such example in bead works, undertaken by local women which grew by 300 percent from Ksh. 8 million in 2016 to Ksh 32.4 million in 2022 across NRT member conservancies. Though bead works as an enterprise was immensely affected by the Covid-19 pandemic in 2020 (earnings Ksh. 5.5 million), it bounced back to Ksh. 30 million in 2021. These results indicate the resilience and sustainability of asset based community enterprises.

Empowerment through livestock works, a livestock to market model that is designed to provide community conservancies with a consistent, reliable, and fair market for their beef cattle indicated growth, before Covid-19 pandemic. The enterprise grew from Ksh. 55 million in 2016, topped Ksh. 94 million in 2018 before dipping to Ksh. 62 million due to drought in 2019. However, due to closure of markets in 2020 and 2021, the enterprise has been deeply affected. As a form of community empowerment, the strides made by ecotourism, which is known to be a significant contributor to local economies through job creation, infrastructure development, and revenue generation were highlighted in the documents. The sector earned Ksh. 52.5 million in 2016, which increased by 153 percent to Ksh. 133 million in 2019, but decreased to by half to Ksh. 62 million in 2020 due to Covid-19 pandemic travel bans. However, tourism earned Ksh. 85 million in 2021 and grew by 34 percent to Ksh.117.2 million in 2022. These statistics again confirm the versatility and sustainability of asset based community development enterprises.

To empower the next generation in conservation areas, the conservancy design had integrated support of the education sector. Document analysis shows that Ksh. 37.4 million was utilized to support 3,262 learners across NRT member conservancies in 2016. The bursary allocation has grown by 110 percent to 78.7 million in 2022 with the learners supported increasing by 286 percent to 12,557. The analysis further highlighted empowerment to diversify livelihoods in as a means to divert labour away from utilization of natural resources. For instance, NRT (2019) reports that 1,489 youth and women profited from microfinance initiatives where 776 received loans to buy motorcycles for *boda boda* public transport businesses and women got loans for startup capital to engage in beadwork and other small enterprises. The analysis further shows that enterprise fund in the conservancies increased from Ksh. 3.8 million in 2016 to 12.1 million in 2022 9 an increase of 218 per cent. Based on these results, it is beyond any reasonable doubt that CBC projects in Laikipia region have had a positive performance by empowering local participants while at the same time promoting conservation.

Through the thematic framework analysis, the focussed group interview participants concurred that a positive change of attitude towards conservation has been noted, a change one chairman of a conservancy attributed to benefits from the CBC projects as they promote local community livelihoods by saying that.

“Our community no longer relies on livestock alone; wildlife conservation has become a source of income to us. We have now learned to eat using both hands, we now eat from our livestock, and from conservation”

Another conservancy chairman added that.

“The attitude of our community towards conservation has positively changed over the last years. Conservation is so important here to the extent that it is an item in political campaigns. The current Member of County Assembly rode on conservation and it is one of the reasons he was elected.”

Evidence from documents reviewed indicated that the community readily accepts strategies meant to create a space for wildlife conservation. Yardstick to this is the fact that conservancy members willingly participate in dividing their group ranches to different blocks to allow areas of conservation and areas of cattle grazing. The CBC project design includes continuous education to ensure acceptance of conservation through grazing plans. NRT (2023) reports that 2,302 herders across the region underwent training in various aspects of planned grazing management implementation in 2022. In a blend of external expertise and traditional ecological knowledge, range management experts and local grazing committees, the members practice block and bunched grazing to help habitats to recover. To cement these results, an NRT Community Conservancy member in 2018 said,

“We have always co-existed with elephants, but in the past, we viewed them as something to be wary of. They would collapse our wells, obstruct our paths and in some cases our young men would come into conflict with them while herding. Since the sanctuary opened, I think things have changed...”

The document review further pointed to the acceptance of the communities to participate in conservation education programs. The annual NRT (2019) reported that 450 conservancy members that comprised of conservancy board members, managers, and community committee members had been trained on Leadership and Management since 2016. Such training is important as it can impact stakeholder beliefs, perceptions, attitudes, and ultimately influence the acceptance of wildlife conservation. Moreover, a village based mobile vocational training christened *Ujuzi Manyattani* has considerably increased livelihood diversification, creating new income streams for women and youth.

CBC projects are anchored on the premise of invigorating community economic and social aspirations to trigger sustainable natural resource use. The qualitative strand of the study confirmed the quantitative survey results that with implementation of various alternative livelihood projects in the conservancies, members adopted sustainable use of the natural resources. Thematic framework approach analysis of the focussed group discussion found out that conservancy members had abandoned past conservation vices. For instance, charcoal burning was reported to have been eliminated as those who used to do it embraced other livelihood initiatives. Important to note was that the community has also embraced bunched grazing systems, where land is divided

to different zones and grazing patterns are in place to take care of the habitats. This type of conservation grazing is meant to bring balance back to impoverished habitats. One manager said that.

“The community through assistance by NRT range management has grazing committees in the conservancies that carefully direct grazing patterns in the paddocks. This allows some areas to recover from exploitation.”

In CBC projects, livelihood diversification strategies perform a significant role in linking conservation and development. From the focused group discussion, it was evident that the conservancy members had increased local innovation in livelihood and enterprise practices in that households combined diverse portfolios of livelihood activities and assets to advance their welfare and did not rely on cattle rearing alone. As seen in the background information, a wider number of respondents in this study (45.0%) were members of more than one CBC project.

Further in concurrence with these results, the document analysis point to adoption of rational use and skilful preservation and management of the natural resources. From the KWCA (2016), sustainable use of resources such as sale of local products and wildlife tourism were the main avenues for generating benefits in conservancies. The NRT (2017) pointed to an increased number the conservancy women participating in beadwork with the aim to reduce reliance on livestock and natural resources. Document analysis also showed that bunched grazing had contributed to the rejuvenation of rangelands and land area under strict conservation has been increased by the practice. Furthermore, it was reported that there was reduced poaching incidences in the conservancies, for instance, according to NRT (2017) the proportion of illegally killed elephants had reduced from 56 percent to 34 percent. In Il Ngwesi community conservancy, an International Livestock Research Institute (ILRI) report by Nganga and Robinson (2018) pointed that the members were engaged in a sustainable resource use of hay-making business as an additional source of livelihood. CBC projects in Laikipia conservation region appear to be sound tools that have created the necessary awareness and ushered in sustainable use of local natural resource base, therefore safeguarding the natural capital for the present-day and forthcoming generations.

Lastly, the qualitative analysis of the focussed group discussions and document analysis show that there was CBC project performance in terms of biodiversity regeneration. From the focussed group discussions latest wildlife species sightings indicated that there was a reappearance of species that had been locally extinct. One conservancy chairman said.

“When I was young, we used to see hirola (Beatragus hunteri) but later they completely disappeared. Of late, these antelopes have been sighted severally and we are happy because they are now coming back. This shows our conservation efforts are paying off.”

The managers of the conservancies believed there were increased sightings of wildlife even within community settlements, especially reticulated giraffe (*Giraffa camelopardalis reticulata*), elephants (*Loxodonta Africana*), impalas (*Aepyceros melampus*), and the Grevy's zebra (*Equus grevyi*). This pointed to an increased wildlife species population in the conservancies.

Based on the discussions, the respondents pointed to the increased grass and vegetation coverage over the recent years, which they

attributed to changes in grazing patterns, land reclamation efforts through gully filling, bunched grazing, and eradication of invasive species. Other factors that respondents pointed to as being precursors of the biodiversity regeneration were the ending of charcoal burning and reseeded of rangelands through NRT's natural capacity enhancement. Further, to cement the prove of habitat rehabilitation, a respondent reported that studies of rhinoceros reintroduction in some conservancies were being done offing to the success of conservation in the region.

The document analysis pointed to an increase in Grevy's zebra, elephants, Cape buffalo (*Syncerus caffer*), Beisa oryx (*Oryx beisa*), eland (*Taurotragus oryx*), gerenuk (*Litocranius walleri*), cheetah (*Acinonyx jubatus*), lion (*Panthera leo*), wild dogs (*Lycaon pictus*) and reticulated giraffe populations (SOC, 2018), confirming the results of the survey and those of the focused group discussions. All the reviewed annual reports showed that there had been increasing acreage of land under conservation and vegetation cover due to land reclamation efforts of gully filling and elimination of invasive species. Naibunga Upper, Naibunga Central, Naibunga Lower, and Il Ngwesi projects are engaged in rehabilitation efforts of reseeded meant restore degraded rangelands. The document analysis showed that the local community had noted positive changes in biodiversity overtime. In the Nganga and Robinson (2018) Il Ngwesi conservancy report, the management points out that there were changes in the rangeland condition due to the implementation of rangeland management activities.

Discussion

In the study, four outcome domains, namely, economic, attitudinal, behavioral and ecological outcomes were used to measure the performance of CBC projects. Specifically, economic outcomes were measured in terms of community empowerment. It was found that the local community had been empowered through local employment (both formal and casual) and initiation of conservation enterprises that afforded the community alternative livelihood. The conservation enterprises were found to have empowered the youth and women, through the creation of opportunities and assisting in elimination of marginalization of these groups which is usually a problem in patriarchal nomadic communities. The community however moderately associated local infrastructure to the CBC projects, confirming that provision of public goods and services is perceived as a right.

There were positive indications of attitudinal change due to the evidenced embracing of conservation as an economic activity. Local community was found to have adopted conservation and non-consumptive use of local natural resources as alternative means of livelihood. The local community had embraced a positive attitude towards conservation to the extent that it had been integrated in the local politics. To this end, conservation as source of welfare seems to has taken its rightful place, at the core of the power dynamics and the future of the community.

Behavioral change towards sustainable resource use was also very evident, underscored by participation by conservancy members in dividing their group ranches to different blocks, for conservation purposes and cattle grazing zones. The community was behavior has changed and to not only rely on large herds of cattle, but also innovative conservation enterprises as households combined diverse portfolios of livelihood activities. Lastly, there were positive ecological outcomes in terms of the realized biodiversity regeneration due to CBC implementation. The reappearance of

species that had been locally extinct and increased sightings of wildlife even within community settlements point to a positive ecological change. Rangeland rejuvenation efforts in the conservancies had increased the acreage of land under conservation and vegetation cover. Furthermore, the habitat rehabilitation and by the time of the study even encouraged research on the reintroduction of endangered rhinoceros species in some conservancies.

Conclusions

Communities in important biodiversity areas have and will continue to play a very important role in sustaining them. Positively engaging these communities could guarantee ecological sustainability of these areas. Well-designed asset based conservation projects that put the local community at the centre breeds positive outcomes for both conservation and local development. Conservation and development, although perceived as conflicting goals have been found to be mutually reinforcing.

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