# Craft Industry Impacts On the Environment and a Community's Social Welfare: Masvingo-Ngundu Highway in Zimbabwe

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## Abstract:

The objective of study was to determine the effects of craft industry on the environment along the Ngundu-Masvingo Highway in Zimbabwe. A questionnaire survey of 130 crafts persons from 14 craft centers in Chivi Communal Area (CCA) was used to collect data. A craft center checklist fieldwork and an environmental accounting exercise for Afzelia quanzensis over 12 months were also used as research instruments. The study showed that Craft Industry is an essential rural livelihood strategy as it enables carvers to meet their basic economic needs and acquire some property. It also helps to reduce the impacts of drought and poverty. It is however, ineffective as an economic empowerment strategy and environmentally incompatible. Economic viability and ecological sustainability need to be balanced. Although carvers are aware of the environmental impacts, they showed also that they had no viable option. Poverty alleviation in the rural area sounds to be the first appropriate and profound solution to the silent but imminent environmental problem. It is recommended that an educational campaign be launched at the national level to deal with this environmental degradation problem.

## Introduction

The economic contribution of the craft industry to the livelihood of the rural people of the drought-prone Chivi Communal Area (CCA) cannot be over-emphasised, though the impact on the environment remains an area of concern. This industry is an income-generating activity for the craft persons, the quantity and diversity of wooden crafts has serious implications on the resource base rendering its assessment imperative. The rate of resource depletion needs an appraisal while at the same time an evaluation of the initiatives instituted by the authorities against forest degradation cannot be ignored.

In this regard, there is need to establish how both economic improvement and ecological sustainability could be achieved to benefit the people in the communal area and environmental conservation. This is important in view of the topical global concern on sustainable development as demonstrated by the recent 2002 World Summit on Sustainable Development.
CCA typifies the problems now facing people and the environment in low rainfall parts of Africa. Population densities are high up to 61 persons per square kilometre, and increasing at an average rate of 2.2 per cent per annum (Central Statistics Office, 2003). It has been revealed

also that the majorities of the people in the country live in the rural areas and depend on subsistence farming. Drought is recurrent and agricultural production is low and highly variable. Land is degrading at an alarming rate and so are other resources like timber.
In an assessment of relative vulnerability to famine done a decade ago, highest levels were found in the southern third of the country where at least 633000 people and perhaps as many as 1.1million people are considered “highly vulnerable” to famine in these areas (Eilerts, 1994). This denotes a condition in which modes of production and social and economic behaviour are being modified in response to food stress.

This study investigates the ecological sustainability of the craft industries focusing on the following specific objectives:

- To establish the economic contributions of the craft industry towards the livelihood of the people in CCA,
- To assess the environmental impacts of the craft industry in CCA and,
- To determine the conservation initiatives instituted in the area of study.

This was achieved by determining the answers to the following research questions:

- To what extent does the craft industry contribute to the economic welfare of the people in CCA?
- How can this industry be ecologically sustainable?
- What mitigatory strategies have been adopted for sustainable development of the craft industry?

In order to achieve study objectives, a programme of research was initiated that includes elements primarily designed to assess the environmental impacts of the craft industry, to determine the conservation initiatives of the community, and to establish the economic contributions of the craft industry to rural livelihood. A major activity realised has been the collection of essential baseline and background data on vegetation and agriculture in the study area. This study intended to give resource users, policy makers and other stakeholders in woodland resource an insight into contemporary issues pertaining to resource use and management.

## The study area

The study area lies between Chivi -Turn-Off and Ngundu Halt, between the 44 kilometres and the 96 kilometre pegs southwards of Masvingo towards Beitbridge. The area is in the Southeast of Zimbabwe and lies in the Lowveld area (below 900 meters altitude) and is characterised by semi arid climate with low and erratic rainfall and high temperatures.
Land is classified in the Zimbabwean agro-ecological classification scheme as Natural Region IV, considered marginal for rain fed agriculture. Drought is prevalent in this area leading to

recurrent crop failure hence wood carving forms an important drought-coping strategy. The area was selected for the study because it is representative of large areas with similar land use, typical of many communal lands in the country with cultivation of annual crops on the valley floor and miombo woodland on the rocky slopes, inselbergs and savannah grasslands in the country. Several studies have also been carried out in the area with respect to other resources that form the basis of rural livelihood that can be referred to. The community was also willing to co-operate with the research following successes of other projects within the community.

The area comprises of miombo woodlands. The dominant carveable species include Afzelia quanzensis, Combretum imberbe and Pterocarpus angolensis, (Standa-Gunda et a, 2002). The land use is primarily communal farming while adjacent areas comprise of resettlement areas, plots, state land and private farms. The study area is characterised by a hilly landscape, heavily drained though with a good communication network. It has an altitude between 695 and 955 metres above sea level. Gentle slopes along the valley floor are encircled by relatively steep rocky hills punctuated by saddles.

## Background

One of the most intractable problems facing humanity today is degradation of resources in the arid and semi arid regions of the world. It has been observed that when rising population increases pressure on land, which is only marginally productive in the first place, overgrazing, deforestation and soil erosion are often likely to follow.

The communal lands of Chivi in Zimbabwe typify the problems now facing people and the environment in this district. Forest products are then used to sustain rural livelihoods and derive income in the tropics yet their use does not guarantee sustainable extraction with unclear impacts. Forest based enterprises such as craft industries are an important part of rural economy, (Campbell et al 2000 and Dewees, 1993). Centre for International Forestry Research (CIFOR) estimates that 350 million people get a living from forest products with at least 50% of their households' needs. About 30 million people in South East Asia have relied on non -timber forest products as a source of income and goods for nearly over 2000 years, (Ames in Wollenberg et al 1998). Sale of crafts helps communal people to earn income, an economic strategy against the odds of poverty and drought prevalent in CCA. While income should be optimised in this area, there is an apparent need for sustainable forest resource exploitation.

Several African communities produce some of the world's most beautiful and distinct woodcarvings, with the Nigerian Yoruba and Tanzanian Makonde being popular for traditional sculpturing representing the finest artwork, (Marshall et al, 2000). Stone and woodcarvings, clay pottery and fibre crafts have a cultural significance, these crafts depict statuettes of man and

animals, snuffboxes, walking sticks, utensils furniture, fibre crafts, doilies and other ornamental carvings used indoors for decoration, (de Beer et al 1996; Balogun in Braedt et al 2000).

Commercialisation of Non-Timber Forest Product (NTFP), driven largely by external demand degrades woodland resource base. Although woodcarving is an important rural livelihood and incredible rural development success, in Kenya it uses 7000 cubic metres of wood annually felling about 50000 trees annually, (Cunningham, 1998 and Chonga, 1999). Over exploitation of species is also evident on Malawian ebony, Namibian, Mozambican and South African mukwa, and the Zimbabwean A.. quanzensis and P. angolensis.

In Zimbabwe, the distance to collect known as 'good quality' harvested hardwoods has increased due to selective harvesting, and A. quanzensis and P. angolensis have almost undergone 'local extinction'. Tree species choice has changed and new species such as Kirkia accuminata (bastard marula) and C. imberbe were introduced into the industry. Wood, comprising 66% of all markets, is more preferred than stone because it is light in weight per volume, more locally available and less fragile, (Cunningham, 1998 and Chonga, 1999).
The case of Kenya's craft industry is a good example that shows both excessive forest-resource degradation due to an economically viable export oriented craft industry and conservation initiatives, (Choge, 2001; Chonga, 1999; and Cunningham, 1998). In Zimbabwe, a community-based natural resource management (CBNRM) has become a regional model in the Southern African Development Community (SADC) region. Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) initiative has indicated a way forward towards sustainable rural development and environmental conservation, (Shackleton et al 2001).

CCA's craft industry, with 69% of the 27 craft markets on Masvingo -Beitbridge road, as shown on Table 1 annexed is a significant rural livelihood strategy. The crafts comprise largely wooden and stone carvings as well as clay pottery, crocheted, sewn, or oven products. A comparative analysis of the earnings of some countries enables us to appreciate fully the significance of the industry.

### *Environmental Initiatives*

The United Nations (UN) has spearheaded global conservation initiatives as shown by the Earth Summit /Agenda 21 of 1992 and the recent World Summit on Sustainable Development (WSSD) of 2002 centred on sustainable development. These resolved to embark on economic development compatible with sustainable environment. The WSSD recognised that economic development and environmental protection can work in a tandem, (CIFOR, 2002).

Widespread environmental campaigns have been launched to counteract woodland resource degradation with local extinction of specific wood species. In Kenya, 'People and Plants Initiative' advocating for the nursery raised fast growing light in weight and durable 'good woods' from alternative sustainable exotic species such as jacaranda, mango or silver oak has been promoted, (Cunningham, 1998 and Chonga, 1999). As a result 'Smart wood' by forest Stewardship Council with carvers, governmental organisations, non-governmental organisations and donor agencies stakeholders active in tree production and management, wood utilisation and marketing was initiated. National awareness campaigns have been done through films, drama, fliers, and posters, public debate, and exhibition and training sessions for target groups. A 'good wood label' certifies the promoted crafts. In Zimbabwe, the National Tree Planting Day is an awareness campaign held on the first Saturday of December annually to encourage the planting of both indigenous and exotic trees. The Government of Zimbabwe has set up the Forestry Commission mandated by the provisions of the Forestry Act of 1949 to be responsible for woodlands by controlling deforestation. In the SADC Region, CBNRM is the most prescribed natural resource management strategy.

### *Legislation in Chivi Rural District*

The Rural District Council Act of 1988 empowers Rural District Councils (RDC) to enact legally binding conservation by-laws. In Chivi RDC by-laws have several legislative shortcomings in natural resource governance (NRG) with only a few oblique restrictions on natural resource use, for instance veldt fires, pulling ploughs; cutting down both protected and unprotected tree species, (Mandondo, 2001). Effective decentralisation of power from central government is only to the RDC level, popular participation without sidelining Producer Communities (PCs) is not guaranteed, upward accountability is not ensured, technocrats, who override council decisions are allegiant to political parties which effect their candidature and council membership is fragmented (ibid.). Furthermore, fines charged are too low to be effective as deterrents, as for example an average of Z$108 and Z$40 is payable for protected and unprotected tree species respectively. The records of woodland resource offenders are an underestimate, as the majority are not detected. Logistical constraints make follow up difficult hence undetected cases are as high as 60%, which is worsened by poor remuneration for monitors who got as little as Z$100 per month plus 10% commission in 1998, (Mandondo, 2001). Income raised from fines is not redirected towards environmental problems, for which they were extracted, (ibid.).

Zimbabwean legislations that govern woodland resource extraction and use have been criticised for inconsistency and contradiction with each other. Policy making and policy implementation is poorly linked, lacking completeness and cohesion, far more leaving out other important stakeholders, (Murphree in Mayers, 1998, Mandondo, 2001, CIFOR, 2001, Shackleton et al 2001).

### *Community involvement in NRM*

The state, a major actor in NRM through its several arms drafts, implements and enforces legislation thereby benefiting, regulating and managing natural resources. CAMPFIRE advocates for the devolution of these roles except regulatory role to the PCs. Chivi RDC enacts legally binding land-use planning and conservation by-laws in the district, including raising revenues through taxes, levies and tariffs, (Mandondo, 2001).

The private sector is a mediator and power broker ensuring participation of the marginalized communities with support for pilot projects, advocacy and lobbying, (Shackleton et al 2001 and CIFOR, 2001).

Traditional leaders, in PCs have been replaced by a government structure and relegated to the spectator role in NRM, yet these have indigenous knowledge and are traditionally spiritual guardians enshrined to discipline trespassers (Shackleton et al 2001 and Mandondo, 2001). Their roles in NRM should be therefore re-established argue Arnold and Perez in Wollenberg et al (1998) and Mandondo (2001).

Producer Communities are active in the extraction of forest resources without performing any other role such as management. They benefit only in terms of the commercialisation of NTFPs thereby degrading the resource base. These do not participate in planning, decision-making, revenue benefiting and formulation of own by-laws as the Village Forest Committee of Tanzania (Shackleton et al 2001). Successful CBNRM for sustainable resource use entails less imposition of NRM at PC level with external support and clear policy and legal framework (ibid.).

Partnerships amongst stakeholders need the least of state interference, PCs need use and proprietary rights over resources, receive revenue and distribute benefits. (Arnold, 2001; Shackleton et al 2001). Traditional belief systems are essential in CBNRM since sacred woodlands and wild fruit trees are revered, protected and respected from cutting under traditional norms and values (Campbell, et al 2000; and Mandondo, 2001). All stakeholders should be fully incorporated in NRM, without undermining each other. Economic incentives are imperative for sustainable resource use, decision-making and planning should be well co-ordinated (CIFOR, 2001). Economic sustainable development coupled with environmental or resource conservation is the modern global cause for concern for governments, NGOs, and international agencies, (CIFOR, 2002).

Sustainable forest use initiatives include measures for sustainable supply of wood to drive industry, harvesting mature trees and those, which reproduce rapidly, (de Jong et al, 2000).

Careful harvesting of re-sprouting miombo woodland species, planting of both indigenous species such as mahogany plantations in Mexico, and fast growing nursery-raised exotic tree species such as mango, jacaranda, neem, and silver oak, (CIFOR, 2001, Chonga, 1999, Cunningham, 1998, Braedt et al 2000 and de Jong, et al, 2000). A switch to alternative species without rehabilitative initiatives is futile unless sustainable resource extraction is ensured.

The content, interpretation and enforcement of legislation should ensure sustainable harvesting of woodland resources in communal areas so as to be effective, such as the setting of quotas, (Marshall, et al, 2000). Common property resources (CPRs) such as communal forest should be managed sustain ably to avoid the "tragedy of the commons". Inequalities between rural poor and elite, men and women in resource use should be rectified, controlled or reduced, (Braedt et al 2000). The level of extraction should be controlled or monitored, (Marshall, et al, 2000). In this regard, research should be linked to practice. Legislation should be complementary of state roles in NRM, devolved to PC's while state controls only degree of commercialisation. Laws criminalizing commercialisation of NTFPs need to be commended, (Mandondo, 2001, Standa-Gunda et al 2002).

Although craft industry is a successful rural livelihood, it degrades the environment hence makes connotations for appropriate initiatives to be implemented, as was the case in Kenya. It needs formal recognition and should be incorporated into the RDC portfolio, (Braedt et al 2000). Poverty alleviation should be balanced with conservation in rural development, (Arnold, 2001).

## Materials and Methods

The study was carried out in the following stages (i) baseline survey to identify the craft centres between Ngundu Halt and Masvingo, (ii) administering of questionnaire to 130 respondents sampled within 14 craft centres, (iii) filed survey of A. quanzensis in Joni Village and (iv) participatory observations of court hearings in Joni Village.

This study was carried out on three different scales. On a macro-scale, it involved the surveying of 27 craft centres between Ngundu Halt and Masvingo along the Harare – Beitbridge road. On a micro scale, it studied 14 craft centres from Ngundu Halt to Chivi Turn-off applying 130 questionnaires to randomly selected respondents. These 14 craft centres were then grouped into three regions namely southern, central and northern regions. An A. quanzensis fieldwork survey in Joni Village of Chivi's Ward 23 was the micro scale angle of approach to this study. Joni Village is in close proximity to a research centre, the Romwe Catchment that has been running for some years now and is an area with new craft centres (see Figure 2, Zunga, Mashanda and Zifunzi). It also included a participatory observation in Joni Village during a court hearing pertaining to the illegal harvesting of A quanzensis. The archival/review method was useful in the collection of secondary data and map applications.

The craft centre checklist fieldwork was carried out between Ngundu Halt and Masvingo. It involved identification of the 27 craft centres by name, raw materials used, types of crafts. The sectionalised questionnaire was applied to all the 14 craft centres sampling a total of 130 respondents. Both open-ended and closed questions were included. Procedures for human subject protection were clearly outlined on top page of the questionnaire.

The A quanzensis environmental fieldwork was done in two parts. It involved sketch mapping, identification of tree species and physical counting of the young, mature, old and coppicing as well as felled trees with dates of felling noted. These plants were then mapped on their relative locations on the sketch map drawn as shown on annexed Figure 2. Participatory observation was done during one traditional court session on the illegal harvesting of A. quanzensis in Joni Village. This fieldwork was carried out with full consent of the village head and conscience of the villagers. The entire data collection process was done from November until December 2002.

Summarized data was subjected to different statistical tests as outlined below. Spearman's correlation coefficient ($\mathbf{r_s}$) was used to assess (i) the relationship between duration of carving and level of income gained and (ii) the association between raw material cost and distance from craft centres. Chi-squared ($\mathbf{x^2}$) tests were done at 95% confidence interval on opinion polls that (i) unsustainable resource extraction depletes raw material base and (ii) environment is less important than economic gain. A Yates Correction for Continuity at 95% confidence interval was used on the opinion poll that everyone should be responsible for environmental conservation. A linear regression analysis model at 95% confidence interval established the best line of fit **(y = 30.5 – 0,3X)** which defined the relationship between population of A quanzensis (y) and time in months (x) in the micro level study. A t-test at 95% confidence interval was used to test normality of the samples of the projected distance to future sources of raw materials within a 10-year period since January 2002. One-way analysis of variance (ANOVA) test at 95% confidence interval on wood preference across the entire study area was used to test for any significant variations. The questionnaire responses were coded numerically for data analysis.

## Results and Discussion

The study shows that 80% are males; constituting middle-aged people between the ages of 21years and 40 years (61%) dominate craft industry activities in CCA. Carvers have attained either primary or secondary education (97.8%). Locals residing within 10-kilometre distance make up 90% of the carvers on.

### *Financial contribution of the industry*

Craft industry is a significant source of income for both once employed minority and the never employed majority. Income is overwhelmingly used against the problem of poverty (44%) and

drought (28%) and to a lesser extent other demands (22%) while 6% are involved in craft industry as a hobby as shown on Table 1 below.

**Table 1: Economic push factors, Chivi craft industry (%)**

| Push Factor | Drought | Poverty | Other | Hobby |
|---|---|---|---|---|
| Frequency % | 28.0 | 44.0 | 22.0 | 6.0 |

This indicates that the majority of carvers are rural poor who are susceptible to natural hazards such as drought in the economically challenging situation prevailing in the rural areas. Craft industry therefore contributes to the economic welfare by helping in meeting basic needs and pressing economic needs such as drought.

Spearman's correlation tests between incomes gained and the duration a craftsperson has been involved in craft industry indicated a fairly strong positive correlation, (**$r_s$=0.6)** suggesting that longer duration crafts persons get higher incomes than shorter duration ones. Experience in both carving and bargaining implies better economic deals hence higher incomes. An income of over Z$76,000 (67.7%) making up the majority in rural areas is an important contribution to the economically disadvantaged rural communities who are also involved in other economic activities, largely agriculture. In exchange for crafts, 99.2% preferred cash or cheque, gaining both domestic and foreign currency. Given that 83.8% have less than eleven local buyers, 89.2% are widely spread flow of foreigners who come up to as many as twenty buyers per week. The flow pattern changes abruptly for the former as the customer number declines sharply to an average of two in the 16 to 20 categories. Meanwhile that of the latter slightly increases to about 35 then gently declines to an average of five above the over 20 customers per week.
Barter trade (64.6%) is also highly preferred. Products such as clothing, bicycles, radios and television sets are used in preference to credit and lay-by, which are unpopular. Craft industry is therefore essential as a source of monetary income as well as material property. It is an important rural livelihood strategy.

The income from crafts is used for food and clothes, which are more basic, while 37.8% for shelter and 22% for energy, while transport and water take up 9% each. The property items acquired with craft income include among other items beasts (72%) followed by wheelbarrows (53%). Bicycles (45%), Furniture (34%), home (32%) and cart are also acquired but are not valued as high as the popular beats which are a symbol of wealth in rural areas.
Family basic needs are satisfied and acquisition of property made possible from this essential rural livelihood strategy. The level of income, however, is too low with 51.5% earning below Z$100,000 annually while the gazetted minimum income is Z$180,000. Carvers are therefore below the minimum wage hence ‘poor’. The study has also revealed that the craft industry helps crafts persons to met basic needs yet too low to free them from poverty.

### *Wood extraction and replenishing*

The craft centre checklist fieldwork show the dominance of wood on the craft centres with 88.9% of the craft centres, having wooden crafts alone or alongside others. This implies that wood is highly preferred by carvers thereby subjecting woodlands to degradation.

Dominance of wood statuettes (73.1%) and wood furniture helps to confirm wood as the widely used resource followed by rock (26.9%), while clay, grass and hide are some of the raw materials for other crafts. The highest proportion of wood implies that selective harvesting takes place on the resource base as reported earlier by Cunningham (1998), Braedt et al (2000). A. quanzensis is the highest subject to extraction with 63.8% followed by P. angolensis with 43.1% and C. imberbe (mutsviri) with 41.5% on the highly ranked woods. Other alternative woods include K. accuminata, Dolbergia melanoxylon, Spirostachys africana, Kigelia africana, and Burkina africana. The highly extracted species are facing rapid depletion, which shows the degradation effect to the environment. A switch to alternative unsustainable resources is not a long-term solution but just an expansion of the impacts on the environment.
The A. quanzensis fieldwork survey showed that four trees were felled within twelve months, three cut by man to sell to carvers and one by natural hazard. The linear regression analysis defined the dependence of the number of trees (y) on time (x) with the equation:

**y = 30.5 – 0,3X.** **(1)**

Predicting using this model, it would take about 8.5 years since January 2002, to exhaust all the live plants if this harvesting does not permit coppicing. These projections are only chance based since other factors such as germination; spread and coppicing are technically held constant.

Wood is frequently extracted with 80% of the carvers extracting within a month. Now given that 56.9% carvers reflected that the resource base is at '**critical stage**' and also that 96.9% have only up to five species of raw material, it follows then that these few preferred species are subjected to selective and hence over extraction leading to resource depletion as the A. quanzensis discussed above shows.

Using Spearman's correlation test to assess the association between the increase in raw material costs with the increases in distances travelled to obtain them showed that there is no association between the two variables (**$r_s$=0.0**) for the southern region whilst there is a weak positive association (**$r_s$=0.3**) for the central and (**$r_s$=0.2**) for the northern region. Craft industry is more established on the northern and central regions such that carvers feel the impact of resource scarcity on the costs of raw materials while the southern region's new craft centres have not as yet felt the impact of depletion of wood.

ANOVA across the entire 14 craft centres at 95% confidence interval concluded that wood preferences are uniform. This substantiates further the argument that there is selective harvesting of particular hardwoods such as A. quanzensis threatening them with local extinction just as the Kenyan ebony case, reported by Cunningham (1998). Eventually species such as A. quanzensis, P. angolensis, and C. imberbe will undergo extinction in CCA if necessary rehabilitative and preventive measures are not taken. The upcoming alternatives such as D. melanoxylon, K. africana and B. Africana will also undergo the same depletion pattern.

Craft industry in CCA is negatively affecting the environment, as the industry is not ecologically sustainable. The introduction of other unsustainable alternative indigenous species is not a long-term solution but a spread of the problem. Already 35% of the carvers acknowledged extraction of protected species while no carvers indicated exotic species alternative to indigenous ones.

### *Extraction control and management*

The majority of carvers (78.5%) acknowledged that raw material extraction is controlled while the remaining minority (21.5%) responding negatively. Resource extraction is controlled by Chivi RDC (73.5%) which shows a small measure of devolution of power by the government yet the traditional leaders (5.9%) and PC (7.8%) need to be more empowered if considering CAMPFIRE model initiative as shown on Table 2 below.

**Table 2: Controllers of raw materials**

| Controller | Govt. | RDC | Community | T Leaders | Private Org. | Donor |
|---|---|---|---|---|---|---|
| Frequency (%) | 9.8 | 73.5 | 7.8 | 5.9 | 2.9 | 0 |

The RDC controls largely by prohibition (52.9%) through listing particular species as 'protected', penalising the offenders (22.5%) as well as issuing of quotas (15.7%) and to a lesser extent, issuing licences (6.7%). A meagre percentage of offenders (2.0%) are being expelled. The fines being charged are too low as Mandondo (2001) earlier discussed, yet is the popular penalty (6.6%) to offenders while only a low number of cases indicated expulsion (22.5%), which is a traditional way of NR M. The least number of carvers indicated imprisonment (9.8%) as a way of punishing offenders. This shows that NRM in CCA is ineffective since the devolution process is not fully complete as most of the management roles rest with Chivi RDC. The A. quanzensis environmental accounting fieldwork found out that the two offenders who cut the last fourth trees were only verbally warned since the village heads have the least powers invested in them. Warning only is not an important deterrent to future trespassers.

The $X^2$ test at 95% confidence interval concluded that the rehabilitation measures have been implemented in the entire study area. This shows that the realisation that the environment has been degraded triggers the response to rehabilitate it. Crafts persons are therefore aware of the negative environmental impacts of the craft industry. The larger proportion of the rehabilitation (58.3%) is tree-oriented showing that woodland degradation is essentially noticeable in these areas.

On the foresight of the 10-year period, the majority (56.9%) indicated that there would not be enough raw materials while those speculating that there will be enough raw materials were lower (18.5%) than the ignorant category (24.6%). A t-test on projected raw material cost and projected distance as follow up to the minority speculating enough raw materials in the next decade concluded that the speculations are normal and similar for both southern and northern regions at 95% confidence interval. The majority speculation (56.9%) shows that crafts persons are aware of their industry's impact on the resource base to the extent that they envisage the resource base as incapable of supplying them for a period longer than a single decade. Earlier on the majority (56.9%) also indicated that the resource base is at a critical stage. On the same note, the minority speculating (18.5%) enough supply of raw materials in the next decade acknowledge that the costs of raw materials as well as distances travelled to obtain them will increase which also implies that the nearby available resources would be depleted. The majority and minority groups of opinion speculation (75.4%) both indirectly compromise that degradation of resource base is evident showing that carvers are highly aware of resource degradation save for the ignorant minority (24%).

Another $X^2$ test at 95% confidence interval concluded that unsustainable resource extraction depletes the raw material base. The majority (89.1%) indicated that in the entire study area raw material base is undergoing degradation. A Yates Correction for continuity at 95% confidence interval concluded that there is no significant difference between the southern and northern regions in the argument that the majority (92.3%) agrees that everyone should be responsible for conserving the environment. This view gives a 'commons' problem since even those responsible for degradation would continue to do so on the pretext that the impacts are everyone's problem while they enjoy the benefits alone. Furthermore, carvers would argue that it would be better to degrade the environment than die of poverty and starvation viewing the environment is less important than the economic gains with the majority (56,9%). Shackleton et al (2001) observation that economic benefits may not justify the environmental costs is accurate. These results confirm the assumption that poverty overrides rationality in the craft industry of CCA. The above cited rehabilitation measures are evident but not adequate as a mitigatory measure since no preventive but only curative measures are taken. While the level of

environmental awareness is relatively high, the pressing economic demand drives crafts persons to sacrifice environmental sustainability for economic benefit.

## *Conclusion*

This study has shown that the CCA's craft industry makes tremendous economic contributions to the local communities and has its share of the environmental effects, which need to be attended to. The CCA craft industry is male dominated with middle-aged single and married persons who have a moderate literacy level and are local to the craft-centres. This craft industry is a significant rural livelihood strategy in as far as basic needs are concerned but incapable of empowering carvers economically against poverty. Craft industry is degrading the environment especially with special reference to wood resources with particular species facing local extinction. Environmental protection initiatives remain a challenge to the producer community as well as other institutions involved in Natural Resource Management.

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**ANNEXTURE**

**Table 1: Craft Centre Checklist Fieldwork between Masvingo - Ngundu Halt**

| CRAFT CENTRE AND NUMBER | RAW MATERIAL | | | | | CRAFT TYPE | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Wood | Clay | Rock | Fibre | Other | Furniture | Statuette | Ornament | Other |
| 1.Ngundu | 1 | | 1 | | | | 1 | | |
| 2.Zunga T O | 1 | | | | | | 1 | | |
| 3. Mashanda | 1 | | | | | | 1 | | |
| 4. Zifunzi | 1 | | | | | | 1 | | 1 |
| 5. Zivuku | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 |
| 6. Maringire | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7. Mhandambiri | 1 | | | | | | 1 | | 1 |
| 8. Madzore | 1 | 1 | | | | | 1 | | 1 |
| 9 Sese | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 |
| 10 Sese B C | 1 | | | | | | 1 | | |
| 11. Jaka | 1 | 1 | 1 | | | | 1 | 1 | 1 |
| 12. Gwitima | 1 | | | | | 1 | 1 | | 1 |
| 13. Rest Area | | 1 | | | | | | | 1 |
| 14. Mafenga | 1 | | | | | | 1 | | |
| 15. Makani | 1 | | 1 | | | | 1 | | 1 |
| 16. Chivi T O | 1 | | | | | | 1 | | |
| 17. Chishave | 1 | 1 | | | | | 1 | | 1 |
| 18. Ngomahuru T.O | 1 | 1 | | | | | 1 | 1 | 1 |
| 19. Barti | 1 | 1 | 1 | | | | 1 | 1 | 1 |
| 20. Powerline1 | 1 | | 1 | | | | 1 | 1 | 1 |
| 21. Powerline2 | 1 | | 1 | | | | 1 | 1 | 1 |
| 22. Vadanda1 | 1 | | 1 | | | | 1 | | 1 |
| 23. Vadanda2 | 1 | | 1 | | | | 1 | | 1 |
| 24. Makondo | 1 | | | | | | 1 | | |
| 25. Plots Area | 1 | | | | | | 1 | | |
| 26. ZIRRCON | 1 | | 1 | | | | 1 | 1 | |
| 27. Masvingo CC | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |

- 1 denotes area with that selection

**BOX 1: Village Court Hearing**

- **Case**: Illegal harvesting of a protected tree species: Afzelia quanzensis
- **Date**: 16 December 2002
- **Place**: Joni Village, Ward 23, Chivi District
- **Members present**: 2 Village heads plus 27 others
- **Composition**: 23 males 6 females
- **Accused**: 2 males, both married family men of 4 and 5
- **Social Status**: Both are unemployed, with no history of having ever been employed, with primary and lower secondary education. Neither has attained a course.
- **Livelihood**: Both engaged in agriculture and occasional in rural piece-jobs (building fowl runs, thatching roofs, building cattle pens, moulding clay bricks).
- **Reason for the Offence**: To earn income to feed starved families.
- **Awareness Issues**: Villagers are aware that, A.quanzensis is a protected species.
- **Available Option**: In the event that the village court failed to settle the case, it would be referred further to the Chief's traditional court at Chief Nemauzhe's court.
- **Judgement**: Both accused persons were verbally warned after , pleading guilty to the offence.
- **Fine**: No fine was charged for the offence. A fee of Z$100.00 each was charged for the court (dare) formalities.

**Conclusions**:

1. Economic drives against profound poverty causes illegal extraction of protected species.
2. Communities are aware of the protection of specific species.
3. Traditional leaders control resource extraction with limited power.
4. The penalty of trespassing resource protection is not deterrent/prohibitive enough.
5. Women are under-represented in issues pertaining to resource extraction.