



Research

Lack of benefit sharing undermines support for nature conservation in an Eastern Afromontane biodiversity hotspot

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ABSTRACT. Successful forest conservation in the tropics depends on various biophysical, socioeconomic, cultural, and political factors. Researchers, environmental practitioners, and local people recognize the need to resolve longstanding systemic weaknesses in environmental governance institutions, to make mainstream environmental policy and action, and to find locally informed and adaptive conservation measures. This also applies to the preservation of cloud-forest fragments of the Taita Hills in southern Kenya, a section of the Afromontane biodiversity hotspot. These forest remnants host many endemic and endangered plant and animal species, and suffer under deforestation and forest degradation. We conducted structured surveys with 300 smallholder farmers living around three forest fragments in the Taita Hills. Our results indicate a lack of knowledge about biodiversity and ecosystem functions among local people. We found an inverse relationship between the level of formal education and practical environmental knowledge, and a bias toward the protection of plant species, because of their provisional ecosystem services, as opposed to the protection of wild animals, because they are mainly associated with human-wildlife conflicts and large-scale tourism. Unresolved human-wildlife conflicts and missing benefit sharing from tourism has created an anti-conservation attitude. Our study underlines that nature conservation is only feasible if the local people benefit from it in the medium and long terms, and if the added value of conservation for high human-livelihood quality is clearly communicated.

Key Words: *benefit sharing; environmental awareness; environmental communication; human-wildlife conflict; Kenya; landscape degradation; nature conservation; Taita Hills*

INTRODUCTION

Conservation of tropical forests in Africa faces a myriad of challenges (Hansen et al. 2020), such as climate change (Hemp 2009), weak governance structures (Agrawal 2007), communication gaps between institutions and people (Habel et al. 2020), and competing interests, such as demands for forest products for the local and global markets (Agrawal et al. 2008). Forests and woodland are neglected in conservation in comparison with African savannahs and bushlands, which are of high relevance for tourism (Riggio et al. 2019). The African continent loses 3.9 million hectares of natural forest each year (FAO 2020). This contributes to increasing habitat fragmentation of the remaining forest habitats (Fahrig 2003, Hansen et al. 2020) and to altered habitat quality (Hemp 2009), with negative effects on biodiversity persistence (Brooks et al. 1998, Burgess et al. 2007), reduced ecosystem functions, and subsequently decreasing human-livelihood quality (Agrawal 2007, Büscher and Whande 2007).

There have been efforts toward forest conservation and restoration by different actors with varying degrees of success (Atela et al. 2015, Abiyu et al. 2016, Douh et al. 2018). Effective implementation of forest conservation in both gazetted and community forests largely depends on the attitudes and good will of the local people (Andersson et al. 2007, Ribot et al. 2010, Nzau et al. 2020). People who regard themselves as conservation beneficiaries are more likely to adopt positive conservation behavior, such as sustainable extraction of firewood, as opposed to people who feel disadvantaged by nature conservation measures (Holmes and Adamowicz 2003, Vodouhê et al. 2010). However, positive perceptions and attitudes do not necessarily lead to positive conservation behavior (Waylen et al. 2009).

Attitudes toward conservation also depend on the level of formal education and practical environmental knowledge (Sternberg et al. 2001, Reyes-García et al. 2009, Mawere 2015), gender dynamics (Vodouhê et al. 2010), benefit-sharing arrangements (Mutanga et al. 2015), disadvantages for humans caused by human-wildlife conflicts (Githiru 2007, Kamau and Sluyter 2018, Ceaușu et al. 2019, Killion et al. 2020), degree of poverty, and land available for subsistence farming (Nzau et al. 2020). Additionally, communication barriers and power imbalances between local people and environmental management authorities undermine concerted efforts for nature conservation (Weichselgartner and Kaspersen 2009).

The Taita Hills represent an area where cloud forests have been largely destroyed over the past several decades, and current conservation efforts are showing only modest success. The Taita Hills were originally covered with cloud forest, which still represents a suitable habitat for many endemic plant and animal species that occur restricted to these mountains (Burgess et al. 2007, Maeda 2011). Thus, the Taita Hills are classified as an Eastern Afromontane biodiversity hotspot (Mittermeier et al. 2011). This mountain range rises up to 2600 m above sea level and provides cool and humid climatic conditions (Jaetzold et al. 2012), suitable preconditions for forestry and smallholder farming (Maeda 2011, Njeru 2016, Njeru et al. 2017). A major proportion of cloud forest has been transformed into exotic tree plantations and agricultural land during the past decades (Newmark 1998, Githiru and Lens 2007, Pellikka et al. 2009, Teucher et al. 2020). Furthermore, political and social factors, particularly land reforms and population growth, have caused significant losses of natural vegetation (Hohenthal et al. 2015). Today, few cloud-

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forest remnants exist (Aerts et al. 2011), and still harbor exceptional habitats for many species (Githiru and Lens 2007, Aerts et al. 2011). There have been various conservation and restoration campaigns that have so far borne only marginal success (Pellikka et al. 2009).

In this study we conducted surveys with smallholder farmers living along forest fragments. With these questionnaires we obtained basic information about education and income, as well as details about the knowledge of nature and biodiversity, especially about the value of forests for people. Furthermore, these questionnaires were used to find out the way of communication with the relevant institution for forest and resource management. Based on the obtained results we will answer the following questions: What kind of attitudes do the local people have toward the protection of plants and animals? How do people perceive the usefulness of the different channels of environmental communication? What are the possible conservation strategies in the light of the current ecological and economic situation in the Taita Hills?

MATERIAL AND METHODS

Data collection

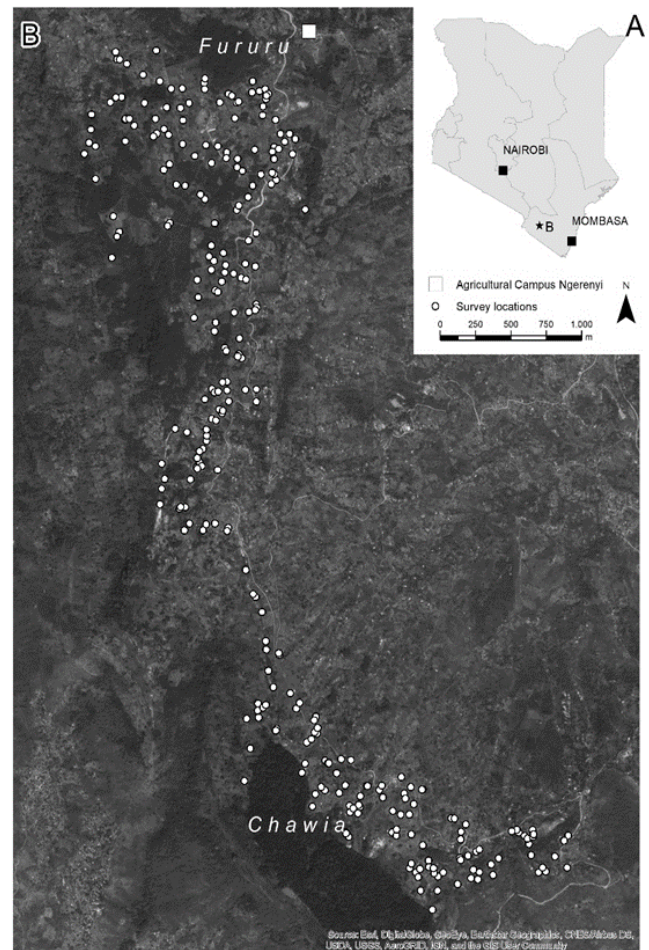
We conducted 300 structured questionnaires around the forest fragments Fururu, Susu, and Chawia (Fig. 1). Answers were recorded with the Open Data Kit (ODK) technology on Android. Participants for the structured questionnaire were selected using convenience sampling (Dörnyei and Griffee 2007). The criteria for convenience sampling include geographical proximity, availability of participants at the given time, and their willingness to participate (Dörnyei and Griffee 2007). In our case, we targeted all available households within a 5-km radius around the three forest fragments. Each survey was answered by only one adult member (> 18 years old) of a single household. A household was defined as all those people who cook and eat together every evening. The representative person of the household, who answered the questions of the questionnaire, was appointed by the rest of the adult family members. The respondents consisted of 52.3% women and 47.7% men, and represented the age classes 21 to 30 years (16.3%), 31 to 40 (19.3%), 41 to 50 (25.7%), and > 50 (38.7%; Table 1). On average, a household consisted of four people. The completion of one questionnaire took about 60 minutes. Data collection was performed during July and August in 2018.

Questionnaire design

The initial version of the structured questionnaire was designed in English and subsequently translated into Kiswahili. The questions were asked by J. M. N. or another Kenyan, who both natively speak Swahili. All answers were re-translated again from Swahili into English, all by J. M. N. The questionnaire was divided into six thematic sections, with 43 questions in total; 17 questions were open-ended. The first section of the questionnaire captured basic social and demographic data of participants. The second section explored the existence and applicability of local ecological knowledge on forest conservation. The third section included questions on land use and land tenure. The fourth section contained questions on awareness of and perceptions toward biodiversity and conservation. The fifth section was on willingness to apply sustainable practices in land management. The sixth section inquired into everyday habits and behavior. The

second and sixth sections were largely adapted from Shephard-Walwyn (2014). The complete structured questionnaire is provided as Appendix 1.

Fig. 1. (A) Study area in Kenya (star in small inset map), and (B) detailed map showing the three forest patches Fururu, Susu and Chawia, and all locations where surveys were conducted (white dots). This map first appeared in Rülke et al. 2020.



Data analyses

For the present analyses we considered 40 out of the 58 single questions received. We used gender, age, education, and source of information as predictors of environmental awareness in our statistical analyses (Table 1). We combined the answers concerning knowledge about occurrences of animals and plants (survey questions 22 and 23) and of perceived soil erosion, fertility, and non-indigenous plant species (question 29), and derived a simple but effective index of environmental awareness, based on the knowledge of biodiversity and ecosystem functioning and people's agreement in protecting species and ecosystems:

$$EA = 1/2 \left(\frac{A_t + P_t + A_e + P_e}{4} + \frac{SE + SF + NT}{15} \right) \quad (1)$$

In this equation, A_e , P_e , A_c , and P_c refer to the second section of questions and denote the mentioning of endangered (t) and endemic (e) animals A and plants P coded with 1 (yes) and 0 (no). SE, SF, and NT denote the strength of agreement (1 = strong disagreement, 5 = strong agreement) to the question of whether soil erosion (SE), soil fertility (SF), and use of non-indigenous trees (NT) are problems in Kenya (factors asked for in the third section of questions). The present adjustment makes EA to range between 0 (lack of awareness) and 1 (strong awareness).

Table 1. Summary statistics of participants with respect to gender, age class (18-29, 30-39, 40-49, > 50 years), and education (None, Primary school, Secondary school, Higher education).

Variable	Age class				Sum
	21-30	31-40	41-50	> 50	
Gender					
Men	21	28	36	58	143
Women	28	30	41	58	157
Sum	49	58	77	116	300
	Education				
	None	Primary	Secondary	Higher	
Gender					
Men	31	53	27	32	143
Women	51	69	18	18	156
Sum	82	122	45	50	299
Age Class					
25	2	21	17	9	49
35	6	34	6	12	58
45	14	37	12	13	76
> 50	60	30	10	16	116
Sum	82	122	45	50	299

We further assessed the reasons why participants supported the protection of plants and animals (survey question 24). We grouped the answers given into six values: provisional ecosystem services, traditional value, future generations, aesthetics, tourism, and nature conservation. We analyzed the available sources of information for environmental laws, rules, and regulations that were available to local people (question 25), and how the local people rated the usefulness of the environmental information they got from these sources (question 26). We used nested ANOVA and contingency table analysis as implemented in Statistica 12.0 to infer differences of participants with respect to gender, age, education, and source of information.

Finally, we performed two strengths, weaknesses, opportunities, and threats analyses (SWOT; e.g., Scolozzi et al. 2014, Bull et al. 2015) to discuss possible conservation strategies in light of the current ecological and economic situations. For this task we searched the literature to obtain the latest information on the conservation status and ecological functioning of the study region, as well as on current and envisioned changes in land use. From these sources we compiled the most important issues mentioned with regard to the current states of biodiversity, usage, and forest conservation.

RESULTS

Attitudes of the local people toward nature conservation

Overall > 60% of participants recorded high levels of environmental awareness, which did not significantly differ

between men and women: $p(F_{1,299}) > 0.5$ (A, Fig. 2; Table 2). However, women scored lower in all age classes (B, Fig. 2) with lower educational levels when compared to men (C, Fig. 2). Awareness was weakly related to age class: $p(F_{1,299}) = 0.04$ (Table 2). However, awareness was different between participants of different educational levels: $p(F_{1,299}) < 0.01$ (Table 2). Interestingly, men of intermediate education scored highest in environmental awareness, whereas with women no clear pattern emerged (C, Fig. 2).

Fig. 2. Environmental awareness (Eqn. 1) with respect to (a) gender, (b) age class, and (c) education groups (N: no school education, P: primary school, S: secondary school, H: higher education). Errors denote parametric 95% confidence limits. Dark grey bars denote men, light grey bars women.

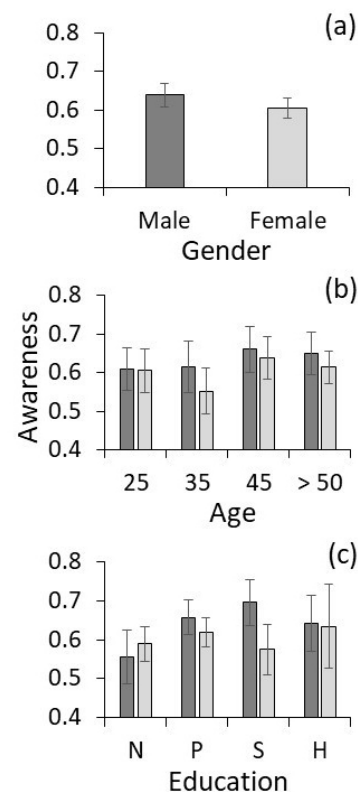


Table 2. Results of two nested ANOVAs with age, education, and teaching nested within gender as categorical predictors and the conservation awareness score as response variable. Given are degrees of freedom (df), Wald statistics, and parametric significances.

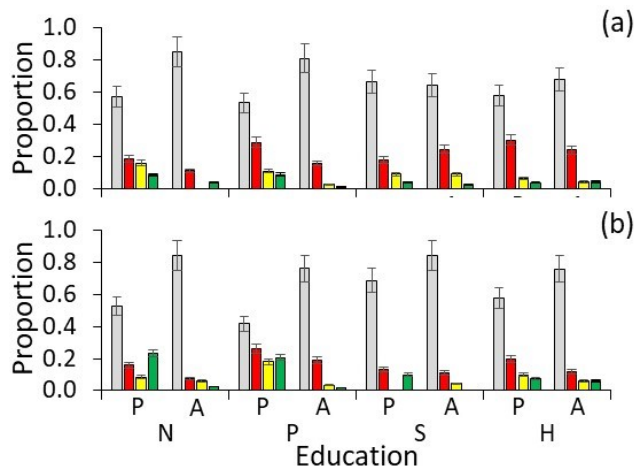
Effect	df	Wald	P
Gender	1	0.35	0.55
Age	6	12.83	0.04
Education	6	20.12	< 0.01
Teaching	7	8.18	0.27

Irrespective of education, most participants were unable to mention any endemic (A, Fig. 3) or endangered (C, Fig. 3) plant or animal species. Participants with no or only primary education

Table 3. Contingency table c2 tests to detect differences in the answers with respect to gender, age group, and education level with respect to basic questions on nature conservation. Numbers of endangered and endemic animals and plants refer to the numbers of taxa mentioned.

Question	Gender		Age		Education	
	χ^2 (df=1)	p	χ^2 (df=3)	p	χ^2 (df=3)	p
Should plants be protected	0.82	0.36	1.14	0.70	4.90	0.18
Should animals be protected	11.11	< 0.001	14.32	< 0.01	33.55	< 0.001
Number of endemic plants	0.01	0.91	10.67	0.01	2.43	0.49
Number of endemic animals	3.31	0.01	2.72	0.44	10.86	0.01
Number of endangered plants	0.02	0.89	11.74	< 0.01	10.92	0.01
Number of endangered animals	15.99	< 0.001	4.74	0.22	2.94	0.40

Fig. 3. Proportions of participants in four educational groups (N: no school education, P: primary school, S: secondary school, H: higher education) with respect to numbers of (a) endemic and (b) endangered species. Colors: grey: 0 species mentioned, red: 1 species, yellow: 2 species, green: 3 or more species. Error bars denote bootstrapped 95% confidence limits.



mentioned more endemic and endangered plants than participants of secondary or higher education: $p(F_{1,298}) = 0.01$ (Fig. 3). However, only a moderate difference appeared with respect to animals: $p(F_{1,298}) = 0.06$ (Fig. 3). In total, our data support significant gender differences for the awareness to protect plants, with higher awareness in women than men, whereas no such differences came up with respect to animal protection (Table 3, Fig. 4).

The recurring reasons to protect plants and animals were related to provisional ecosystem services, tourism, and nature conservation. Mentioning of these reasons did not significantly differ between age classes: $p(F_{3,296}) > 0.05$ (B, Fig. 4). Tourism was the dominating reason with respect to animals, whereas provisional ecosystem services were most often mentioned with respect to plants (B, Fig. 4), irrespective of the level of education (C, Fig. 4). In contrast, the level of education influenced the way local populations assessed plant and animal protection (C, Fig. 4). Participants with lower education significantly pointed more often to tourism with respect to plant protection than participants with at least a secondary education: $p(F_{3,296}) < 0.01$ (C, Fig. 4).

Fig. 4. (a) Proportions of men and women participants who voted in favor of plant (P) and animal (A) protection; (b) Proportions of participants in four age groups who voted in favor of plant protection because of provisional ecosystem services (green) and tourism (red), and in favor of animal protection because of tourism (red) and nature conservation (yellow); (c) Respective proportions of participants in four educational groups (N: no school education, P: primary school, S: secondary school, H: higher education). Colors as in (b). Error bars denote bootstrapped 95% confidence limits.

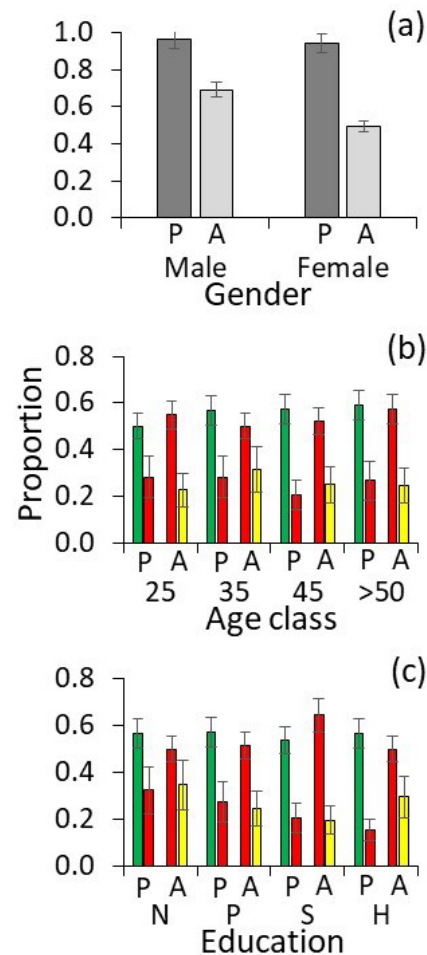
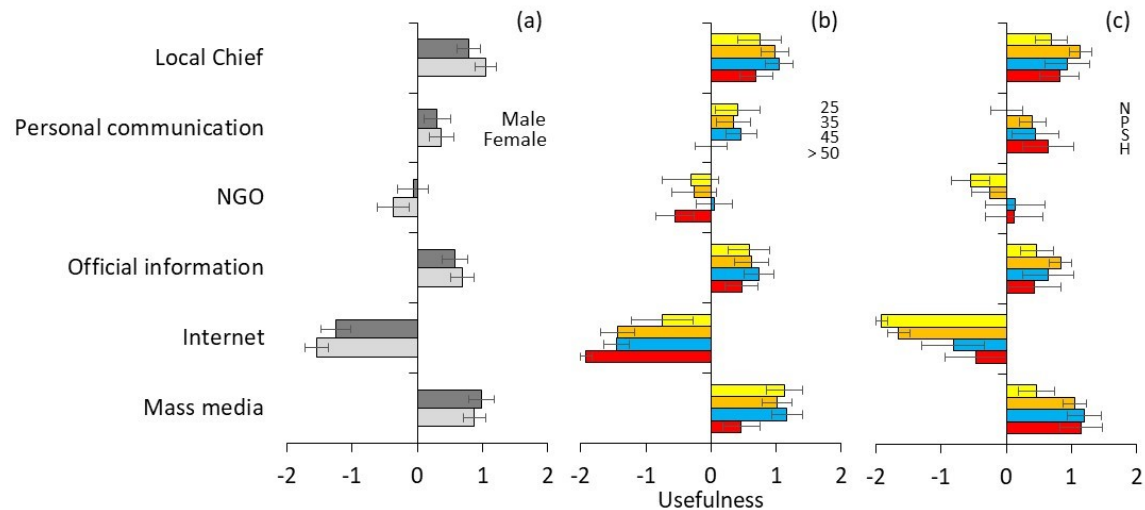


Fig. 5. Average scores of a 5-point scale regarding the usefulness of information on environmental conservation (-2: not useful, +2: very useful) with respect to information source and (a) gender, (b) age class, and (c) education. Error bars denote parametric 95% confidence limits.



Use of different channels of environmental communication

Participants clearly differentiated between sources of information on environmental conservation with no significant gender differences (A, Fig. 5). Mass media and official information as well as communications from local chiefs were well received (A, Fig. 5), whereas internet and NGO information was not rated as useful (A, Fig. 5). Older people particularly rated information from the internet as not useful (B, Fig. 5). Interestingly, this age group, being least educated (Table 1; C, Fig. 5), was most sceptical of all external information sources (B, Fig. 5). Usefulness of mass-media information increased whereas the usefulness of internet information decreased with increasing level of education, respectively (Fig. 5).

Possible conservation strategies

Our first SWOT analysis on the forest status highlighted the following strengths: that forest patches provide valuable habitats for endangered plant and animal species, seed banks, various ecosystem functions, and act as important water catchment. As weaknesses we identified insecure land tenure; biodiversity homogenization through the planting of exotic trees; small and isolated forest patches; and lack of implementation of land-use and forest management. Potential opportunities might be green tourism, mobilizing international funding, ethical biodiversity harvesting, ecosystem services provisioning, and the leasing of land for conservation purposes. Threats were demand of land for conservation; ongoing planting of exotic trees; ongoing deforestation of forest patches; demand for firewood and timber; fires; farming along rivers and in swamps; and biodiversity loss (Table 4).

In our second SWOT analysis, we focused on forest conservation, and identified the following strengths: high willingness to conserve and restore forest; high level of environmental awareness; existence of a community forest association; economic benefits through conservation; and international investment in

biodiversity hotspots. We identified the following weaknesses: in-trust toward forest conservation; weak coordination of activities; distrust toward NGOs; loss of environmental knowledge; and lack of financial resources in conservation. Potential opportunities were bottom-up pressure, mobilization of funding, and international visibility. Main threats were agricultural intensification, historical injustices, corruption, lack of land management, and the financial crisis (B, Table 4).

DISCUSSION

Environmental awareness of people: the interplay among education, age, and sex

We found a high level of environmental awareness among the local people in the Taita Hills when compared with other studies conducted in other regions of Kenya based on identical approaches, such as along riparian forests in the semiarid region of southeast Kenya, and around Arabuko Sokoke coastal forest in the south of Kenya (Nzau et al. 2020). We found a negative relationship between formal education and the knowledge of endemic and endangered animal and plant species. Participants with no or only primary education significantly mentioned more endemic and endangered plant species than participants possessing at least secondary school education and higher education. Various explanations for this trend are crucial and not mutually exclusive. First, people with no formal education have a higher likelihood of relying directly on nature, especially for provisioning ecosystem services such as food, medicine, firewood, and building materials (Wangai et al. 2016), as well as for cultural values (Berkes 2012), than people with at least secondary or higher education, who are likely to have waged income (Manda and Sen 2004) and possess alternate spiritual values (Owuor 2007). Second, participants who have at least secondary education are likely to have left their localities to attend boarding schools for extensive time periods, which is the norm of the schooling system in Kenya (Mucherah 2006). It takes four years to complete

Table 4. Strengths, weaknesses, opportunities, and threats (SWOT) analysis of the current state of East African natural forest fragments.

<p>Strengths High endemic and endangered biodiversity (Githiru and Lens 2007); High level of carbon sequestration (Glenday 2006); High degree of water retention (Nicol et al. 2015); Tourist attraction (Mittermeier et al. 2011); Indigenous tree nursery and bee keeping (Himberg et al. 2009);</p> <p>Opportunities Increasing green tourism (Jarvis et al. 2010); International funding for hot spot conservation (Emerton et al. 2006); Potential funding for ethical genetic harvesting (Engels et al. 2011); Future ecosystem service contracting (Githiru and Njambuya 2019); Leasing land to advance fragment connectivity (Githiru and Njambuya 2019);</p> <p>Strengths High willingness of the local people to restore the forest fragments as water towers (Hohenthal et al. 2018); High local environmental awareness (our study); Active Community Forest Associations (CFAs; Wekesa et al. 2021); International interest in tropical biodiversity conservation (Emerton et al. 2006); Economic benefits on conserving natural forests (Himberg et al. 2009);</p> <p>Opportunities Bottom-up pressure for forest conservation to restore water tower (Hohenthal et al. 2018); International funding of local conservation (McFarland and Ployhart 2015); Private funding of nature sanctuaries (McFarland and Ployhart 2015); International visibility of local conservation achievements (Mittermeier et al. 2011);</p>	<p>Weakness Insecure land tenure due to the land inheritance culture (Maeda et al. 2010); Non-native species and diversity homogenisation (Omoro et al. 2010); Too small forest remnants causing instable populations and vulnerable food web structures (Apfelbeck et al. 2019); Lack of land use and forest management plans (Teucher et al. 2020); Lack of proper biodiversity monitoring schemes;</p> <p>Threats Legal cases on land ownership (Wagura 2018); Monodominance by planted non-native tree species (Pellicka et al. 2009); Ongoing illegal deforestation and selective logging (Teucher et al. 2020); Increasing demand for firewood (Loader et al. 2009); Increasing frequency of drought (Boitt et al. 2015); Chronic forest fires (Himberg et al. 2009); Poor enforcement of riparian protection rules (Hohenthal et al. 2018); Breakdown of food web structures (Ulrich et al. 2016);</p> <p>Weakness Distrust or apathy towards forest conservation due to lack of short-term economic benefits (Holmes 2003); Weak coordination among conservation organisations (our study); Distrust of local people against NGOs (Kendal and Ford 2017); Loss of practical environmental knowledge (Rogo and Oguge 2000); Insufficient conservation financing (our study);</p> <p>Threats Ongoing agricultural intensification on riparian areas (Teucher et al. 2020); Historical injustices and marginalisation in resource management and benefit-sharing (Hohenthal et al. 2018); Corruption and lack of transparency (our study); Uncontrolled urbanisation and land use change (Mkaya 2013); Financial crises (Kavousi et al. 2020);</p>
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secondary education and at least four years to complete higher education in the current school curriculum in Kenya, according to the Ministry of Education (<https://www.education.go.ke/>). In consequence, people with higher formal education are likely to possess more theoretical environmental knowledge acquired from the classroom than practical environmental knowledge connected to their immediate ecosystem (Sternberg et al. 2001, Reyes-García et al. 2009). Third, the sharp decline of biodiversity in the remaining forest fragments (Teucher et al. 2020) could contribute to an increased disconnect between people and nature (Andersson et al. 2007). The loss of practical environmental knowledge by the Taita people limits their confidence to negotiate for equitable resource management, making them subservient to bureaucratic knowledge systems, which in turn enhances structural power imbalances (Hohenthal 2018). These findings on the trade-offs between formal education and local environmental knowledge underscore the global call for integration of local environmental knowledge in formal school curricula (Müller and Tippins 2010, McCarter and Gavin 2011, Kim and Dionne 2014, Abah et al. 2015, Mawere 2015), but also the need for real world–related and action-oriented forms of environmental education (UNESCO 2017, Rieckmann 2018).

We found that men of intermediate education scored highest in environmental awareness. The school-labor dynamics in Kenya offer important clues to this finding, whereby persons with at least primary education and no further tertiary training are less likely

to be absorbed into the labor market (Manda 2004) translating to minimalized probability for out-migration (Ginsburg 2016). Men with average formal education therefore possess both theoretical (i.e., learned in the school setting) and practical environmental knowledge acquired in daily livelihood interactions with the local ecosystems (Sternberg et al. 2001, Owuor 2007, Reyes-García et al. 2010). On the other hand, women with intermediate education are likely to out-migrate for casual labor in the domestic sector (Suda 2002) or marriage (Ginsburg 2016), especially given the limited prospects of inheriting ancestral land (Luke and Munshi 2006, Djurfeldt 2020). The association between formal schooling and local environmental knowledge is complex (UNESCO 2009), and often shows contrasting coherences (Reyes-García et al. 2010). Growing concerns across the African continent show that the inception of academic education systems undermined the pathways for local knowledge transmission (Sternberg et al. 2001, World Bank 2003, Owuor 2007).

Attitudes toward wildlife: lacking compensation and benefit sharing

Most respondents expressed little interest in protecting wildlife, favoring the protection of plants over wild animals. Women showed the least support for protecting wild animals. This bias may be understood in the context of the ecosystem benefits provided by plants, whereas wildlife are perceived to be of less tangible benefits to the local people. For instance, diet preferences

had significantly shifted from bushmeat to present-day domesticated meat sources (Icheria 2019). The inclination to protect plant species over wild animals may further be understood in the context of two factors. First, the long-standing and unresolved human-wildlife conflicts in this region (Hohenthal et al. 2018, Kamau and Sluyter 2018, Rülke et al. 2020, Siljander et al. 2020) led to an aversion to wild animals. This is made clear by women's indication that the constant scaring away of monkeys is a burden, and some fires set in the remaining forest fragments were for the purpose of chasing away or eliminating monkeys (Appendix 2). Second, the absence of equitable compensation for damage caused by wildlife, and lacking benefit-sharing arrangements from wildlife conservation and tourism worsen this negative attitude toward wild animals (Atela et al. 2015, Chomba et al. 2016; Appendix 2).

Sharing in the gains from conserving protected habitats is a basic requirement for effective conservation. Numerous studies have shown that the integration of the local population into local tourism is essential to establish a long-term marketing and conservation strategy. The Taita Hills clearly show the attitudes toward the last forest fragments that develop when local people do not benefit from tourism. Approximately 62% of the Taita-Taveta County, home of the Taita people, is covered by Tsavo National Park, and another 24% of the land by private ranches and large-scale sisal plantations. Only 11% of the land remained for smallholder farming (Njogu and Dietz 2006). These land-use dynamics and the arising resource use and management contentions (Njogu 2004, Hohenthal 2018) contribute to an inverse relationship between wildlife conservation and human-livelihood needs (Githiru 2007, Hohenthal et al. 2018). Our findings echo the association of wildlife conservation to tourism (Rülke et al. 2020) and unmask reluctance toward forest conservation action that is conceived in the fear of losing the remaining arable land to wildlife conservation (Atela et al. 2015).

Communication gaps: the role of elders and participation

We found a twofold communication anomaly in the Taita Hills. First, the local people find that information from governmental and non-governmental agencies is not useful, with older people being sceptical of all external information sources. This might be because older people are less educated, and in general show less positive attitudes toward nature conservation (Table 1). However, older people are extremely critical to the acceptance of conservation, and the general attitude toward the remaining forest habitats. Older people play a pivotal role in the social system in Kenyan communities. Extensive research acknowledges the role of elders in Africa as custodians of local ecological knowledge who are thereby likely to possess practical environmental knowledge (Shizha 2006, Owuor 2007, Berkes 2012). Second, the inclusion of local people in forest governance and decision making is ambiguous and asymmetrical. This is in line with findings from other studies conducted in the Taita Hills (Hohenthal 2018, Rülke et al. 2020, Teucher et al. 2020). The loss of practical environmental knowledge combined with resource-appropriation injustices and the reluctance of Kenya Wildlife Service (KWS) to address human-wildlife conflicts in the Taita Hills set a backdrop for mistrust and structural power imbalances between the local people and environmental management authorities (Githiru 2007, Hohenthal 2018). As a result, environmental communication does not proceed very efficiently

(Holmes and Adamowicz 2003, Weichselgartner and Kasperson 2009). This situation becomes particularly clear when taking a closer look at and analyzing the role of Community Forest Associations (CFA) in the Taita Hills. The Forests Act (Government of Kenya 2005) and the Forest Conservation and Management Act (Government of Kenya 2016) provide a formal legal framework for local communities to participate in resource management through CFAs (Teucher et al. 2020). Representative members of CFAs are ideally chosen by the local communities through a democratic process to mediate resource use and benefit sharing. However, we found that CFAs in the Taita Hills lack the skills and financial resources to equitably participate in forest management (interviews 2, 7, and 8, Appendix 2). This lack of capacity reduces the engagement of local people in conservation dialogue to only distant approvers (Kendal and Ford 2017), whose value is to rubberstamp decisions from various governmental and non-governmental organizations. This creates an illusion of active inclusion of local communities (Nzau et al. 2020).

Taita Hills: strengths, weaknesses, opportunities, and threats

In our SWOT analyses (Table 4) we identified various strengths. The remaining forest fragments still host many endemic and endangered plant and animal species (Githiru and Lens 2007) and are important for carbon sequestration (Njeru 2016, Njeru et al. 2017). The cloud forests act as water catchments (Kivivouri et al. 2013, Mkaya 2013) and provide indigenous seed banks and medicinal plants, among other ecosystem services (Seifert et al. 2022). On the other hand, insecure land tenure (Maeda et al. 2010) and rapidly declining plot sizes per capita (Nzau et al. 2018) contribute to mismanagement of natural resources across the Taita Hills. The expansion of exotic trees throughout the forest and across farms (Omorio et al. 2010) causes biodiversity homogenization, which has a negative impact on habitat quality and ecosystem functions (Pellikka et al. 2009). Most forest remnants are too small to guarantee long-term persistence of biodiversity (Ulrich et al. 2016, Apfelbeck et al. 2019). Land-use and forest management plans largely do not exist or are only poorly implemented (Teucher et al. 2020). There are still significant threats to be considered such as the potential for legal cases on land ownership especially with the recent ambitions by conservation actors to pursue fragment connectivity (Wagura 2018). The monodominance of planted non-native tree species, continuing illegal deforestation and selective logging (Aerts et al. 2011), and increased demand for firewood resulting in cutting trees and the collection of deadwood (Loader et al. 2009) could pose unintended consequences on already compromised ecosystem health (Pellikka et al. 2009), and which have been connected to drying up of water sources (Kivivouri 2013, Hohenthal 2018). Moreover, increased drought frequencies (Boitt et al. 2015), chronic forest fires, and the general poor enforcement of riparian protection rules exacerbate the declining quality of the Taita Hills. This has a negative impact on biodiversity (Ulrich et al. 2016) and ecosystem functions (Seifert et al. 2022) in the long run. Regardless of these weaknesses and threats, there exist various potential opportunities for positive development in the future, for example, supporting and expanding green tourism in the region (Jarvis et al. 2010), mobilizing international funding for the preservation of global biodiversity hotspots (Emerton et al. 2006), as well as ethical biodiversity harvesting (Engels et al. 2011) and ecosystem service contracting (Chomba et al. 2017, Githiru and Njambuya 2019).

In our second SWOT analysis we focused on the process of change in conservation action for the Taita Hills cloud forests (B, Table 4). There exists high awareness and willingness among the local people to conserve and restore the cloud forests of the Taita Hills as an important water tower (Kivivuori 2013, Hohenthal et al. 2018). The National Forest Act provides a legal background for Community Forest Associations (CFAs; Government of Kenya 2005, Teucher et al. 2020), through which the local people can organize to sustainably take opportunity of the economic benefits, including tree planting, beekeeping, and butterfly farming. These organizations, if properly executed, can tap into the international interest in the conservation of tropical forest biodiversity hotspots (Emerton et al. 2006), in order to upscale benefits and human-environment positive outcomes. However, conservationists ought to be attentive to the following weaknesses: the pervasive mistrust or apathy toward forest conservation because of lack of short-term economic benefits (Holmes and Adamowicz 2003), weak coordination among conservation organizations, as well as distrust toward non-governmental developmental agencies by the local people (Kendal and Ford 2017). This high level of mistrust might also arise from the history of the people in the Taita Hills. The people living in the Taita Hills have much experience in negotiating natural resource rights and in accommodating the historically chronic waves of newcomers into the area (Prins 1952). This situation led to increased pressure on available land, to uncertainties in the property rights of land, and to a high level of mistrust, among other things toward conservation activities.

The loss of practical environmental knowledge among the local people and insufficient conservation financing further increase the fragility of environmental conservation in the Taita Hills cloud forests. Notwithstanding these complexities, there are potential opportunities for positive change such as increasing bottom-up pressure for forest conservation driven by increasing water scarcity, which can be strengthened through the mobilization for international and private funding for nature conservation, and increasing international visibility of local conservation achievements through environmental communication. There are, however, threats to be considered, such as the ongoing agricultural intensifications on riparian areas that cause degradation and impair important migratory routes for the fauna occurring around the Taita Hills forest fragments. The historical injustices and marginalization in resource management and benefit-sharing accompanied by corruption and lack of transparency in resource management, uncontrolled urbanization (Mkaya 2013), rapid land use change (Teucher et al. 2020), and general financial crises (Kavousi et al. 2020) further complicate the urgent restoration of the Taita Hills cloud forest.

CONCLUSIONS

Our study shows that the systematic reluctance to address perceived historical injustices in benefit-sharing and unequal resource management governance recreates a subtle, yet powerful, anti-conservation narrative, reinforces distrust for environmental management agencies, and forges a polarizing environment for meaningful conservation action. As long as local organizations have a very low capacity to act, their relevance tends to be low, and so does their acceptance by the local population. The current situation makes any efficient protection of the last cloud-forest patches of Taita Hills highly difficult.

Responses to this article can be read online at:

<https://www.ecologyandsociety.org/issues/responses.php/13325>

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Data Availability:

All data are available as supplementary electronic appendices.

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Appendix 1: Structured questionnaire

Introduction of interviewers

Hello, my name is _____ (-student) and my name is _____ (TUM/Vechta-student). We work for the Taita Taveta University and the TUM University and the University of Vechta in Germany. Some of our colleagues conduct environmental studies in the Taita Hills cloud forests and in the meanwhile we want to find people working or living along the forest, who are willing to answer some questions about their living and work as well as their experiences with the nature. **The findings of this research will provide benefits through environmental conservations programs by taking your needs into account.**

Would you be willing and do you have about 45 minutes to answer some questions? Your answers and personal information of course will be handled anonymously. You can always ask questions or say additional answers and withdraw at any point of the interview if you feel uncomfortable.

Habari, jina langu ni _____ () na jina langu ni _____ (Mwanafunzi wa TUM/Vechta). Sisi ni watafiti wa chuo kikuu cha Taita Taveta University na Chuo cha Ufundi cha Munich, Ujerumani. Tuna watafiti wenzetu ambao wanafanya utafiti wa mazingira katika misitu ya Taita. Tungependa kuhoji baadhi ya wakaazi wa eneo hili. Matokeo ya utafiti huu yatakuwa yenye manufaa katika mikakati ya kuhifadhi mazingira kwa kushirikisha maoni yako kwa ujumla.

Tutashukuru iwapo tutapata muda wako kwa takribani dakika 45 kufanikisha lengo hili. Ujumbe ambao tutapata kwako utakua na usiri kubwa, na iwapo una swali lolote, jisikie huru kuuliza.

Survey No.:..... Date:.....
Nambari ya utafiti:..... Tarehe:.....

Interviewer: GPS (if
Mtafiti:..... possible):.....
GPS
(ikiwezekana):.....

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33
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PART 1- Socio-demographic data and side conditions

1) Gender

Jinsia

Male <i>Mwanaume</i>	<input type="checkbox"/>
Female <i>Mwanamke</i>	<input type="checkbox"/>

38
39
40

2) Ethnic group

kabila

<i>Taita</i>	
<i>Taveta</i>	
<i>Sagala</i>	
<i>Others</i>	

41
42
43
44
45

3) Please indicate your age (only one answer):

Una umri wa miaka mingapi? (jibu moja tu)

18-28 29-39 40-50 51-61 > 61

46
47
48
49

4) What is your level of education? (only one answer)

Kiwango chako cha elimu ni? (jibu moja tu)

- None**
Sijaenda shule
- Primary school incomplete**
Sikumaliza shule ya msingi
- Primary school complete (1-8) KCPE**
Shule ya msingi (1-8) KCPE
- Secondary school incomplete**
Sikumaliza shule ya upili
- Secondary school complete (1-4) KCSE**
Shule ya upili (Kidato cha 1 - 4) KCSE

- Tertiary education /vocational training institution
(polytechnics etc.)
Chuo cha ufundi (wowote)
- Higher education (professional training or university)
Elimu ya juu (Mafunzo ya kitaaluma au chuo kikuu)
- Other (specify):
Nyenginezo

50

51 **5) What is your main source of livelihood?**

52 *Je, unajishughulisha na shughuli gani muhimu za mapato?*

53

54

55

56 **6) Please indicate your level of income per month (only one answer):**

57 *Tafadhali onyesha kiwango chako cha mapato kwa mwezi? (Jibu moja tu)*

58

< 5,000 5,000-10,000 10,001-15,000 15,001-20,000 > 20,000

59

60 **7) How many children do you have: _____ M.....? F.....**

61 *Una watoto wangapi: waume.....wake.....*

62

63

64 **9) How many people in total live in your household? _____**

65 (Please explain that the household includes all the people who share common pot/ cook
66 together every day)

67 ***Jumla mnaishi watu wangapi hapa?***

68 *(Tafadhali eleza wale mnaopika pamoja)*

69

70 **PART 2 – Culture, indigenous knowledge and conservation**

71 *Utamaduni, maarifa asilia, uhifadhi*

72

73

74 **10) How many years have you lived in this village?**

75 *Umeishi kijiji hiki kwa mda gani?*

76

77 **11) Did some of the following persons teach you about indigenous knowledge in the
78 conservation of Taita Hills forest?**

79 ***Ni nani aliyekufunza kuhusu umuhimu wa hii misitu ya Taita?***

80

	Never kamwe 1	Rarely nadra 2	Sometimes Mara nyingine 3	Often Mara kwa mara 4	Very often Mara nyingi 5
<i>Mother Mama</i>					
<i>Father baba</i>					

<i>Grandparents mababu</i>					
<i>Other family members Wengineo katika familia</i>					
<i>Faith Leader Kiongozi wa dini</i>					
<i>School teacher mwalimu</i>					
<i>Village Elders Mzee wa kijiji</i>					
<i>Others wengineo</i>					

81
82

83 **12) In your opinion: How important is indigenous knowledge in the conservation of Taita**
84 **cloud forests?** (Please circle the correct response)

85 *maarifa ya kitamaduni yana umuhimu gani katika uhifadhi wa misitu ya Taita?*

No importance <i>Si muhimu</i> 1	Little Importance <i>Muhimu kiasi</i> 2	Neutral <i>Upande wowote</i> 3	Important <i>Muhimu</i> 4	Very important <i>Muhimu sana</i> 5
---	--	--	---------------------------------	--

86

87 **13) Please explain why:**

88 *Tafadhali eleza kwanini:*

89

90

91

92

93 **14) If you have children, do you think that it is important for you to teach them the**
94 **importance of conserving the Taita hills cloud forests?** (Please circle the correct response)

95 *Kama una watoto je, ni muhimu kuwafundisha umuhimu wa kuhifadhi misitu ya Taita? Chagua*
96 *jibu mwafaka*

No importance <i>Si muhimu</i> 1	Little Importance <i>Muhimu kiasi</i> 2	Neutral <i>Upande wowote</i> 3	Important <i>Muhimu</i> 4	Very important <i>Muhimu sana</i> 5
---	--	--	---------------------------------	--

97

98 **15) Please explain why:**

99 *Tafadhali eleza hwanini:*

100

101

102

103

104

105 **16) Who do you think should be responsible for teaching your children about the**
 106 **importance of conserving the Taita Cloud Forest?**

107 *Kwa mtazamo wako, ni nani ana jukumu la kufundisha watoto umuhimu wa kuhifadhi msitu*
 108 *wa Taita?*

- 109 ✓
 110 **Mother** *Mama*
 111 **Father** *Baba*
 112 **Grandparents** *Mababu*
 113 **Other Family Member** *Watu wengine (please specify)*
 114 *taja.....*
 115 **Faith leader** *Mchungaji wa kijiji*
 116 **School Teacher** *Mwalimu wa shule*
 117 **Village Elders** *Wazee wa vijiji*
 118 **Other** *Wengine (please specify) Taja.....*
 119
 120
 121
 122
 123
 124
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 127

128 **17) What is your religion**

129 *Dini yako ni?*

<i>Christian</i> <i>mkristo</i>	
<i>Muslim</i> <i>muislamu</i>	
<i>Traditional</i> <i>Dini za kitamaduni</i>	
<i>Other</i> <i>Nyingine</i>	

130
 131 **18) Does your religion teach about the importance of conserving the environment? (Please**
 132 **circle the correct response)**

133 *Dini yako inakufundisha umuhimu wa kuhifadhi mazingira? (Chagua jibu mwafaka)*

134 **Yes/No**

135 *Ndio/La*

- 136
 137 **19) If yes, please explain how:**
 138 *Kama ndio, eleza kwanini:*
 139
 140
 141

142
 143 **PART 3 – Land tenure and use**

144 *Sehemu 3 – Umiliki na utumiaji wa mashamba*

145
 146 **20) What is the size of the land that you use (acres)?**

147 **Shamba unalotumia lina ukubwa wa kiasi gani?**

148

149

150 **21) What are the benefits of living/cultivating close to the forest?** (Please indicate on a scale
 151 from 1 (Not important at all) to 5 (very important) how important the following reasons for
 152 living/cultivating close to the forest are):

153 *Ni faida gani zinazotokana na kuishi/kulima karibu na msitu? (Tafadhali taja kuanzia viwango*
 154 *1 si muhimu kabisa hadi 5 ni muhimu sana ukizingatia sababu zifuatazo)*

	No importance <i>Hakuna umuhimu</i>	Little importance <i>Muhimu kidogo</i>	Neutral <i>Upande wowote</i>	Important <i>Muhimu</i>	Very important <i>Muhimu sana</i>	Don't know <i>sijui</i>
Good soil for agriculture <i>Mchanga wa rotuba nzuri kwa kilimo</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good soil for brick production <i>Mchanga mzuri wa kutengeza matofali</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wood availability for construction <i>Miti ya kujengea</i>						
Wood availability for burning bricks <i>Miti mizuri ya kuchoma matofali</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wood availability for charcoal production <i>Miti mizuri ya kutengeza makaa</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of water <i>Maji</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of wild animals as food supply <i>Nyama ya msituni kama chakula</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of shade <i>Kivuli</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate regulation <i>(Hali ya hewa)ubaridi</i>						

Good area for animal grazing <i>Mahali pa malisho</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Others, specify: <i>Nyingine</i> <i>Taja _____</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

155
156

PART 4 – Awareness and Attitudes

157 *Sehemu 4 – Ufahamu na Mtazamo*

158

22) Are there any endangered plants and animals in this area?

159
160 *Wajua kama kuna mimea na wanyama wanao angamia kwenye eneo hili?*

	Yes <i>Ndio</i>	No <i>La</i>	I don't know <i>Sijui</i>
Plants <i>Mimea</i>	<input type="checkbox"/> which: <i>Ipi:</i> _____	<input type="checkbox"/>	
Animals <i>Wanyama</i>	<input type="checkbox"/> which: <i>Gani:</i> _____	<input type="checkbox"/>	

162

23) Are there any plants and animals in this area which only exist here?

163
164 *Wajua kama kuna mimea na wanyama wanao patikana kwenye eneo hili peke yake?*

	Yes <i>Ndio</i>	No <i>La</i>	I don't know <i>Sijui</i>
Plants <i>Mimea</i>	<input type="checkbox"/> which: <i>Ipi:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>
Animals <i>Wanyama</i>	<input type="checkbox"/> which: <i>Gani:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>

165

24) In your opinion should plants and animals in Taita cloud forests be protected?

166
167 *Kwa maoni yako lazima mimea na wanyama walio hatarini kulindwa?*

	Yes <i>Ndio</i>	No <i>La</i>	I don't know <i>Sijui</i>	Reasons <i>Kwanini?</i>
Plants <i>Mimea</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Animals <i>Wanyama</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

168

25) How do you get information about environmental laws, rules or regulations? (Multiple answers possible)

169
170
171 *Jinsi gani unapata taarifa kuhusu sheria za kutunza mazingira (Majibu zaidi ya moja inawezekana)*

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173

Media (radio, newspaper etc.)

Vyombo vya habari (radio, magazeti, na kadhalika)

Internet (Website/Facebook...)
Mtandao

Official information (from government or the management of the area)
Taarifa rasmi (kutoka kwa serikali au usimamizi wa eneo hili)

Non-governmental organizations
Mashirika

Personal communication with friends, neighbors, or family members
Mawasiliano ya kibinafsi na marafiki, majirani, au watu wa familia

Public meetings
Baraza

Others, specify: _____
Vinginevyo, Taja: _____

174

175 **26) Please rate the usefulness of the following sources of environmental information:**

176 *Njia zifuatazo zakutupatia habari kuhusu mazingira zina umuhimu gani kulingana na viwango*
177 *vifuatavyo:*

	Very useful <i>Munimu sana</i>	Useful <i>muhinu</i>	Neutral <i>Upande wowote</i>	A little useful <i>Muhimu kidogo</i>	Not useful at all <i>Si muhimu kabisa</i>
Media (radio, newspaper etc.) <i>Vyombo vya habari (radio, magazeti, n.k)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet (Website/Facebook...) <i>Mitandao</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Official information (from government or the management of the area) <i>Habari kutoka kwa serikali</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Non-governmental organisations <i>Mashirika</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal communication with friends, neighbours, or family members <i>Habari kutoka kwa marafiki, majirani au familia</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public meetings (baraza)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Mabaraza</i>					
Others, specify: <i>Nyingine, taja</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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27) Please rate the importance of the Taita hills cloud forests to you personally

Misitu ya Taita una umuhimu gani kwako wewe binafsi?

No importance <i>Si muhimu</i>	Little Importance <i>Muhimu kiasi</i>	Neutral <i>Upande wowote</i>	Important <i>Muhimu</i>	Very important <i>Muhimu sana</i>
1	2	3	4	5

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28) Please explain why:

Tafadhali eleza kwanini:

.....
.....
.....

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29) On a scale from 1 (strongly disagree) to 5 (strongly agree), please indicate how much you agree or disagree with the following statements:

Tafadhali onyesha ni jinsi gani unavyokubaliana au kutokubaliana na sentensi zifuatazo katika viwango vya 1 (sikubali kabisa) hadi 5 (kubali kabisa)

	Strongly disagree <i>Sikubali kabisa</i>	Disagree <i>Sikubali</i>	Neutral <i>Upande wowote</i>	Agree <i>Kubali</i>	Strongly agree <i>Kubali kabisa</i>	Don't know <i>sijui</i>
Soil erosion is a serious problem in Kenya <i>Mmomonyoko wa udongo ni shida kubwa nchini Kenya</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soil erosion is a serious problem on my farm <i>Mmomonyoko wa udongo ni shida kubwa katika shamba langu</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soil fertility/productivity is a serious problem in Kenya <i>Ukosefu wa rotuba ni shida kubwa nchini Kenya</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soil fertility/productivity is a serious problem on my farm <i>Ukosefu wa rotuba ni shida kubwa katika shamba langu</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too small fields due to land-splitting is a serious problem in Kenya	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Mashamba madogo sana kwa sababu ya kugawanya ardhi ni shida kubwa nchini Kenya</i>						
Too small fields due to land-splitting is a serious problem for me <i>Mashamba madogo sana kwa sababu ya kugawanya ardhi ni shida kubwa kwangu</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of non-indigenous tree species/crops is a serious problem in Kenya <i>Kupanda miti na mazao yasiyo ya kiasili ni tatizo kubwa nchini Kenya</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of non-indigenous tree species/crops is a serious problem on my farm <i>Kupanda miti na mazao yasiyo ya kiasili ni tatizo kubwa katika shamba langu</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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30) What do you think are the 5 main threats to the Taita hills cloud forests, plants and animals?

Je, kwa mtazamo wako ni tishio gani 5 kubwa kwa wanyama na mimea ya misitu ya Taita?

1).....

2).....

3).....

4).....

5).....

31) Who do you think should be in charge of protecting the Taita hills cloud forests?

Kwa mtazamo wako, ni nani mwenye jukumu la kuulinda misitu ya Taita?



The government *Serikali*



Non – governmental organisations *Mashirika*



Donors *Wafadhali*



Local people *wanakijiji*



32) Do you think that you have a personal responsibility towards the conservation of the Taita hills cloud forests?

(Please circle the correct response)

Je, kwa mtazamo wako wewe binafsi una jukumu la kuhifadhi misitu ya Taita?

222
223
224
225
226
227
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229

Yes/ No
Ndio/ La

33) If no, why not If yes, how do you contribute?

Kama la, eleza kwanini kama ndio eleza vipi

.....
.....
.....

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Part 5 – Willingness

Sehemu 5 - Utayari

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34) I will now read out some other possibilities of getting personally involved in the protection of nature. Please indicate on a scale from 1 (not willing at all) to 5 (very willing) to what extent are you personally willing to do in order to protect the forest?

Sasa nitakusomea baadhi ya jinsi unaweza kushiriki katika ulinzi wa viumbe hai na mazingira.

Tafadhali onyesha kwa kiwango kutoka 1 (siko tayari kabisa) hadi 5 (niko tayari kabisa) ni kwa kiasi gani wewe binafsi uko tayari kulinda msitu ?

	Not willing at all <i>Siko tayari kabisa</i>	Not very willing <i>Siko tayari</i>	Neither – Nor <i>Sina uhakika</i>	Somewh at willing <i>Niko tayari kiasi fulani</i>	Very willing <i>Niko tayari kabisa</i>	Don't know <i>Sijui</i>
Keeping a buffer zone / Unused zone <i>Kutenga sehemu kati ya shamba na msitu</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replanting trees <i>Kupanda miti tena</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant crops within trees (mixed farming) <i>Kuchanganya miti na mimea</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adopt zero-grazing <i>Kufungia mifugo</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify: <i>Mengineyo, (Eleza):</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Part 6 – Habits and behavior

Sehemu 6 - Mazoea na tabia

35) How included are you in making the rules of resource use and conservation in Taita hills cloud forests?

Unahusiswa vipi katika utunzi wa sheria za utumiaji na uhifadhi wa misitu ya Taita?

Not involved at all **Very few times involved** **Neutral**
Upande wowote **Sometimes involved** **Actively involved**

<i>Sihusishwi kabisa</i>	<i>Husishwa mara kidogo sana</i>		<i>Husishwa mara kwa mara</i>	<i>Husishwa sana</i>
1	2	3	4	5

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36) Please explain your answer:

Tafadhali eleza jibu lako:

.....
.....
.....

37) How many forest conservation user groups are you registered in?

Ni makundi mangapi uliyojisajili katika utumiaji wa misitu ya Taita

None	1	2	3	4	5	More _____
<i>Hakuna</i>						<i>Zaidi</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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38) How often do you attend meetings on forest conservation?

Mara ngapi unahudhuria mikutano kuhusu misitu ya Taita?

Annually	Bi-annually	Quarterly	Monthly	Weekly	Never
<i>Kila mwaka mara moja</i>	<i>Mara mbili kwa mwaka</i>	<i>Mara nne kwa mwaka</i>	<i>Kila mwezi</i>	<i>Kila wiki</i>	<i>Kamwe</i>
1	2	3	4	5	6

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39) How would you rate the usefulness of the attended meeting?

Mikutano unayohudhuria ina umuhimu gani?

Not useful at all	A little useful	Neutral	Useful	Very useful
<i>Si muhimu kabisa</i>	<i>Muhimu kidogo</i>	<i>Upande wowote</i>	<i>Muhimu</i>	<i>Muhimu sana</i>
1	2	3	4	5

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40) Please explain your answer

Tafadhali eleza jibu lako

.....
.....
.....

41) How often do you take firewood from the forest?

Unatafuta kuni mara ngapi msituni?

Never	Yearly	Monthly	Weekly	Daily
<i>Kamwe</i>	<i>Kila mwaka</i>	<i>Kila mwezi</i>	<i>Kila wiki</i>	<i>Kila siku</i>
1	2	3	4	5

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42) Which alternative livelihood activities are you actively involved in?

Unajihusisha na njia gani mbadala za kujikimu kimaisha?

- Beekeeping** *Ufugaji wa nyuki*
- Ecotourism** *Utalii wa mazingira*
- Tree planting/nurseries** *Upandaji wa miti*
- Medicinal herb collection** *Madawa ya kienyeji*

- Fish farming *ufugaji wa samaki*
- Butterfly farming *ufugaji wa kipepeo*
- Other
- Nyingine _____
- None Hapana Reason:
- Sababu* _____

277

278 **43) At the very end, we would like to ask you about your personal ideas for protecting the**
 279 **valuable areas better, but at the same time remaining or even improving the situation of**
 280 **the local people?**

281 *Mwisho kabisa, tungenda utujulishe maoni yako kuhusu kulinda maeneo ya thamani, na*
 282 *wakati uo huo kuboresha hali ya watu wa hapa?*

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290 Thank you very much for your time and your effort! We appreciate it highly.
 291 *Asante sana kwa muda wako na juhudi yako! Tunashkuru sana!*

292

293

294 **S1.2 SEMI-STRUCTURED EXPERT INTERVIEW GUIDE**

295

296 **The interview will take about 30-45 min**

297 Can you please tell me briefly what your job is? _____

298 **1. To start with, I would like to ask you some general questions:**

- 299 (a) When you think about Taita Hills Cloud forests, which images come into your mind?
- 300 (Spontaneously: Please name both positive and negative aspects.
- 301 (b) How would you describe the current situation of the Taita Hills Cloud forests?
- 302 (Considering interaction of nature/ locals/ government)?
- 303 (c) Describe the extent to which the situation has changed during the last 20 years?
- 304 (d) Could you please clarify who is responsible for the different forest fragments
- 305 especially Fururu, Susu and Chawia? (National government, County government or
- 306 local communities)

307 **2. Speaking about the interaction of locals with the area of the Taita Hills cloud forests:**

- 308 (a) What is produced around the Taita Hills Cloud forests? (Please name all the different
- 309 kind of products that come into your mind, you may name legal and also illegal
- 310 activities):
- 311 (b) Is there or has there been a change in the products coming from the forest during
- 312 the last years? If yes, what are reasons for this shift?
- 313 (c) What are the reasons for the production of these goods (private use/business/...)?
- 314 (d) Which natural resources are used for the production of these goods (soil, water,
- 315 woods, flowers, honey,...)?

316 **3. What kind of ownership on land exists in this area? How secure is the land?**

- 317 (a) How do you deal with squatters/illegal settlers occupying the land? What is your
- 318 opinion on this?

319 **4) We heard that there are environmental laws and rules; that regulate the use of forest**
320 **resources- like e.g. a ban on tree logging, a ban on charcoal burning and a ban on hunting**
321 **forest animals.**

- 322 a) How are these laws enforced?
323 b) What is the extent of compliance to these laws by the locals?
324 c) To what extent do these laws have negative impacts on the situation of local people?
325 d) To what extent do locals know or get information about these laws?
326 e) To what extent is there communication about the laws between locals and
327 institutions/ government?
328 f) If there is any communication, can you please describe how it works?
329 g) Do you know of any other existing protection laws or rules that would apply to the
330 area of the Taita Hills cloud forests?

331 **5) To what extent do local people know about the importance of biodiversity, endangered**
332 **plant and animal species or the services (water, soil, ...) that ecosystems provide to them**
333 **around the area of the Taita Hills Cloud Forests?**

- 334 (a) What is the extent of awareness among locals and institutions that this area is
335 sensitive and fragile and that its ecosystems can easily be destroyed?
336 - locals
337 - institutions

338 **6) I would also like to ask you some questions about the management and protection**
339 **(current/future) of the Taita Hills Cloud forests:**

- 340 (a) Which institution or administration is responsible for the management (and
341 protection) of the area? How many people work for it?
342 (b) Does your institution have any role to play in protecting the Taita Hills Cloud
343 forests? If yes, please list the roles.
344 (c) What is being done in the area to protect the forest-vegetation and the species?
345 (d) Which of these actions do you consider being successful?
346 (e) What should be done in the future?

347 **7) What are your personal ideas for protecting the valuable areas better, but at the same**
348 **time remaining or even improving the situation of the local people?**

349 **8) I would like to ask some questions related to religion and indigenous knowledge:**

- 350 (a) To what extent does your organisation integrate religion in its conservation
351 campaigns?
352 (b) To what extent and in which way can religion work hand in hand with policy and
353 science in nature conservation?
354 (c) To what extent does your organisation integrate indigenous knowledge in its
355 conservation campaigns?
356 (d) To what extent and in which way can indigenous knowledge work hand in hand
357 with policy and science in nature conservation?

358 **9) At the very end, I would like you to comment on the following issues**

- 359 (a) How does the plantation of eucalyptus trees in forest patches affect their habitat
360 quality?
361 (b) Why are the old eucalyptus trees not harvested?
362 (c) Is there an official system of benefit sharing of harvested trees between the
363 government and local people?
364 (d) Are existing (Community Based Organizations (CBOs) active?
365 (e) From our field work, we have learnt that local people are reluctant to plant
366 indigenous trees, why is it so?
367 (f) What are the causes of chronic forest fires in some of the fragments?

368 **10) Do you have any further remarks or questions?**

369 **Thank you very!**

370

371

372 **S1.3 EXPERT INTERVIEWS**

373

374 Interview no. 1: Nature Kenya, Wundanyi

375 Interview no. 2: Susu Ndiweni Fururu Community Forest Association

376 Interview no. 3: Kenya Forestry Research Institute (KEFRI), Ngerenyi

377 Interview no. 4: Helsinki Research station Wundanyi

378 Interview no. 5: IRUWA Solar water Heater Taita Hills

379 Interview no. 6: Ministry of Environment, County Government of Taita-Taveta

380 Interview no. 7: Chawia Community Forest Association

381 Interview no. 8: Furaha Womens' group

382 Interview no 9: Ecotourism Kidaya, Ngerenyi

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385

386 **Interview 1: Nature Kenya Wundanyi**

387 So basically we are on a project, a program funded from DANIDA it is entitled People Partner
388 With Nature where basically the project is about participatory forest management in general
389 participatory forest management where we are trying to involve the community in forest
390 conservation. You know conservation nowadays must have an element of livelihood because
391 initially people used to talk about conserve, conserve, you are conserving and you are not
392 benefiting from the environment so ours here in Taita is that we promote the participatory
393 approach in conserving the forests because these forests are where the birds we are interested
394 in are staying there are the habitats, so if these forests are conserved then we anticipate that our
395 birds will be safe and alongside doing this in this project of ours we have three it is about three
396 broad thematic areas there is the area of capacity building there is that area of livelihoods and
397 then there is that area of forest management, the forest ACT of 20.. I think it is 2016 that is aah
398 forest conservation and management Act of 2016 we had initial one that is 2005 it has been
399 reviewed requires that a forest whether it is degraded whether it is on a private land whether it
400 is intact must be managed in such a way that is spelt in a management plan so in our project
401 we are also have been supporting forest management plans. The participatory forest
402 management plans for 2 forests that is the Chawia forest and Vuria and we have a draft not
403 draft parsee but we the output these are now the management plans where we did we funded
404 we funded these. This is, within here we have thematic areas so this one will be guiding the
405 partnership between the community and these are the county forests and then from here
406 according to the requirement of the Act, the Act requires that after developing this it has to be
407 approved by the authority either if it a county forest by the county government or if it is national
408 forest by KFS (Kenya Forest Service) and now after that there's the second step of having an
409 agreement between now the community with community and authority where within the
410 agreement we call it forest management agreement it spells out what is expected from the
411 community aspect and what is expected from the authority and then if there are some benefits
412 accruing from the conservation then what percentage will it also defines what percent will go
413 to the community in that agreement if it signed it is binding that somebody can be sued if you
414 breach the agreement so this is the first step we have done on participatory forest management
415 we have developed this we are soon embarking on agreement we are retrained the community
416 so alongside these ones we are doing capacity building. We want to promote that partnership
417 in natural resource management where the community are Incorporated in the management
418 setting such that the management recognizes that there are people partners. Authority that the

419 government or KFS recognizes the community that they partner in the conservation, so to
420 ensure these we, we have supported the formation of Community Forest Associations we call
421 them we abbreviate CFAs where we have done the capacity building so that they understand
422 what CFA is all about, their roles as CFA members in conservation, responsibilities and
423 rewards if any. We have done that we've had like local consulting and training we've also
424 promoted the exchange visits, we took sometimes back we took them to Arabuko Sokoke you
425 know Arabuko Sokoke has some history good history in community and conservation we went
426 there for like one week with representatives we have five forest fragments so we took 5, 5 from
427 the 5 forest fragments I think we were almost 30 to Arabuko Sokoke for 1 week that was early
428 this year I think it was early this year. We also took other representatives for an exchange visit,
429 to a training on Community Forest Association by KEFRI in Kitui it was also like 5 days that
430 was this year and we have had a lot and the impact of all these training on now the CFA include
431 the CFAs now understand the need to involve themselves in conservation in conserving the
432 forests. They are also assisting us you know like in this office I'm alone there are assisting us
433 in doing the awareness as part of capacity building they are now like cascading whatever
434 they've learnt sharing with the rest of the community so through the *barazas* the public
435 meetings they convene they organize public meetings through the chief's office and talk about
436 their forest like Vuria why we need to conserve Chawia forest and the need for the community
437 to join the Community Forest Associations through user groups so it is going to some extent
438 they are up to the task, they have gotten some skills they understand what they are doing so
439 that is the aspect of involving the community in conserving the forest. The second part of our
440 program is on the livelihood so we have been initiating livelihoods on experimental basis the
441 first phase of our program ended last year and we had some extension till March this year so
442 we are in the new phase of the program in the first phase we initiated some projects including
443 not initiating parsee but supporting because they have been ongoing we were engaging in other
444 projects partnering with other groups so we have been up scaling what had already been started
445 so beekeeping we have supported the groups we have like 4, 5 groups 1, 2, 3, 4, 5, 6 we have 6
446 groups these 6 groups we have procured and delivered **250 landstroke[7:55 not clear]**
447 **beehives** and some the ...[8:00 not very clear] .that is like they were 10 they were not so many
448 and alongside that we have been doing capacity building on beekeeping we took some
449 representatives from those groups to a 2 weeks training in Baraka Agricultural Training College
450 in Molo 2 weeks training it was funded by our organization and these guys who were trained
451 were to come back and train others they were supposed to be coming back and so that they
452 come teach others I hope they've done okay they have done we have been doing bits of
453 monitoring. Other than that one we have also been encouraging I don't know how to call it
454 encouraging local exchange visits or sharing knowledge from one group to the other like the
455 issues with beekeeping has been with the beetles so like the other group that is in Chawia they
456 were telling us that, okay they are also partnering with other, what do we call it, with other
457 organizations for example the ICIPE so they have been trained and they came up with a method
458 of controlling the beetle like the beehives there is are landing part on the beehives, where the
459 bees land so they were cutting the landing area so that when the beetles come when they get
460 knocked on to the beehive they fall so when there is that landing they don't fall they fall down
461 and start crawling and get into the hives so they were trying to cut these landing sites to ensure
462 that when they knock themselves from the beehive instead of getting a landing place they fall
463 down so we have been using the same group to train some of our groups to help they do the
464 inspection of beehives we are just we have been encouraging local knowledge transfer or local
465 knowledge exchange yea so but beekeeping in other groups it is not doing very well except for
466 that group that we visited in Chawia
467 *Why?*

468 They have a series of problems one, beetles, second I think it could be too cold this other side
469 third is their negligence when you compare the other group from Chawia that they are getting
470 income in fact they are getting good money according to them from the beekeeping they are
471 doing regular hive inspection where you regularly open up and check out whether there is a
472 problem within the hive or not so this other group it is as if they are not doing it and I'm not
473 an expert in beekeeping but they are telling us that bees require clean environment so there is
474 a likelihood that these community groups some of the groups they don't give us, sometimes
475 maybe they lie to us when we ask we usually enquire on a monthly basis how many beehives
476 have colonized how many bees have absconded and we usually ask about how frequently do
477 they go and monitor their beehives they might tell you we have been doing it we have done it
478 and we are doing it like every two weeks but in real sense even after three months. Yea so those
479 could be some contributory factors, the fact that the hives are not clean so they are suppose to
480 be cleaned regularly or you do the inspection, cleaning regularly then the fact that most bees
481 are absconding could be because the hives are not clean or because of the infestation by the
482 beetle or it is too cold because there is a way of aligning or orienting the hives they were taught
483 and probably there those they are also talking about attack by honey birds but I think that is not
484 a major

485 *We have also seen that they don't have a processing plant anymore, its broken*

486 Yeah they don't have a processing plant. Its broken in fact they gave us a sample the one that
487 is broken I sent it to our head office in Nairobi. Our head office is based in xxx. And they tried
488 to do a replacement but they could not get the exact one so our organization is thinking of
489 buying the whole system so I think I should be calling to ask them where they've reached. That
490 group is soon getting one but it has stayed like almost 1 year.

491 *Yea, and are you working in touch with xxx organisation he has also told me that they are also
492 working to find a replacement*

493 a replacement, mm that's a a good *ninii* because if they can get a replacement to buy the same,
494 we can do other things.

495 *I am surprised that you went with KEFRI (KENYA FORESTRY RESEARCH INSTITUTE) to
496 train CFAs (COMMUNITY FOREST ASSOCIATIONS) because KEFRI told us CFAs are
497 highly politicized they are not functioning. It was really nothing good about CFAs around that
498 area from KEFRI.*

499 This area of ours or

500 *The area around Chawia, the KEFRI main office that is up the hill said CFAs are not
501 functioning they are highly politicized*

502 You know we also have politics in conservation so what happens is you know these people just
503 came recently I think It could be this year.

504 *In September 2017*

505 Yea September but we've been here since 2013 and I have been working with the CFAs. We
506 have challenges and it is common to all community groups it is common even to all people
507 who are working together challenges are there. Okay, to some extent they are doing some good
508 work but we are also getting challenges from other groups because you find that these CFAs
509 some of them were formed, the concept of CFA came to Taita very late. Those people who
510 were giving information about the need to have Community Forest Associations didn't deliver
511 it very well. So some members thought that you form a CFA and then you take over the
512 management of the CFA you start cutting, instead of conserving you start cutting the trees and
513 you sell the timber and any other, so that was the notion. So some thought that it would be
514 easier to start milking benefits from the forest because there was a planned harvesting of mature
515 eucalyptus from the Taita hills. So whoever was giving them information, just to entice them
516 so that they can get into community groups, or get into CFA was that form the CFA then after
517 forming the CFA the when the felling plan takes effect you will be benefitting so that is the

518 notion. That concept was poorly delivered to the community. That is what we are struggling
519 with. In fact there is a better CFA we are seeing that is fairly picking up but still there are some
520 few problems from the Vuria because it is a CFA that as Nature Kenya we've built its capacity.
521 Yea they have even done election, we've overseen their election it was successful. And at the
522 end of the election it was more intact because we as an organization you know we are playing
523 a neutral ground. We ensured that, because the forest is surrounded by 6 villages or sub
524 locations, we ensured that within that the executive committee each sub location is represented
525 and we ensured that fairest way because each and every sub location produced like 4 delegates.
526 The initial plan was that they were supposed to have 7 delegates and when they came there was
527 a sub location represented by 4. So we wanted to have a fair play, such that if you win you are
528 winning because you've maybe presented your policies and people are happy with them. So
529 the other challenge is, it's not that they are politicized what we have is that when the concept
530 came it was poorly delivered the after the delivery, you know these things come with projects,
531 maybe you have a 3 year project then you've delivered the concept poorly and then your project
532 expires and you go away.

533 *Speaking of poor delivery, a lot of people in Chawia, most of people we interviewed told us*
534 *now we are given the forest the forest will become a community forest*

535 That is misinformation

536 *Yea so maybe you should start correcting that*

537 Yes, we've also realized that our CFAs trying to create awareness they deliver wrong
538 information to the rest of the community. I have a case example there is a Community Forest
539 Association close to Ngerenyi University, it is called Sundifu. Susu, is a small indigenous forest
540 closer to the polytechnic and then we have Fururu closer to university and then we have the
541 other one closer to the hill is basically a eucalyptus closer to a primary school known as
542 Vichwala. So they are doing awareness and trying to recruiting more members into their group
543 so recently they gave me you know they give me the progress of their activities so they were
544 telling me that this group is complaining they have overgrown seedlings they are waiting for
545 us to go and buy then I asked them, excuse me where did we agree with you people to go while
546 recruiting the groups you tell them that we will be buying the seedlings and yet we don't have
547 that in our program

548 *That's what we have been told. They are waiting for you to buy*

549 Yes, those are some of the challenges facing the livelihoods that have been initiated and that is
550 now a challenge that is hard to eradicate. A challenge that after doing everything then some sit
551 and tell you now we have done it, so what next. You've given you've capacity built a group in
552 a given livelihood you've even supported the initiation of a livelihood then after the fruits have
553 started coming then they wait for you to come and either buy or help them go sell. You support
554 community group with cabbages for example so that they have something that can take a
555 shorter time to start earning as they wait for example the bee honey production or as they wait
556 for fish farming

557 *And do you make this clear maybe in the initial, that you will not be the end buyer*

558 You know where the problem is, at the moment we have our own project. Initially the project
559 that got me here initially I was working with Kenya Wildlife Service Research in XXX. So
560 when I came here in XXX then we were affiliated with other groups. There is a group we are
561 sharing office with. So it was a project and our role was specific, implementing a specific part
562 of the project and the bigger portion of the project was being implemented by the other group.
563 Initially there was another one that was funded by CDTF to the tune of 30 million. So we were
564 also partners so when we come we are building on what is existing so in doing this we have
565 realized there are some mistakes that occurred at the initial stages because you find that some
566 of the projects, first one the CDTF project had a provision for buying seedlings from the
567 community. That was one. Another one which now gave me job from xxx funded by Darwin

568 Initiative had that provision for procuring, purchasing the seedlings from the community. Now
569 those other 2 projects their time elapsed so we have ours which is a program, first phase has
570 gone, we are in the second phase there is no provision for buying the seedlings unless a
571 community group does a proposal to us that requests some funds to buy some seedlings
572 rehabilitate a portion then they can be given some cash like we did. There is a group on the
573 other side, a Community Forest Association from Vuria was given some 20 thousand based on
574 what they wanted to buy seedlings from their user group and plant there is another group that
575 was given 45, I think they wanted to plant 1500. Yea so unless they do that usually we are
576 trying to, you know working with the community is very difficult we are trying to capacity
577 build, one and then to expand their thinking like opportunities which area available in the
578 devolved system of governance like for example I was just speaking to the group we are
579 working with that there is need for them to do a proposal we can help them to do a very
580 simplified proposal to CDF such that maybe to procure seedlings then they identify where they
581 want to plant the seedlings then if they get the money they take this money and buy their own
582 seedlings they take the seedlings they go and plant and they remain with the money, that is how
583 it is.. that is how our organization does but we don't have allocation for procuring seedlings
584 we are only encouraging them we are only opening their minds on available opportunities to
585 benefit including creating linkages to the county government through ministry of environment
586 we have done that, we have even brought our groups together with the ministry of environment
587 so that they could share, telling the ministry they are able to do this and that. We also work
588 with Kenya Forest Service if we hear that they need seedlings we can direct them or if a donor
589 comes who needs some specific seedlings we direct them but we don't have that opportunity
590 to go and procure, to go and buy the seedlings
591 *Tera has told me he wants to buy 4 thousand*
592 Yea Tera did it, Tera did it last time and they got from the groups working with. You know our
593 groups are widespread. You didn't reach Ngangao forest and then Vuria?
594 *Vuria yea*
595 You've reached
596 *But we have not done research, I just went to walk*
597 Vuria, we have groups, Vuria there is a side called Mrughua, Mgange Dawida, and the other
598 side called Mwanda. So we usually encourage them, some groups have benefitted by the way
599 through the linkages we are encouraging them to create working linkages. We are also
600 encouraging them to be on lookout for emerging, forming more partner groups like the Tera
601 has been training some of our groups I was also forgetting the need to talk with them so that
602 we agree with them on now they will be having a project, starting in September, it was suppose
603 to start in September but I think it is almost rolling out that goes out for 4 years. I will seek
604 audience with them to know which are there areas of focus, the coverage the areas not the
605 thematic but the areas and then in any case if they will be working some of the groups we are
606 working with is the agreement they can do what they want to do, and and where they will not
607 do we pick from there not duplicating for example maybe they are encouraging A,B,C,D or
608 they want to train on this and we are also planning to train on this, so we can allow them to
609 train on the other one and then we pick form where they will reach, that is what we are thinking.
610 *And I'm also surprised that that from literature we have been reading that Taita has*
611 *participatory I don't know from since when, that's the whole idea that we came here to study*
612 *participatory management, but when we came here we were told the stakeholders are just*
613 *formulating the policy for participatory management so it's like in theory in real sense it didn't*
614 *exist*
615 I think there is an example of a Community Forest Association which I have heard that they
616 were doing very well from the Taveta I think it is known as either Kitobo
617 *Taveta down*

618 Yea Taveta down, Kitobo
619 *But not on these fragments*
620 That is the truth, the concept came late and when it came, you know the problem with these
621 projects come with the concept and the project elapses after 3 years so you push it you reach at
622 a point the project has elapsed and you don't have any other project. So you leave it that point.
623 So those are some of the things which are and whatever you are told I think it is the truth and
624 that is why as Nature Kenya as an organization we are thinking of, we want it to work and this
625 is an example, we had formulated this, we wanted this to go to county government they sign it
626 we enter into the agreement from there so we have a binding thing we want to experiment it
627 with 2, okay what we want to see is that community taking that initiative of conserving their
628 forests and if there are some benefits accruing from the conservation it also goes the benefit
629 goes to the community through the Community Forest Association so we are also doing
630 experiment and we hope in the 3 years we have, we want to have at least 2 or 3 examples where
631 we will be saying we've gone, I have an example, around Fururu there is a CFA we abbreviate
632 it SUNDIFU (*susu, ndimbenyi, fururu forests*) there is another one from here Iyale forest, we
633 abbreviate it IYAWEMBI that is Iyale, Wesu on the small rock and then there is the other side
634 Mbimbi, that is IYAWEMBI and then the SUNDIFU, Susu, Fururu and Ndimbenyi. Those
635 forests have their management plans approved by Kenya Forest Service, the second stage was
636 supposed to be formulation of the management plan between the Kenya Forest Service and the
637 CFA because those are national forests. The project ended so nobody took up the initiative we
638 tried and initiated the initial process of the agreement which requires the CFA to notify the
639 Kenya Forest Service that they have done the management plan and now they are requesting
640 the initiation of the management agreement and then the project ended the letter was sent, either
641 it didn't reach Nairobi it disappeared somewhere because we sent some person who is at the
642 headquarter to confirm whether that letter reached, it didn't reach so we didn't have again, we
643 have been relying on, we wanted KFS to help those 2 CFAs to start up the process of writing
644 the agreement and again we wanted to ask, we've not asked but we wanted to ask KFS is it
645 possible backdating pushing the date forward for implementation because it has not been
646 implemented it was initiated in 2016 it was approved in 2016 but no implementation but to an
647 extent there are activities that are ongoing supported by different organization such that when
648 you read through the management plan you will realize that they are being implemented
649 *And perhaps since you came here in 2013/2014 until now the situation you found on this*
650 *fragment is it the same or have you made an impact or has anything changed*
651 Umm okay before answering that question I said that our project has been on participatory
652 forest management we also talked about the aspect of livelihoods the aspect of advocacy I think
653 the aspect of advocacy and capacity building so we've also been having an element of a school
654 outreach program to integrate the awareness with the aspect of environment, public awareness.
655 We also been having the element of involving the young ones in environmental conservation,
656 so you are asking the impact? I is on these plans we have developed these plans and it has cost
657 us a lot of money bringing the experts together, community groups together
658 *So this is your initiative?*
659 Yea this is our initiative
660 *The same document that KEFRI, Kenya Wildlife Works the all contributed to this?*
661 No they were not part of it, KEFRI was not here, KFS was here, county government was here,
662 Community Forest Association plus a consultant so we brought those guys on board and we
663 spelt, we had the document so this is one of our output, the second output t I show you
664 something the second output is this the implementation is ongoing
665 *You got this up there?*
666 Yes this was funded I think the..[not clear] is still here one of our partners this project the one
667 initial project whose implementation is ongoing seriously ongoing

668 *Okay, talking of these we have found through our research people are quite aware of*
669 *endangered plant species and all these trees but they are not aware about birds or any animals*
670 *that are living in that forest or do not have a very ecocentric attitude towards the animals,*
671 *could you know why?*

672 You know again I said that when you are working with community it is very difficult to work
673 with them because, you know you cannot force someone to bind into your idea of conservation
674 but then generally this is how we work even if you walk around those areas of our operation
675 you will hear some people say that that organization only benefit few people. There was a time
676 we heard like that. Only benefit a few people why we don't work with everybody we work
677 with people in groups and these groups at different areas we have the sub groups, the groups
678 like maybe can be forest user groups, self help groups, we work with self help groups so these
679 self help groups were brought together through an umbrella body known as ...[33:58 not clear]
680 so ours our site support is called Dawida biodiversity group in short it is **DABIGO** this group
681 has between 10 to 13 CBOs (**Community Based Organisation**) within itself spread from
682 Ngangao to Vuria to Chawia, Susu, Fururu to Iyale so we work with these groups so we work
683 with these groups to help achieve our goal of conservation bearing in mind working with small
684 group they will also impact on the rest of the community but now if you start talking again on
685 the same same if you talk with Tera here the Helsinki guys here not talking with them but if
686 you ask those who are within their area of operation they will even tell you they don't know
687 what those guys are doing yea that's what you will get it because somebody selects what he
688 or she wants to hear but generally awareness has being done generally it has been done the area
689 of coverage is big. We are working with 15 schools secondary are few either 1 or 2 but majority
690 are primary we work with Mazola primary it is closer to Chawia these *Jikos*, the boilers of
691 secondary we bought them and it was to reduce pressure on firewood, cut down the firewood
692 consumption by almost 50% we supported another school known as Vichwala. Have you been
693 to Vichwala, yes Vichwala there is a *Jiko*, our *jiko* is there we supported a school here called
694 Kungu, Kungwi is on your way up, on your way up you will get Kungwi we have our signpost
695 is there we supported that school loser to the forest so when somebody tells you aim of
696 supporting this because of these 2 birds they stay in the forest and their numbers are dwindling,
697 they are undergoing local extinction they are disappearing in the forest which they were found,
698 so among things which are contributing to their disappearance, habitat disturbance, that could
699 be cutting down trees for firewood and any other, walking aimlessly in the forest so we have
700 tried to reduce but we have also talked. You know these birds you don't, even they are not
701 known in the local dialect and these are forest dwelling birds. So it need

702 *Why are they not known?*

703 They are forest dwelling birds *wako ndani ya* [they are inside] forest they are not common
704 outside so even if you tell someone about these *Taita apalis* there number is less than 200, not
705 even 200 is between 150-200 but telling a person about these birds you need to go to Vuria you
706 may be lucky to see they are fairly abundant in Vuria in Iyale they are very few in fact today
707 we are lucky to sight *kuskia wakilia wawili* [to hear 2 cry] this one and also one of us, this one
708 we are just doing other things so we have done awareness and maybe what we have not done
709 is gauging we have bits of gauging the impact but when we gauge the impact of awareness it
710 usually fairly positive but again you know data is affected by the sample size. Yea

711 *Okay maybe what are you doing about eucalyptus plantation that also affects their habitat*
712 *quality?*

713 I, we have been in talks with Kenya Forest Service from the headquarters and the local level
714 to at least those areas where these species are found they reduce, they cut not cutting but
715 replacing the eucalyptus with indigenous you know these birds are found in indigenous forests
716 so that is what we have been doing and the impact of that is that KFS agreed and there is a
717 project that is ongoing, and we have affiliated ourselves with museums of Kenya. Iyale forest

718 there is an area that got burnt so were allowed through our collaborators we convinced them
719 that these birds require that indigenous, so we wanted to remove the burnt exotic trees and
720 leaving the area just open that way to allow natural re-growth
721 *And the fern will not take advantage*
722 So that will be a challenge, that could be a challenge but again it is fine these birds nests on
723 fern they are not selective on what they nest on, this one including Taita white eye, nests on
724 fern so we have like in Ngangao there is a sampling plot that *nini* [what] was fallen, eucalyptus
725 and pine were cut some sizable area so some monitoring work is going on, on how there is how
726 regeneration is occurring natural growth and whether these species are spreading their territory
727 towards the area that was cut open so that is the far we have gone and as an organization we
728 have been lobbying from Nairobi for the indigenous forest be managed by Kenya Wildlife
729 Service[KWS] because we have realized that those indigenous forests are homes to some
730 unique biodiversity
731 *And why is there no KWS here in Wundanyi office, or is there?*
732 You know with Kenya Wildlife Service is more or else the big animals are you aware of that?
733 *Yes*
734 So because we don't have those big animals they are not aware that we have unique species of
735 birds that are only found here I wonder if they know unless if they heard being named in
736 meetings something like that
737 *And why are the old eucalyptus trees not harvested?*
738 Ummm, there was a plan that was developed known as the felling plan by Kenya Forest Service
739 and then politics came. Politics is a very dangerous game, it started, local politicians started
740 saying oo you see your trees outsiders want to come and benefit from your trees you are stupid
741 you the Taitas you are stupid things like that so politics came and then the Kenya Forest Service
742 had to suspend, to suspend the whole issue of implementing felling plan, within the felling plan
743 they had plans of like where they have matured doing the harvesting and then think of whether
744 replacing the eucalyptus with the semi-eucalyptus or leaving. There had a very good plan
745 whereby some parts of the forest were to some forests were to remain just indigenous they just
746 harvest and allow it to remain indigenous they have the management plan for that
747 *And maybe have they come up with an official benefit sharing system?*
748 *With?*
749 *With the community to remove the politics, if they say the government gets much and and as*
750 *much goes to the community*
751 You know KFS is government and a government will not come and tell you that and give you
752 an idea of how to eat into their profit, they will not come and tell you and who is a community
753 in the first place?
754 *The citizens of the government*
755 So how will you have a benefit sharing mechanism with the citizen, who is this citizen It's just
756 like saying the government the government the president, no, because you will hear the
757 president saying government will deal with that, government, government. A minister will say
758 that the government is targeting the minister then you ask who is the government, is not known.
759 So it is the same. When we talk about the citizens whatever the only thing that can happen is
760 what we are doing now having a management plan and then from there you have the agreement
761 that is signed and then people start working so on the agreement revenue like for example if
762 the felling plan will take effect then you agree as a CFA, a CFA can even register being a saw
763 miller then they are given a percentage that if they are doing the felling then this percentage
764 the CFA will be given this percentage if you fell, you fell and then you rehabilitate you see, so
765 we have not reached there
766 *And from our fieldwork we have learnt that people are reluctant to plant indigenous trees do*
767 *you know why?*

768 It takes too long to grow to mature again they don't regard it as economical, it's not economical
769 according to the returns you know it takes too long to mature and then after taking too long
770 compared to exotic trees they are growing very fast so you start harvesting in time and you
771 start enjoying the benefits of your hard work like for example the *Prunus africana* it can take
772 2 years and it is here
773 *And they also talk about the logging ban because even if they plant indigenous trees they will*
774 *never be allowed to cut them so they say its better we plan the exotic trees because we can have*
775 *a permit to cut them so perhaps the logging ban is counterproductive in that sense*
776 Maybe
777 *And what are the causes of chronic fires in some of the fragments*
778 Okay from the hearsay some believe that during the drought when you want the rain to come
779 quickly you burn, maybe it is biologically proven it works but it is not sustainable so they are
780 burning, the smoke itself you know smoke is moisture from the burning vegetables, it goes into
781 the air get cooled and then come down in the form of rain
782 *And do you work with religious organizations or indigenous dini za kienyeji [traditional*
783 *religion]*
784 No
785 *And last question, what are your personal ideas for protecting the forest but at the same time*
786 *improving local livelihoods, your personal*
787 My personal,
788 *If you had the power*
789 If I had the power you know when you tell a community member that conserve, protect do this
790 do what the forest benefit, community want to see tangible benefits not inherent like ecological
791 services bla, bla. They want to see, in fact community member wants to feel that because of
792 this forest my child is going to school, because of this forest I have eaten my supper, have this
793 money because of this forest so personally if I'm in the authority assume county government
794 I would advocate for strong partnership between Community Forest Association and the
795 government and I would also develop the revenue benefit sharing mechanism such that outside
796 the conservation work that the community will be doing, if they is something good from it then,
797 I would ensure there is a good percentage going back to the community you know I have been
798 telling the community members that these forests do not even belong to Kenya Forest Service,
799 Kenya Forest Service they do conservation and management on behalf of like here in Taita on
800 behalf of people of Taita, the forests were there before KFS was formed, forest were there and
801 they will only support that conservation, you know when you talk about that they will tell you
802 this forest *ni ya serikali, nyani pia inatoka hapa* [belongs to the government and monkeys live
803 there] come and destroy our crops so the best conservation initiative is that which strikes a
804 balance between, that ensures the wellbeing improves the wellbeing of people improves and
805 conservation, biodiversity improves so for you to ensure that you have achieved this, you have
806 done bits of conservation you need to look at the social welfare of the people and also the
807 welfare of the biodiversity
808 *What is your idea of controlling human wildlife conflict especially with monkeys and baboons?*
809 The greatest contributor towards human wildlife conflict are the humans themselves because
810 you are a human being you have gone and cultivated closer to the forest the monkeys will see
811 your farmland as the easy way out to go and feed same like Taita county as a whole the issues
812 to do with elephant human conflict it is on the rise, why because we have gone and stayed
813 within their corridors, migratory corridors so when these elephants come, maybe more from
814 the other side to get water its traditional water the area there then it gets the area is locked will
815 this animal spare you, it will just move so we are pushing, the human beings we are pushing
816 too much or too hard on the wildlife and so because of that push, they are hitting back. We are
817 squeezing them

818 *And does insecure land tenure in the area affect what you do like in Chawia we didn't see*
819 *anyone with a title deed*
820 I think titles are not here in the hills, they are not here
821 *Do you think they would improve the situation?*
822 If, they have that legal document in which sense
823 *In conservation sense such that people will invest in their land more because like grandchildren*
824 *say ni shamba ya babu [the land belongs to my grandfather] so they have no motivation to plant*
825 *trees on their farm or anything to invest intensively so perhaps if they could have a secure land*
826 *tenure they would invest more on their farms and remove pressure from the forest*
827 Maybe, you have even made me remember something to add on what I would do I would also
828 encourage the payment, is it called payment for ecosystem services such that those who are on
829 the lowlands pay for the services from the hills and these people from the hills will feel the
830 urge maybe to conserve the water catchments may feel the urge to up their further their
831 environment up here is conserved because water like the Voi River comes from up here I think
832 these are tributaries up here. So the issue on land ownership is very tricky. You know I think
833 what we need urgently for example here in Taita or the areas with fragile ecosystems are land
834 use plans such that it is in the government laws whatever or policies that if you are to plant
835 like you were saying some people are for exotic, then there are areas where you are not allowed
836 to plant exotic and some area you can be allowed to plant exotic even if you do subdivision of
837 land there are areas that need more so the water catchment areas whether it is on your land or
838 not on your land it must remain protected for the issues of water
839 *And do you think there is hope for conservation or we are going to lose it*
840 Yea this one we are worried whether it will survive because the number is dwindling. Hopes.
841 Okay, despite the challenges, hopes only come because of the effort that has been put so based
842 on the efforts that are in place we just hope that things will turn around well. For example we'll
843 secure the habitat for this. We are leasing land the side of Vuria we have 6 hectares already
844 leased for 25 years for the conservation on a private land so these birds were found to be there
845 their nesting ground were being destroyed by fire somebody could just burn to open forest for
846 farming, so we as an organization planning to create a reserve forest reserve for these birds
847 secured so for these birds to some extent hopes are there we are also pushing hard for the county
848 government recently we formulated forest policy and when the right time comes for
849 formulating the regulation, policy goes with regulation we will also push for, ensuring that the
850 fragile areas are mapped and maybe stringent measures are put in place to ensure that if for
851 example your *shamba* there is a strip passing through your *shamba* then we will ensure that we
852 put some close that say ...or to reinforce the existing laws like on protection, you see so a lot
853 of research is going on the hills and we just hope are also pushing county government to take
854 a lead such that these research work that are being done like you people after finishing we need
855 to have the report and the stakeholders and the community are made aware of the status of their
856 environment what is on-going so if that one is done then a lot of awareness will be created.
857 People will see the trend, yea when we talk about this bird is disappearing they will be seeing
858 you see to some extent we have hope and that is what is driving us we have not given up hopes
859 are there. Together with having these strong Community Forest Associations we'll be having
860 a strong Community Forest Association and we are optimistic that other groups, other people
861 will come from other areas to come and benchmark on how it was done here. Ya there is some
862 hope
863 *Asante sana [thank you very much]*
864 *Karibu [welcome]*
865 *Chawucha [thank you]*
866 [...not clear] ...**THE END**
867

868 **Interview 2: Susu Ndiweni Fururu Community Forest Association**

869

870 **To start with, I would like to ask you some general questions:**

871 *When you think about Taita Hills Cloud forests, which images come into your mind?*
872 *(Spontaneously: Please name both positive and negative aspects.)*

873 - We want to conserve it and we want to rehabilitate it, because it was destroyed. It is no longer
874 indigenous.

875 - But in reality, we have to restore the forests as previous. There is a need to remove the
876 eucalyptus for indigenous trees. That is the major point of us.

877 - We have our constitution and our objectives here:

878 “The SuNdiFu CFA shall ensure, that is the aim, that since much of the forest and the wetland
879 resources have been destroyed by human activities. Fururu encroachment, SuNdiFu will
880 provide the community with all they need to stop their negative attitude and make positive
881 changes by conducting regular awareness meetings.”

882 - This is one object to create awareness.

883 *How would you describe the current situation of the Taita Hills Cloud forests? (Considering*
884 *interaction of nature/ locals/ government)?*

885 - Destroyed. The forest is destroyed.

886 - Due to encroachments, firebreaks, illegal logging, there are so many destructions.

887 - From Its original way, it was a cultural, before then.

888

889 *Describe the extent to which the situation has changed during the last 20 years?*

890

891 - There is an infinite number of changes, especially the forest cover has been encroached a lot.
892 Movement, flow of water, as it was previously covered, it is not longer existing.

893

894 *Could you please clarify who is responsible for the different forest fragments especially*
895 *Fururu, Susu and Chawia? (National government, County government or local communities)*

896 - Now for us, they are gazetted. So, we are barely under casual ways. The three forest fragments
897 are government gazetted. Chawia is still under County government.

898 **Speaking about the interaction of locals with the area of the Taita Hills cloud forests:**

899 *What is produced around the Taita Hills Cloud forests? (Please name all the different kind of*
900 *products that come into your mind, you may name legal and also illegal activities):*

901 - They do bee keeping

902 - Now, as you know, the forest was completely under governmental control, years ago. They
903 were used to protect it, they used to conserve it, but when it was gazetted, the people got very
904 disappointed, because then the attitude changed. The government came into the forest, the
905 people were no longer allow to take dry and dead wood out of the forest, so they burned it.
906 They wonted anymore to step into that forest and the people thought, now it is lost. It is now
907 lost from them. So they had a bad attitude actually. They said: “Now we don’t care about it.”,
908 “Let the government now protect it.”, “Let the government now improve it.”. And they didn’t
909 improve it. Instead they started corruption, they started logging. And due to that it was
910 destroyed. So, if you ask me about the people, they don’t get anything from the forest, they
911 lost. So that’s why they are bitter. That’s why fire has started in the forest.

912 In fact they hated it to be associated with the forest, because they didn’t get firewood, they
913 didn’t get anything they wanted, they didn’t get grass, it was burned, nobody was going in.
914 There were no, like firebreaks, to protect the forest. But I putted it there an I am telling them
915 they need to use the rocks.

916 But they know the forest is a source of water catchment. I think they understand, that the forest
917 is good for them.

918 *Is there or has there been a change in the products coming from the forest during the last*
919 *years? If yes, what are reasons for this shift?*

920 - We are supposed to benefit, but we don't extract medicinal herbs from the forest. And after
921 all, in the forest, when they were indigenous, I know, our people were used to the medicine
922 from the forest. But now, after gazettelement, they don't get that medicine from there.

923 - Butterflies

924 - There are some birds, which can only be found here in this forest, not anywhere else in the
925 world. There is the white eyed, it is a Taita bird.

926

927 **What kind of ownership on land exists in this area? How secure is the land?**

928 *How do you deal with squatters/illegal settlers occupying the land? What is your opinion on*
929 *this?*

930 - It is private land, because the land is demarcated, and we all have titles.

931 - Authority for the land is the ministry of land.

932 - Land control body

933 - Previous we had this problem. There was a lot of illegal settlements but now, everything is
934 titled.

935 **We heard that there are environmental laws and rules; that regulate the use of forest**
936 **resources- like e.g. a ban on tree logging, a ban on charcoal burning and a ban on hunting**
937 **forest animals.**

938 *How are these laws enforced?*

939 - These laws are enforced by Kenyan Forest Services (KFS)

940 - Environment and natural resources

941 - If I wanted to harvest, like I recently did, I harvested, I cannot harvest just without the
942 knowledge of county government and the ministry of KFS and the ministry of environment
943 and natural resources. The county government is now authorized to give the permits.

944 - Let me just indicate: First we have to get permission from the area chief, you have to see your
945 warden administrator, constitution of warden administrator. Then from there you have to go to
946 forest department, to get permitted to harvest on your land and to log trees. This is the
947 procedure.

948 - The community, they have to go the village councilor. This councilor is the first person who
949 educes the permit, that this man really owns the trees. We go to that chief. Than from there we
950 go to the warden administrator. Then we go to sub county forest administration. Actually
951 we are talking about the district, because there are changes, we don't have a provisional
952 government, we don't have district officers. What we do have now, is county commissioners.
953 They are there. And you have to do all this every time you want to harvest. Normally this
954 process took sabot a week.

955 *What is the extent of compliance to these laws by the locals?*

956 - When I want to harvest on my land, I can't just harvest without that knowledge of county
957 government, ministry of environmental and natural resources, that is the one who give us the
958 permits to harvest

959 *To what extent do these laws have negative impacts on the situation of local people?*

960

961 - This procedure is good! If everybody would be allowed to harvest without a permit,
962 desertification would occur. It is also meant for conservation. [...] You can see how many local
963 people do replant.

964 *To what extent is there communication about the laws between locals and institutions/*
965 *government?*

966 - Well, this is an exactly association thing, this is what we do. This wasn't there since forever.

967 This is new. That allowed the communities to participate in forest management. And this is

968 why we founded this association. Now, what we are saying is that, it is going to change. Much
969 has been given to the community now. Why? Because the government now has seen, once they
970 had gazetted that forest [...], but now this one turns different. What were they doing? They were
971 logging, selling the logs and getting money for themselves [...].

972 - But now, things have changed. From now, when we started to manage the forest together
973 (KFS, the county forest officers and the association). So when they get 600KSh from
974 researchers for the fees, those funds should be actually shared.

975 *If there is any communication, can you please describe how it works?*

976 - For example, we share the share the forest management plan content with the community and
977 inform them about all the changes. We are sensitizing the book.

978 - The forest act 2005 has given them authority to participate in the forest management.

979 *Do you know of any other existing protection laws or rules that would apply to the area of the
980 Taita Hills cloud forests?*

981 - Soon we will go to sign an agreement together with the county government and KFS. It is
982 about how we want to manage and use the forest. And for your information, this comes from
983 us now.

984 - We have a book. A forest management plan and we were authorized to participate, what we
985 did. This forest management plan is unique.

986 **To what extent do local people know about the importance of biodiversity, endangered
987 plant and animal species or the services (water, soil, ...) that ecosystems provide to them
988 around the area of the Taita Hills Cloud Forests?**

989 *What is the extent of awareness among locals and institutions that this area is sensitive and
990 fragile and that its ecosystems can easily be destroyed?*

991 - locals: They are aware! They are aware of what is changing. They are well informed They
992 causing what is happening. They are to ones, who talk about it.

993 *[Long speech about himself and how important he is to the other villagers. At least he assumes
994 that.]*

995 - I went to another course in Nanyuki.

996 - I have told the people a lot about climate change. I am a member of a climate change adoption
997 program. We were working with a lot of people (ICIPE, Finland University, and a lot more)

998 - We have ISGTP Kenya: International Small Groups Tree Planting Program

999 When I came from there, it was my job to educate the people here

1000 *[Again a long self promoting speech]*

1001 - institutions

1002 **I would also like to ask you some questions about the management and protection
1003 (current/future) of the Taita Hills Cloud forests:**

1004 *What is being done in the area to protect the forest-vegetation and the species?*

1005 - I teach them about organic farming, replanting trees, planting fruit trees, how to farm, how to
1006 act

1007 *What should be done in the future?*

1008 - SuNdiFu Association will work due to the established workplan 2018. Firstly to map the
1009 forest. Realizing that the forest boundaries and the adjusted farms are unmarked. We will give
1010 these activities the first priority, to avoid forest-farmers conflicts and encroachment problems.
1011 Secondly, firebreaks and clearing and marking. Number three: Construction of fences. Forest
1012 control groups. Number five: Enable and entangle the different committees. Number six:
1013 Infrastructure. We don't have roads. The people see the need of access roads, e.g. for fire
1014 fighters and also for ecotourism. Number 7: Utilization of user groups. We should utilize
1015 workforce and we should get it from the user groups. That is what we are doing now, we are
1016 sanitizing them, to be ready, when work comes, in the forest. They will do all these jobs. The
1017 communities will do this through user groups. They will be allowed to keep their behaviors. E.

1018 g. Bee keeping is coming now, as well as butterflies. Tree nursery groups. Bird monitoring
1019 groups. Herbal medicine groups. There are trees, able to cure cancer. Researching groups.
1020 Cultural knowledge groups.

1021 **I would like to ask some questions related to religion and indigenous knowledge:**

1022 *To what extent does your organization integrate religion in its conservation campaigns?*

1023 - We have to integrate it, because there are different groups with different interests and diverse
1024 religions. There are the ones who want to keep the forest holy, to close the forest, so that nobody
1025 can enter it.

1026 - We want to keep the caves, for sure, but the main aim is to keep the fragments together, to
1027 keep all the different interests and religions and cultures together with the indigenous
1028 knowledge.

1029 - There are still cultural forests: Ndiweni and Fururu

1030 - Traditional caves has been there, but they are partly or completely destroyed.

1031 *To what extent and in which way can indigenous knowledge work hand in hand with policy
1032 and science in nature conservation?*

1033 - It is important! We already had some studies about the religion with the researches from
1034 Finland. It is really important! Traditional religion plays a major role. The people need to be
1035 aware of the carves, so that they will not longer destroyed. The areas and the caves need to be
1036 protected!

1037 - The problem with our culture here is that it automatically has changed We are not much in
1038 traditional religion. People have to pray, because it is their faith.

1039 *[A long speech about their own behavior and use of their private religion and an experience
1040 with the researchers from Finland and how their praying brought rain...]*

1041 **At the very end, I would like you to comment on the following issues**

1042 *How does the plantation of eucalyptus trees in forest patches affect their habitat quality?*

1043 - These trees, you know? These trees, eucalyptus has been really harvested, because the people
1044 were told, that the eucalyptus is dangerous to water. Now, there came people, they said due to
1045 their data, you have a good eucalyptus forest. But they were told, that they are useless, they
1046 drain your land, just put them away. So, the people gave their property, almost without, I mean
1047 with a throw-away-price. And now, the people are dying of poverty, because they have
1048 harvested their eucalyptus trees, at least they have let other people from other places. I am not
1049 deciding (?) anybody. But that is, what they have done. They confused the people from the
1050 Taitas. They have harvested the eucalyptus trees, went away and now, the Taitas have to plant
1051 other trees. So, I think you're understanding me why. And when we went to Florenz (?), these
1052 was, prayed us to plant eucalyptus trees. And I know myself, I have harvested these trees, I've
1053 got eucalyptus trees by the way, my forest is eucalyptus. I was an enemy of the people. They
1054 were saying: "You see, you are keeping your forest here, your eucalyptus forest is drying our
1055 water and is doing what what!" I told them, okay, but your aim is not in the river, it is in my
1056 land. You see, you can not interfere with mine. But I has been told, harvest is, harvest it quickly,
1057 they are dangerous to water and what what. And when we went to forest, we went to Florenz
1058 (?) it is, what is said, to be a very good tree, as far as even, ecology's concern. So, I was thinking
1059 of asking about it. There is no problem with eucalyptus, we have just been told to plant it far
1060 away from the water catchment. You cannot plant it in the water catchment. But in our farms,
1061 we plant them. You get timber, firewood and it is the one you use to produce tea by the way.
1062 So how could they say it should not be grown? And they themselves from up the country come
1063 and take our treed, because this species, the Taita species, the Taita eucalyptus, is very good.
1064 It is not like other areas, when you go upcountry, the eucalyptus is not good, for timber even
1065 and for round boles but here it is very good.

1066 - But in the forest, it affects the indigenous habitats. We mean, in the forest, it should not be
1067 planted. It kills indigenous. When you take a look from where you are staying, you can see

1068 how it has spread, now they are even finishing the indigenous forest. That is why we want to
1069 remove it and plant our indigenous trees.

1070 *Why are the old eucalyptus trees not harvested?*

1071 - First of all, there where the university is now, was a big forest. What there was done, the
1072 people use to say, they own the trees in the forest. During the harvest, it was done illegally. By
1073 the way, with the collaboration, some people, talked to somebody, when they came and
1074 harvested all the trees. And this brought a lot of conflicts. To the people and the community
1075 and the government and even the institution, because they harvested and the community didn't
1076 get anything. Now, myself, when I was been given the chances to forearms, I talked about these
1077 forest as a eucalyptus forest. What did they want? They wanted to harvest. And now, the
1078 officers, who are here in Ngerenyi, the other previous years, the district commissionaire, they
1079 cutted trees. See? And they left. After harvesting, the y left. They went away. Now, they had
1080 the plan to harvest these trees, so they came. But I was one of the ones who were asked about
1081 it. And I thought about, I was now given authority, to take part of it. So, I said, these trees will
1082 not be harvested. Okay, they can harvest, but now, they did it illegally, because we as an
1083 association now, we should be told, we should have signed an agreement or leaven the trees,
1084 so that the community get their share.

1085 - So, why they have not been harvested, is about the conflict of interest. Because, they wanted
1086 to harvest, but we were there, said you cannot harvest, unless we know, unless we got invited,
1087 the community get their share, the county get their share.

1088 - We should be included. We should be given a share. So I don't know, what they want to do
1089 now. They stopped.

1090 - If you want to restore the forest, you need to remove them. In fact, we want to reverse the
1091 forest to indigenous. So, they have to be harvested. And if they will not be harvested, they lose
1092 value

1093 *Is there an official system of benefit sharing of harvested trees between the government and
1094 local people?*

1095 - No, at the moment it is not there, but we want to implement it.

1096

1097 *Are existing (Community Based Organizations (CBOs) active?*

1098 - Right now, we have like three in this area.

1099 *From our field work, we have learnt that local people are reluctant to plant indigenous trees,
1100 why is it so?*

1101 - In their farms? The indigenous? They don't plant them! Because they have tested timber from
1102 exotic trees. You know, indigenous takes too long to mature for timber. For them it takes 60
1103 years, but for eucalyptus it takes and Grevilliea, all those exotics, it takes 15 years. So people
1104 like to plant them. You cannot tell them to plant indigenous, but for river areas, they should
1105 plant indigenous.

1106 *What are the causes of chronic forest fires in some of the fragments?*

1107 - Okay, it can be an accident, where a farmer is maybe burning grass and then the fire spreads
1108 into the forest. Or there is arsonist, this people who like, cause my forest was burned, this was
1109 a arsonist. And you know, I told you, the people don't care anymore if the forests are burning,
1110 because they are not using the forest. Now we are sensitizing them, they should not burn the
1111 forest. Because they are gonna be beneficial to them.

1112 - The forests provide lots of water.

1113 **You are facing this fragmentation due to the subdivision of land. How do you perceive
1114 the pressure on land in the Taita Hills, regarding this topic of fragmentation?**

1115 - Well, according to land tenure with us, it started long ago in 1966. Most of our farmers are
1116 now reducing due to our population. So, as time goes by, we don't have land anymore, because
1117 we shared it with our children and grandchildren. So, what we further requested with our

1118 government currently, there is a need, if possible, we plant more trees here, to reserve water,
1119 so that the bare areas, burned areas, then we can transfer and keep them for water catchments
1120 in future. We don't know, how many years to go.

1121 *Another question on ownership of land: Where is the perception on ownership? Are, e.g.*
1122 *women allowed to own land?*

1123 - Well, for now, it is allowed. But previously, no women could own land. And now, we are
1124 practicing it, it is accepted.

1125 *I was wondering about the different relationships between the human-beings here with plants*
1126 *and animals. Because they seem to be really different, for my opinion. What do you think about*
1127 *it? Do the people here, the locals, have a different relationship with plants as with animals?*

1128 - Simply because we are farmers, we normally like temp animals. They are life-sustaining for
1129 us, especially cows, goats. Surely, you cannot do without. So, those animals who become
1130 destructive, like monkey, thrikes (?), baboons, some like so, they are those that were born to
1131 be in those areas where at least where the settings are for foreigners to come, like you, and to
1132 keep the distance. They are those animals, not allowed to come up.

1133 *Does it also depends on the knowledge? Because for my opinion, the people know a lot about*
1134 *plants and trees and everything green, but they don't have so much knowledge of wild animals*
1135 *in the forests. Is it like that?*

1136 - You are right. We like staying with temp animals. But the wild animals I fear. So surely, we
1137 are not free with. So let them stay in the reserve.

1138 - There is one thing. The total account is misunderstanding, between the people and the national
1139 government. Because now, in Taita, 62% of our land is now for animals, wild animals. 62% of
1140 Taita land is national park. Now the rest is on private, companies and whatever. So, the people
1141 themselves have no land. See now? So there is a breach. So you see, the greater part of national
1142 budget or national money comes from the park. So you see now? The greater part of the Taita
1143 county is not entitled to have anything. It is not possible to get anything. Our example here, we
1144 are trying to make laws, to convince the government, now for Taita to, to be given a percentage
1145 of the animals they generate so through this animals and this park. So, but they have been said
1146 for a long time, for years and years and they have never been implemented. So there is a
1147 conflict. When we come to that one, there is a conflict. And now, they are starting to protect
1148 the animals.

1149 *Well, do you have recommendations how to deal with this conflict?*

1150 - Yes, what we should do, there is a county called Turkana, that is where oil has been found.
1151 There were two month or three month, when oil has not been flowed to Mombasa. Why?
1152 Because the Turkanas said, this should not go on until they are given percentage. 30 % of the
1153 amount of oil should be given to the county. So that the people can benefit. The problem in
1154 Kenya is that, when the assets are utilized, people of that area, they never get anything. But
1155 that is what going on. But I am happy, the parliament is passing those laws, so that we get
1156 something. And the Taitas also should get this from the park, for the environment.

1157 - Okay, they claim that, when they go to budget, then the Taitas, the money which is given to
1158 the county, for development, does even comes from the, the money was earned by the park.
1159 But we are the protectors of the animals, we should get a percentage. However small. You
1160 know it is a lot of money, it is the one building roads, it is the one doing all that things. But we
1161 should also get something, like Turkana got. They have won! They stopped the oil. The
1162 Turkana are warriors. Like the Maasai. Look what they did at the Mau-forest. The people in
1163 the Mau-forest are not Maasai, they come from other counties. Now, the Maasai say, if the
1164 government is not going to remove them, the Maasai themselves are going to remove them. So
1165 now, the people are going out of the forest. So, such things should be done, so that we have
1166 peace.

1167 - If you want peace, prepare for war. That is, what the British say.

1168 **Thank you very!**

1169

1170

1171 **Interview 3: Kenya Forestry Research Institute (KEFRI), Ngerenyi**

1172 **To start with, I would like to ask you some general questions:**

1173 *When you think about Taita Hills Cloud forests, which images come into your mind?*
1174 *(Spontaneously: Please name both positive and negative aspects.*

1175 Positive aspects are that the community is pro conservation, very conscious, passionate and
1176 actively participate in conservation. The negative is that we have lost large areas of the forest
1177 cover in Taita hills.

1178 *How would you describe the current situation of the Taita Hills Cloud forests? (Considering*
1179 *interaction of nature/ locals/ government)?*

1180 About 0.5% of forest cover is lost annually. However, there is still and an opportunity to
1181 reconnect the Taita forest fragments using both indigenous and exotic species. The Community
1182 Forest Associations are also very weak. KEFRI is currently working to strengthen CFAs around
1183 here. The community does not have the Knowledge on how to go about CFA's and partly it is
1184 the government to blame for it because it has not invested enough education to the community
1185 here regarding the CFAs. We are also thinking about how to remove the plantations from the
1186 forest fragments. Last week we formulated a policy on the strategic management of the Taita
1187 hills forests.

1188 *Could you please clarify who is responsible for the different forest fragments especially*
1189 *Fururu, Susu and Chawia? (National government, County government or local communities)*

1190 There is no community forest management for the officially gazetted forests. Fururu is gazetted
1191 National government forest while Chawia is a County Government forest. Before the County
1192 government system in Kenya, Chawia forest was a Municipal forest.

1193 *[He did not know who is in charge of governing Susu fragment]*

1194 **Speaking about the interaction of locals with the area of the Taita Hills cloud forests:**

1195 *What is produced around the Taita Hills Cloud forests? (Please name all the different kind of*
1196 *products that come into your mind, you may name legal and illegal activities):*

1197 Majorly it is maize and grevillea, only recently has nature Kenya introduced honey as an
1198 alternative source of income.

1199 *Is there or has there been a change in the products coming from the forest during the last*
1200 *years? If yes, what are reasons for this shift?*

1201 No, it has been year in year out of monocropping that is why there is a severe decrease in soil
1202 fertility around the hills

1203 *What are the reasons to produce these goods (private use/business/...)?*

1204 Mostly it is for subsistence.

1205 **To what extent do local people know about the importance of biodiversity, endangered**
1206 **plant and animal species or the services (water, soil, ...) that ecosystems provide to them**
1207 **around the area of the Taita Hills Cloud Forests?**

1208 No they are not aware of endangered animals in the area. People have a bias towards plants
1209 and trees because they get tangible ecosystem benefits from them as opposed to animals. Life
1210 is all about surviving and meeting your needs.

1211 There visible incentives for conserving trees than animals. Animals are more often seen as
1212 destructive.

1213 *What is the extent of awareness among locals and institutions that this area is sensitive and*
1214 *fragile and that its ecosystems can easily be destroyed?*

1215 - locals

1216 - institutions

1217 KEFRI promotes high commercial tree species on farm lands through which it aims to
1218 indirectly contribute to the conservation of indigenous forest/ endangered tree species in the
1219 forest. We identify cleared areas in the forest for reforestation. We have 6 experimental plots
1220 in Chawia forest and 9 in Ngangao. We also screening out various indigenous trees to pick out
1221 the pioneer species for the forest fragments. However, we only do research.

1222 Local people are not aware about the sensitivity of the biodiversity in this area. However,
1223 Nature Kenya is currently taking the lead in educating local people on biodiversity.

1224 **I would also like to ask you some questions about the management and protection**
1225 **(current/future) of the Taita Hills Cloud forests:**

1226 *Which institution or administration is responsible for the management (and protection) of the*
1227 *area? How many people work for it?*

1228 Kenya Forest Service (KFS) takes up the research from KEFRI. KEFRI develops policy briefs
1229 through it's research recommendations and passes the drafted policy briefs to KFS for their
1230 contribution after which it is taken to Ministry of Environment (County Level), the Minister
1231 then tables it to the County Assembly for parliamentary debate and adaptation. The passing of
1232 the regulation/law is highly dependant on the good will of the governor because he can
1233 influence the MCAs to pass the regulation/law. If the policy is passed, it is taken back to KFS
1234 for implementation.

1235 We formulated the County forest management policy for three days back to back together with
1236 6 other stakeholders including KFS, KWS, Nature Kenya, County government, and Wildlife
1237 works,

1238 *[He explained that the described current draft policy for Taita Hills forests management is still*
1239 *undergoing this process and has not yet been tabled to the county parliament].*

1240 *Does your institution have any role to play in protecting the Taita Hills Cloud forests? If yes,*
1241 *please list the roles.*

1242 We work strictly on trees. We are currently concerned with the conservation of *Coffea fadei*
1243 which is a wild coffee on the UN red list. We are also researching on how *cicigamiam*, *qenez*
1244 and *Albesia*, a nitrogen fixing tree can support the recovery of the degraded areas.

1245 We have tree nurseries here at KEFRI. Farmers have to request for the training. We work
1246 together with groups, we identify a good group after they make a request for training at the
1247 institute. We then made a request for training funds to the deputy director of KEFRI, and when
1248 approved we can train a group.

1249 *[***The spellings of the tree species are wrong and need to be confirmed. On further probing,*
1250 *he said that KEFRI has not trained any groups in Taita Hills since it established here in*
1251 *September 2017]*

1252 *Which of these actions do you consider being successful?*

1253 KEFRI only has experimental plots and has sent recommendations to KFS because it is the
1254 mandate of KFS to implement but none of our recommendations for Taita hills has been
1255 implemented so far.

1256 *What should be done in the future?*

1257 The clearance of the eucalyptus plantation but there is still a standoff between the local people
1258 and the government on the benefit sharing process of the cleared eucalyptus and that stand off
1259 seems will take some time so perhaps the eucalyptus will not be cleared anytime soon.

1260 **At the very end, I would like you to comment on the following issues**

1261 *How does the plantation of eucalyptus trees in forest patches affect their habitat quality?*

1262 We have not done any local research on how eucalyptus trees affect the habitat quality. We
1263 have recommended to KFS to get rid of all eucalyptus plantations in the forest fragments.

1264 *Is there an official system of benefit sharing of harvested trees between the government and
1265 local people?*

1266 No

1267 *Are existing (Community Based Organizations (CBOs) active?*

1268 The existing CFAs are very weak, not objective and they want to politicize everything. They
1269 are not serious. They do not have a management plan and the benefits of cost sharing between
1270 the CFAs and government are not clear. The government has not trained the community on
1271 how the forest should be co-managed.

1272 *From our field work, we have learnt that local people are reluctant to plant indigenous trees,
1273 why is it so?*

1274 Indigenous trees take a long time to mature and therefore people would rather plant high
1275 commercial trees. But we encourage farmers to balance between indigenous and exotic trees.
1276 For example, by sparing a piece of land where they can plant indigenous trees for their future
1277 generations.

1278 *What are the causes of chronic forest fires in some of the fragments?*

1279 The fern which is an invasive species is the cause of forest fires here. KEFRI is researching on
1280 how to control the fern naturally. Fires spread during land preparations for planting when
1281 farmers clear their farms by burning.

1282

1283

1284 **Interview 4: Helsinki Research station, Wundanyi.**

1285 **To start with, I would like to ask you some general questions:**

1286 *When you think about Taita Hills Cloud forests, which images come into your mind?
1287 (Spontaneously: Please name both positive and negative aspects.*

1288 The cloud forests are forested areas acting as attraction of rainfalls. It is also having endemic
1289 tree species, wildlife, and sources of rivers.

1290 The forest cover has also deteriorated.

1291 *How would you describe the current situation of the Taita Hills Cloud forests? (Considering
1292 interaction of nature/ locals/ government)?*

1293 Forest cover has declined. At the moment people are trying to rehabilitate water catchments,
1294 reforestation in areas where trees were. There is a lot of improvement and understanding about
1295 conservation by the communities.

1296 *Describe the extent to which the situation has changed during the last 20 years?*

1297 There has been a lot of forest encroachment due to population growth. The forest boundaries
1298 should be well marked to avoid further encroachment.

1299 *Could you please clarify who is responsible for the different forest fragments especially
1300 Fururu, Susu and Chawia? (National government, County government or local communities)*

1301 It is the role of the communities to protect the forests. It is upon the communities to stand firm
1302 and refuse exotic tress.

1303 **Speaking about the interaction of locals with the area of the Taita Hills cloud forests:**

1304 *What is produced around the Taita Hills Cloud forests? (Please name all the different kind of*
1305 *products that come into your mind, you may name legal and illegal activities):*

1306 Harvesting fodder for livestock.

1307 Collection of firewood with or without permission

1308 Ecotourism

1309 A lot of research

1310 Ecosystem services

1311 *Is there or has there been a change in the products coming from the forest during the last*
1312 *years? If yes, what are reasons for this shift?*

1313 Exotic tress have decreased in the forest fragments but are increasing on farmlands and private
1314 forests. The introduction of the power saw has increased deforestation.

1315 **What kind of ownership on land exists in this area? How secure is the land?**

1316 *How do you deal with squatters/illegal settlers occupying the land? What is your opinion on*
1317 *this?*

1318 There are people with ownership/title deeds around the forest and they keep pushing the forest
1319 boundaries.

1320 **We heard that there are environmental laws and rules; that regulate the use of forest**
1321 **resources- like e.g. a ban on tree logging, a ban on charcoal burning and a ban on hunting**
1322 **forest animals.**

1323 *How are these laws enforced?*

1324 The laws are enforced through a government system. Kenya Forest Service (KFS) has the
1325 mandate to give permission for harvesting tree resources.

1326 Also through the local administration of chiefs and village elders.

1327 *What is the extent of compliance to these laws by the locals?*

1328 The senior KFS officials give permits to outsiders to harvest trees. The community gets pissed;
1329 they question why they should comply with forest laws while outsiders' benefit. They therefore
1330 harvest trees without the right documentations.

1331 *To what extent do these laws have negative impacts on the situation of local people?*

1332 There was high corruption among the government officials concerned with forestry in the
1333 1980's until 1996. They harvested a lot of indigenous trees from the forest and local people
1334 were angry because of this.

1335 *To what extent do locals know or get information about these laws?*

1336 Many people are learned, attend environmental meetings and people have radios and read
1337 newspapers. They also inform each other using word of mouth, attend environmental seminars
1338 and read the constitution.

1339 **To what extent do local people know about the importance of biodiversity, endangered**
1340 **plant and animal species or the services (water, soil, ...) that ecosystems provide to them**
1341 **around the area of the Taita Hills Cloud Forests?**

1342 *What is the extent of awareness among locals and institutions that this area is sensitive and*
1343 *fragile and that its ecosystems can easily be destroyed?*

1344 - locals

1345 - institutions

1346 Majority of the people are aware through learning in school and also living with nature. People
1347 know a lot has been lost and that there is need to claim it back for example through planting
1348 indigenous tree species.

1349 **I would also like to ask you some questions about the management and protection**
1350 **(current/future) of the Taita Hills Cloud forests:**

1351 *Which institution or administration is responsible for the management (and protection) of the*
1352 *area? How many people work for it?*

1353

1354 AFERIA project which is implementing the results of CHIESA project by offering information
1355 on pest management. Parasitoids are natural enemies of certain pests causing destruction to
1356 crops. For example there are small wasps laying eggs on maize that eat caterpillars and we also
1357 trap fruit flies by setting traps with female pheromones to attract male fruit flies

1358 We also have demo sites to show people how to do drip irrigation.

1359 We train farmers on push and pull method to control armyworms where they plant Napier and
1360 desmodium grass along terraces to repel army worms and farmers can harvest the napier and
1361 grass to feed livestock.

1362 **What are your personal ideas for protecting the valuable areas better, but at the same**
1363 **time remaining or even improving the situation of the local people?**

1364 People should know that the forest fragments are a source of many rivers. Especially the people
1365 of the lowlands who benefit from these rivers should be involved in the forest fragment
1366 conservation.

1367 **At the very end, I would like you to comment on the following issues**

1368 *How does the plantation of eucalyptus trees in forest patches affect their habitat quality?*

1369 Eucalyptus is growing in most areas and it is highly invasive.

1370 *Why are the old eucalyptus trees not harvested?*

1371 If a tree is on protected forest no one has mandate to harvest. It is government property. When
1372 KFS tried to harvest there was an outcry claiming corruption.

1373 *Is there an official system of benefit sharing of harvested trees between the government and*
1374 *local people?*

1375 No

1376 *Are existing (Community Based Organizations (CBOs) active?*

1377 Yes

1378 *From our field work, we have learnt that local people are reluctant to plant indigenous trees,*
1379 *why is it so?*

1380 Because of land scarcity there is not enough land per capita to plant indigenous trees. Also
1381 local people fear if they plant indigenous trees they will be welcoming primates and generally
1382 indigenous trees take a long time to mature so people want fast maturing trees to sell timber.

1383 *What are the causes of chronic forest fires in some of the fragments?*

1384 Due to demand for firewood, therefore people burn forests to get permits to collect dead wood.

1385 The forest fires are usually around October. Which is a very dry month in the area. So people
1386 burn fires as a tradition to call for rain. Also due to strong winds fires may spread from farms
1387 to the forest. There is also the notion that forest are harbouring primates and therefore people
1388 burn down forests to get rid of their habitats. Local people may also burn grass to get rid of
1389 ticks and the fire accidentally spreads. There are also cigarette accidents where a smoker throws
1390 a carelessly throws a cigarette away without putting it off. In September/October of 2016/2017,
1391 7 fragments were on fire at the same time and this was linked to beliefs of forest burning.

1392

1393 **Do you have any further remarks or questions?**

1394 If we have a chance to create awareness around land and title deeds. As it is now, land belongs
1395 to the father and the other family members are reluctant to invest in it for long-term
1396 conservation like planting indigenous trees and soil conservation.

1397

1398

1399 **Interview 5: IRUWA Solar Heater Taita Hills**

1400 *Um so my questions will last 30 minutes I guess, I don't know if you have that much time and*
1401 *if I ask one question anyone can contribute, so my first question would be some general*
1402 *questions when you think about Taita Hills forests the fragments that are remaining what*
1403 *images come into your mind, you can say both positive and negative?*

1404 What images, okay ee like you can see the fragments and I feel like its somehow. you know
1405 it's like there are sometimes many many of this it was covered by the forest and now only of
1406 these small parts are remaining, it's getting less and less and I think the people really have to
1407 protect the area, okay there are some things now going but sometimes I feel like it's still not
1408 on the mind of people they really have to protect the primary forest but still I think it's nice
1409 that you can find still the biodiversity here and those unique things and I think there are some
1410 places where already removed completely so I think it's still good something left you can
1411 protect.

1412 *And ...maybe...*

1413 To add on that point aa like to be the way it seems when I was young we had a lot of rivers and
1414 even the place where we are staying, it was a water catchment area so but with time the climate
1415 condition changed completely because in Taita like people here had all their season planting
1416 and harvesting in fact they had tough times like for the maize to be dry so there were a lot of
1417 rains so I feel like now the way now the environment looks like people are just cutting down
1418 the trees. There is a lot of effect you know to the climate conditions.

1419

1420 *Okay and of course you have already shown us what you are doing, but could you just in a very*
1421 *simple sentence tell me what you are doing to protect the situation that you have described or*
1422 *to help the situation*

1423 Mm yea we are producing solar water heaters to support renewable energies here using solar
1424 uum heating the water instead of using the timber and firewood people were collecting cut the
1425 trees here in the forest by using and having firewood you can see it. Still you can see it like
1426 Wesu or something it's getting less and less every year.

1427

1428 And since that like we went for the research like is it happening really with our project you
1429 know so there was the first system that we had installed the clients we had to visit them so
1430 being there we met like people everyone was giving a positive answer like there was another
1431 one saying like okay we have been using 3 bunch you know firewood but now it has reduced
1432 to 1 per week so we saw like okay this is an achievement so it's working like protecting the
1433 forest.

1434

1435 *And how do you describe the reception of your products to the people because I have not seen*
1436 *any of your products in the homes we have visited and we have visited like 300 homes around*
1437 *Fururu, Susu and Chawia*

1438 Yea it's still in the beginning it has to first [cross talk] Here in Chawia we have 2, but like it's
1439 a new project it's a carrier so the first was only about research and now it's getting more and
1440 the first year our project...[Cross talk][phone vibration] systems and now it's getting more and
1441 more we can see it from the numbers we are selling so I think it has potential but of course it
1442 needs a lot of effort to really make it the program to make people use solar water heater instead
1443 of firewood.

1444 [cross talk]

1445

1446 *And might you be working with any governmental institutions like Kenya Forest Service or at*
1447 *the moment you have yet no collaborators*

1448 We already tried to connect to some governmental institutions... [phone vibration] or other
1449 organizations [Cross talk] and Non Governmental Organizations that will give us some credit

1450 or subsidies but it's really hard sometimes most people like will say okay we'll come to you
1451 okay like 4 organizations promising even the nearby project they say it's a good good product
1452 so since we are dealing with the farmers let the farmers decide on their own so they working
1453 on the money issues like because the economy of Taita most people they are not poor but there
1454 are on the average you know so paying like 45 to the most of them sounds to be a larger amount
1455 but it's not a larger amount someone needs to decide you know decide but has to feel the
1456 importance of the solar water heater first.

1457

1458 *So have you approached any organization Kenya Forest Service?*

1459 For this we have been meeting on our marketing events, like NEMA (National Environmental
1460 Management Authority) even they have visited our office we've visited their office in Mwatate
1461 we have been having some of their contacts you know like okay they need to work hand in
1462 hand some of ...TISTI in Nairobi it's a organization which deals with the farmers we were to
1463 have a meeting last year and said they will come end of Christmas but they didn't manage but
1464 we are hoping for the best, like hoping for the best like we already said people are sometimes
1465 not really reliable here so you always say yes yes yes and if until you get to the point you really
1466 can't make the partnership its sometimes difficult. Like but for example, for the biogas project
1467 there was we really managed really got manage they got [not clear] mess and they got a lot of
1468 subsidies actually the farmers only payed half of the price and the other half was paid by
1469 ...mess through the government so they really managed to get a good partnership there.

1470

1471 *And you are still working on the biogas or you have switched over completely to solar water?*

1472 Aa we still do it but usually the trend [not clear7:20-7:22] the biogas plants now so sometimes
1473 they do it on their own so sometimes we follow them what work they have done but it's not
1474 like we are not committed on that as we feel like it can work on its own maybe as we just find
1475 plans we can come to the office you can just link with the contractors where are you located in
1476 Taveta you can just meet one of the contractors there and just go and work so us we don't play
1477 a big we're just to link that's all you know.

1478

1479 *Okay and because the biogas system has been there for a long time have you done like
1480 monitoring and evaluation like could you say how much it has helped the forest or?*

1481 Aa for sure there is one of the volunteer who came here Katherine you know, Katherine and
1482 visited me I feel like it was more than 70 clients who were having the biogas so when the
1483 survey you know she wrote it for her aaa what was is Masters thesis she made research about
1484 how good the system plants are working if they are good and its quite new you can have it if
1485 you want.

1486 *Okay, yea sure...*

1487 I think maybe I should ask her first but yea.

1488

1489 *And when you go to sell out this solar water equipment do you create awareness around it, do
1490 you tell them why you want these I mean for them to adapt this project do you create
1491 environmental awareness or?*

1492 Like what aa motivation ee yea of course [cross talk] we do it because we are still half of the
1493 projects [not clear] general and environmental issues so first you need to make like client aware
1494 to the situation he's living around so once he get it [not clear] solar water heater because most
1495 people think it's a business but to us it's not business that way have some customers who read
1496 have for example like electric heater so they are mostly not really used they don't need the
1497 solar water heater but they still buy the solar water heater even if they have the electric heater.

1498

1499 *So can you say that you feel that the awareness of your clients about biodiversity how do you*
1500 *say about their awareness I mean if I have electric heater and still need to buy this your*
1501 *equipment does it mean I am more aware of the environment or?*

1502 Umm maybe to answer on that I feel first the client we need to get to know like you are using
1503 the solar heater say the benefits of our solar water heater so its upon him now if he feels like
1504 okay I feel I need to switch to the solar water heater because like one benefit is like once
1505 installed the solar water heater is once you pay there is no monthly bills so you shall be using
1506 warm water provided there's sun so someone says okay someone could just pay the bills of the
1507 electric and you know like the way they work the electric heater boiling the water it raises a
1508 big bill you know so it's easy for someone to buy to pay like problems so when he thinks of
1509 this we feel like okay I will just give just give me time I will come to you they say like it's a
1510 good way so mostly electric those I feel like ee most people know about ecological problems
1511 here and that the climate is changing, there are many people say the climate is changing here
1512 so it's really concerning us and they know about ecological problems but I think they don't
1513 have much knowledge about what is going on here exactly. For example the biodiversity trees
1514 and plants came here and now they are spreading and that there are some that are indigenous
1515 trees decreasing of it I think they are aware but they don't really think about what is influencing
1516 that is our farming and that is doing this is it really important for biodiversity I think people
1517 don't know that much about it.

1518

1519 *And what are your personal ideas about protecting the Taita forests but at the same time*
1520 *improving the situation of the local people, and I think that's what you are doing?*

1521 Yea that's what we are doing like trying to avoid the people to cutting down the trees and make
1522 the solar water heater to provide alternative.

1523 *Okay, from our research, we have seen that religion especially Christianity plays a very huge*
1524 *role around Taita that pastors are very influential does your organization integrate religion in*
1525 *its conservation and marketing campaigns?*

1526 Mmmmmh like religion its part of our marketing or

1527 *No no that the religion has so much influence on people we are thinking when we ask this*
1528 *question we are thinking about whether we should actually educate pastors on ecological*
1529 *knowledge so that they can tell their followers because their followers almost agree on*
1530 *everything that the pastors say so is it something you've thought about or not?*

1531 Mm we thought about for example

1532 It has been working

1533 It's on systems and the churches [not very clear] also like we had some of the volunteers like
1534 Theresa they have been managing to some the churches like gospel like in Werugha there was
1535 a time like 2017 there was a big demo in the big church there and after people congregation
1536 they could just put the system we asked the pastors if they had any questions then we just gave
1537 some papers for those who were interested of anything if they wanted to get to know another
1538 pastor there and managed to give mwalimu systems for the 6 weeks so his followers they could
1539 just come and see and when I went like 2 times a few times there I had a positive answers but
1540 people were saying like okay the economy, money [not very clear] we are working on that
1541 issue now.

1542 *Okay, I will not ask more about... because I think it's what Slas is doing do you have any*
1543 *further remarks or questions, I mean the interview is over*

1544 Okay ummmm

1545 *Maybe something important that you think about in terms of what you are doing and*
1546 *conservation of Taita cloud forests that I have not asked?*

1547 Eee maybe general aah you have visited our workshop and you have been just going around
1548 like you met like 300 people and we are having a challenge once you get the people [not very
1549 clear] but days go without getting any feedback.

1550

1551

1552 **Interview 6:** Ministry of Environment, County Government of Taita-Taveta.

1553 *[This interview was interrupted by many phone calls by the environmental officer. He was in*
1554 *a hurry to leave and evaded many of the questions. He copied several written documents and*
1555 *magazines into my drive to read and find the answers of what I wanted I know]*

1556 **To start with, I would like to ask you some general questions:**

1557 *How would you describe the current situation of the Taita Hills Cloud forests? (Considering*
1558 *interaction of nature/ locals/ government)?*

1559 The remaining forest cover is around 5% including woodlots and agroforestry for both
1560 indigenous and exotic trees. Exotic trees interfere with the local ecosystem.

1561 *Describe the extent to which the situation has changed during the last 20 years?*

1562 We have had challenges with deforestation, encroachment, uncontrolled charcoal burning and
1563 forest fires.

1564 Community is doing bad things by logging.

1565 **Speaking about the interaction of locals with the area of the Taita Hills cloud forests:**

1566 *What is produced around the Taita Hills Cloud forests? (Please name all the different kind of*
1567 *products that come into your mind, you may name legal and illegal activities):*

1568 Timber, firewood, charcoal, beekeeping, butterfly farming, birds.

1569 *Is there or has there been a change in the products coming from the forest during the last*
1570 *years? If yes, what are reasons for this shift?*

1571 Alternative livelihoods e.g. Butterfly farming and climate change.

1572 **I would also like to ask you some questions about the management and protection**
1573 **(current/future) of the Taita Hills Cloud forests:**

1574 *Does your institution have any role to play in protecting the Taita Hills Cloud forests? If yes,*
1575 *please list the roles.*

1576 Last week we finished the draft of the forest policy where we involved the national government
1577 through KFS and public participation.

1578 We also hold awareness creation meetings monthly but at the moment we have funding issues
1579 so we are not organising the meetings.

1580 The county government achievements between 2015-2017 are;

1581 -Green energy projects (Biogas)

1582 -Recycling plastic bottles

1583 -Environmental impact assessment

1584 -Green initiative where we have distributed 38000 seedlings to schools and homesteads

1585 **I would like to ask some questions related to religion and indigenous knowledge:**

1586 *To what extent does your organisation integrate religion in its conservation campaigns?*

1587 We invite religious groups to awareness creation and tree planting campaigns.

1588 To what extent and in which way can religion work hand in hand with policy and science in
1589 nature conservation?

1590 *The climate change adaptation for Taita-Taveta was done by a religious group*

1591 **At the very end, I would like you to comment on the following issues**

1592 *How does the plantation of eucalyptus trees in forest patches affect their habitat quality?*

1593 Eucalyptus trees release a lot of water into the atmosphere. They are the best for conservation
1594 and rehabilitation. They are also good for drying up wet areas. Indigenous trees take long to
1595 grow.

1596 *Is there an official system of benefit sharing of harvested trees between the government and
1597 local people?*

1598 No

1599 *What are the causes of chronic forest fires in some of the fragments?*

1600 Traditions, in dry season people burn the forest is they want rain.

1601

1602 **Interview 7: Chawia Community Forest Association**

1603 *When was the group founded?*

1604 The group was founded in 2004, but officially registered in February 2015. We were 18
1605 founding members

1606 *How many members are in the group?*

1607 ???

1608 *How did the group come together?*

1609 We were 5 small user-groups, now there are twelve. All user groups are members of the Chawia
1610 Community Forest Association.

1611 *Please describe the structure of the group*

1612 We have an executive committee of (6) members:

1613 Chairperson

1614 Asst. chairperson

1615 Secretary

1616 Asst. secretary

1617 Treasurer

1618 Asst. treasurer

1619 We have a Conflict Resolution Committee (6 members), an evaluation and Monitoring
1620 Committee (3 members) and a Procurement Committee (3 members)

1621 We often meet once per month. Registration fee is 50Ksh and there is a monthly contribution
1622 of 20Ksh per month.

1623 The respondent pointed to a document titled: Constitution and rules for the Chawia Community
1624 Forest association (2015)

1625 *[He explained that the constitution was formulated on the basis of: Specimen Constitution for*
1626 *a Society. Constitution and Rules, Provided by the Registrar of Societies, Nairobi, Kenya]*

1627 *What is the role of the Chawia CFA in managing the resources of the forests?*

1628 The CFA scouts monitor the activities in the forests, voluntarily, they are not paid. They make
1629 sure that the people who gather firewood only take the dry ones. They are on duty thrice per
1630 week: Wednesday, Saturday and Sunday. On these day they make rounds in the mornings,
1631 afternoons and in the evenings. They are required to record any observed destruction of the
1632 forests. Also any encroachment, that means people farming in the forests. In case of violations
1633 they report this to the Conflict Resolution Committee and the assistant chief. They are
1634 responsible for stopping the encroachment.

1635 *Which forests are managed by the Chawia Community Forest Association or are there only*
1636 *Mitengos*

1637 The Chawia Forest is under the county government. Mitengos are only for the community and
1638 managed under the Chawia CFA. Right now there are (4) in total. Right now, we are in the
1639 process of making an agreement on how to manage these forests. The stakeholders involved
1640 are: Nature Kenya, CFA, the county government and KFS. Several meetings have already been
1641 held since 2014. In 2014 the county government was not involved. At that time there were no
1642 regulations to involve the county government. As of 2015 the regulation changed and they
1643 became involved. This was initiated by KFS and Nature Kenya. They contacted the chairperson
1644 of the Chawia CFA. The last meeting was held in July 2018. They promised that by September
1645 2018 the draft of the management agreement: (Draft - Participatory Forest Management Plan
1646 for Chawia Forest 2018-2022) will be ready. The idea is to meet again after that date to discuss
1647 the draft and make any necessary changes needed.

1648 *Are there any partnerships?*

1649 Yes, for example Nature Kenya and KFS. They provide trainings on alternative livelihoods and
1650 forest management. Trainings are free of cost.

1651 Sometimes we ask them to train us on some particular issues. They also initiate some trainings
1652 as well. Mostly the trainings are held in Wundanyi or Arabuko Sokoke in Kilifi. They take care
1653 of all the expenses.

1654 [The respondent shows me two certificates of courses he has attended: Advocacy, Resource
1655 Mobilization and Opportunity for Local Engagement with the Government (County and
1656 National) Provided by: Nature Kenya. Held in Wundanyi September 2016] and [Leadership,
1657 Institutional Management and Governance. Provided by: Nature Kenya Held in Kilifi County
1658 January 2018]

1659 *How many people are trained per training session?*

1660 About 6-8 people, for example I go to Wundanyi for training. When I come back I call the
1661 executive committees of the user groups. Then they are trained. After training them they train
1662 their members.

1663 *How is the quality of the training for the other members guaranteed?*

1664 Those that undergo training are provided with the handouts of the training sessions.

1665 *What are the benefits of the CFA to the community?*

1666 The local community harvest grass from the forests. Some gather firewood. Sometimes if
1667 someone wants to build they get permission to collect lumber from the forests. Our main water
1668 springs come from the forests. Resources for basket weaving is taken from the forests, as well
1669 as medicinal herbs. The CFA protects the forests from destruction, educate the people about
1670 the forests.

1671 *Please describe the former status of the forests*

1672 In olden times the forests were well preserved by the old men. Then came a time when younger
1673 people started cutting the trees for sale. Between the 60s and the 70s people started harvesting
1674 timber for sale. Then the forests became very degraded.

1675 A few of us realised, that it was important to stop these people from cutting the trees down.
1676 Then we started planting. In the late 1990s the community started replanting trees.

1677 *In your opinion, why are the people more interested in the protection of the plants and trees
1678 than the in the protection of the animals?*

1679 No, we protect the animals very much. We have these birds, endemic birds. These days we
1680 don't hunt in the forests.

1681 Maybe, because they used to eat them (the animals). Some years passed they used to eat the
1682 animals, but these days that is not allowed.

1683 The CFA and KFS has put a ban on this to preserve the biodiversity of the forests.

1684 *Which values regarding the protection of the environment are transmitted to the people of the
1685 Taita Hills Cloud Forests and how are these transmitted?*

1686 When the forest was very healthy the water springs were very many. After destroying the
1687 forests some springs dried up, therefore some of us started educating the people about the
1688 importance of the forests and securing the water supply through public Barazas. When they
1689 understood that they wanted to rehabilitate the forests and started planting indigenous trees in
1690 the forests. Nowadays, some people are even planting indigenous trees in their own gardens.

1691 *At the end I would like to hear your opinion on the following statement, as said in a previous
1692 interview, "The CFAs here are weak."*

1693 Respondent laughs and says, "It is those, who do not attend meetings!"

1694 [Then he asks who said that. I apologised and told him I was not able to disclose the source of
1695 that statement, because the interviews are anonymous. He smiled].

1696

1697 **Interview 8: Furaha Women's Group**

1698 *When was this group founded?*

1699 The group was founded on July 27, 2018

1700 We were three founding members, but at present we are 18 members, (4) male and (14) female.
1701 At the time we started we were only women. Now we need to change the name from Women's
1702 group to include the men.

1703 Before we never informed anyone about the replanting. In 2016 we first started replanting. As
1704 of May 2018 we started keeping records of what we are doing. We located a forest patch, where
1705 it is vacant then we took pictures and texted KFS in Mwatate. They told us we should expand.
1706 They brought us a Nursery Extension Form, so that we can be recognised. Now it is known
1707 that there is a group in Chawia Forest that is involved in tree nurseries. So, anytime a
1708 stakeholder needs indigenous trees for replanting, priority will be given to us.

1709 *What was the registration process like?*

1710 For the registration we needed to have a constitution. We met as a group. We told them the
1711 whole group must be involved. Everyone gave their views. The views were noted down.
1712 Afterwards we chose (5) people to draft the constitution using the views of all of the members.
1713 They returned the draft to the members after (5) work days. They read it to the members to
1714 compare if the draft is the same as the views aired by the members. They read it and it was
1715 reviewed to see if they added their own views or if they remained with the ideas of the group.

1716 All members decided there is no need to revise it.

1717 So, with that constitution we registered the group with the Social Services in Mwatate for
1718 recognition purposes. The registration cost 1000Ksh. The certificate was delivered instantly.
1719 The certificate was paid through the membership fees.

1720 *Where are you located?*

1721 We meet once per week in the forest. On Wednesday from 10:30AM - 11:30 AM

1722 Discuss the previous minutes and any other business.

1723 12:00 - 5:00PM we work in the nursery.

1724 The forest is zoned for different alternative livelihoods.

1725 *How did the group come together?*

1726 The founders called a 'Baraza'. They wanted to form this women's group. So, they mobilised
1727 women to form a group. We saw that it was important for us as women to start a group for tree
1728 nursery; without being driven by anyone. Out of the need for conservation, rehabilitation and
1729 reforestation. Those are the main objectives of the group. Even on our own farms we have to
1730 plant trees.

1731 *What is the goal of the group?*

1732 The rehabilitation of the forest to its original state.

1733 We have planted 14,000 seedlings in the forest already. The goal is to return the forest to its
1734 original state, by planting indigenous trees. Not only in Chawia forests, but in the Chawia ward,
1735 to reforest all the forests.

1736 The respondent explains, that a 'ward' is headed by a ward administrator.

1737 *How is the group structured?*

1738 The group has an executive committee, which consists of:

1739 Chairperson, Asst. chairperson, Secretary, Vice Secretary, Treasurer and two other members
1740 of the group.

1741 *Are there any partnerships?*

1742 We have no financial support. It is through our own efforts. The members contribute 100
1743 'bob' every month. The collections are used to finance our activities.

1744 *What is the current situation of the group?*

1745 Currently, we lack the materials we need to do the work, for example watering cans, sieves,
1746 rain coats, rubber boots, hoes, machetes and the lack of a shed to protect us from the rain or
1747 when it is sunny.

1748 The ban on plastic impedes our work so, we are now on a forced leave.

1749 *What are the benefits of the Furaha Women's Group?*

1750 We also have cultural reasons to protect to protect the forests. There are some trees e.g.
1751 'Maghombo, culturally they are significant to attract evil spirits.

1752 The large trees, e.g. 'Musu', 'Muumu', 'Muumu', 'Mkuyu', 'Ndundu' and 'Mserewache' are
1753 responsible for housing the spirits that are responsible for protecting the forests from being
1754 destructed.

1755 There are some trees indigenous trees that are necessary for attracting the endemic animals.
1756 For example, the Taita White Eye bird (Ndido, Mwora, Mdawa).

1757 Others are important for medicinal purposes (Mngima, Mdawa, Mgumo).

1758 There are some that are used for medicinal purposes (Msawa, Kizunumoto, Msangama)

1759 The respondent points to a bush:

1760 This is Msumwi, which is used to treat coughs.

1761 There are certain parts of the forests that are forbidden to trespassers. Only the rainmakers,
1762 Wagnosi wa kifumbu (does the spiritual cleansing), and the medicine men.

1763 When we destruct those spirits we destruct the forest.

1764 We protect the forest, because it is important for fresh air, rain, firewood, medicinal herbs.

1765 The respondent laughs and says:

1766 Also the group is important, because we learn about the forests, we cook together, eat and have
1767 conversations.

1768 *Please describe the former status of the forest?*

1769 In the older days, the forests were very thick, about 20-30 years ago. We had a lot of huge trees.

1770 *Are there any future plans for the group?*

1771 If we get any sponsors, we are planning to have cottages for eco-tourism. we are planning to
1772 fence the forest to separate the forest from the farmlands.

1773

1774 **Interview 9:** Ecotourism Kidaya, Ngerenyi

1775 *When was the group founded?*

1776 The group was founded way back 1998.

1777 *How many members does the group have?*

1778 Initially, we are 5 but now it was gone around 17.
1779 *Where is the group located?*
1780 Just within this place [the person is pointing on the ground] – Taita Taveta.
1781 *How did this group originally come together?*
1782 [The person has a confused face, I skip this question]
1783 *What is the reason/cause the group has come together?*
1784 Trying to organize the heritage value of the county and to bring all the value of Taita in layout
1785 strategy.
1786 The goal of the group is to cherish the values of Taita and heritage to empower the locals 18
1787 economically.
1788 *In which fields of action is the group active?*
1789 It's active in protecting the forest, animals, the environment and the wildlife, it's the flora oh the
1790 place.
1791 **Structure of the group?**
1792 *How is the group structured? E.g. Chairman, vice chairman etc.*
1793 Yes, there is a chairman, vice-chairman, and secretary-treasurer.
1794 *Does the group work together with collaborators, stakeholders or any other organization?*
1795 *I If yes, to which extent?*
1796 It works together with varies groups and varies stakeholders e.g. religious leader, politicians,
1797 educationists, the old viceman, elders of the village, youth and the locals in general within the
1798 environment and international organization, NGO (Nongovernmental organization), national
1799 government, Wildlife services, Ministry of forest in Taita national and county.
1800 If you want to come to a ceremony, there is a fee for the locals and foreigners. The tour
1801 guidemexpenses and then there are the education expenses.
1802 *Are there any benefits/profits coming along with the activities/work of the group?*
1803 Yes, it depends how often tourists actually come.
1804 *If yes, please classify them into 3 different orders:*
1805 *a) Economic benefits*
1806 What we receive from the tourism and we give service. For example, we can come up with
1807 toilets like universities, school. We come back in the water, to improve our water supplement
1808 *b) Social benefits*
1809 We share a lot in terms of for example: let us remove all the dirt or maybe planting trees. We
1810 meet and share, and we see the strengths. They protect soil erosion, timber too exotic: forest
1811 air, water availability, timber, selling charcoal, we also get local herb.
1812 *c) Environmental benefits*
1813 One of them is actually making the place for the people to stay. We look after the rivers, air
1814 pollution and how they expose [...] providing food for the people, fresh air, good
1815 environment ceremony for example.
1816 *How do the group activities/work benefit the livelihoods of the local people around your*
1817 *village?*
1818 [The question is answered in question 3]
1819 **Status quo and future**
1820 *Which challenges are the group facing at the moment?*
1821 The meetings are occasionally on just like tourists.
1822 *What are the future plans of the group?*
1823 To empower people to come up with a very big center with an education to recruit youth. To
1824 open a hotel where we have the tourists come to let them know about the wildlife. A star
1825 hotel to receive the tourists.
1826

Appendix 2. Participants responses.

[Please click here to download file 'appendix2.xlsx'.](#)
