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TRADITIONAL PRODUCTS MADE FROM PLANT FIBERS PRODUCED BY THE LOCAL POPULATION OF THE WAMBA VALLEY IN DEMOCRATIC REPUBLIC OF CONGO

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ABSTRACT

This study on the traditional, socio-cultural and commercial values of handicrafts based on fiber plants made by the local populations of the Wamba Valley was carried out within the framework of the development of local forest resources. The main objective was to study the socio-cultural and commercial values of handicrafts made from fiber plants in the study area with a view to considering the conservation and sustainable use of plant resources. The methodological approach was based on observations, inventories of objects made on the basis of fiber plant products supported by survey techniques. The main results show that several objects of value (traditional, socio-cultural, and commercial) are made on the basis of products extracted from the fibers of *Raphia*, *Eremosphata* and *Urena lubata*. This is particularly the case for objects such as hats, bags, sandals, clothes (clothing), baskets, shelves, chairs and rugs. These objects have various economic values, but on average the overall value (the price) of these objects is 562 ± 80 $ i.e. a median of 20 and a mode of 0.5 in the city and 425,3 ± 60.9 $ i.e. a median of 15 and a mode of 0.3 in the town. These objects also respond to cultural and social values. They represent cultural identities of the studied ethnic groups. To avoid the scarcity of these resources in ecosystems, it is important to reconcile use with conservation.

Keywords: Traditional values, socio-cultural values, handicrafts, fiber plants, Wamba Valley.

INTRODUCTION

In Democratic Republic of Congo, as in most tropical countries, forests remain the main source of supply of woody substances (firewood, timber, service wood), and non-woody substances (food, fibre, honey, traditional pharmacopoeia, dendro-energy (Lubini and Kusehuluka, 1991; Devred, 1958).

The Congolese flora contains an important specific diversity. Several research works have been carried out in the country on ecological, phytosociological and phytogeographical studies (Lubini, 1982; Belesi, 2009; Habari, 2009, Lubini, 1997 ; Kidikwadi, 2019 ; Pauwels, 1993). Among the topics covered in this work are plants with fibers, latex, oil, resin, as well as plants providing dyes. This wide range of products provided by these forests is used by people for social, cultural and spiritual reasons. Some of these products play an essential role in traditional, cultural and spiritual ceremonies. To protect them, certain practices of taboos are erected to prohibit overexploitation. Despite the services offered by these resources, they are destroyed on a large scale by populations

without, however, foreseeing the mechanism of domestication, conservation or recovery of the species. FAO (1997) asserts that the large-scale destruction of the planet's forest resources is increasing in the face of population growth, unequal distribution of assets and unsustainable exploitation of natural resources. FAO (2001) considers fiber commodities as resources that can be sold or used by industry as raw materials. These come from renewable resources and forest biomass. These products are likely to allow an increase in real incomes and jobs.

Even if their exploitation is still done on an artisanal scale, the artisanal products made from plant fibers have an influence on the life or the survival of the rural population, because they play an important role in the socio-economic balance, and in the preservation of cultural identity. In relation to the above, this research addresses the following concerns:

• What are the fiber plants used for the manufacture of art and traditional objects in the Wamba Valley?

• How are its handicrafts made, mined and used?

• What are the socio-cultural and economic bases for the use and marketing of these objects?

MATERIAL AND METHODS

Our research was carried out in the Kenge 2 region located in the Wamba River valley. It is located at 04° 51'14.5" south latitude and 016°57'0.3" east longitude, at an altitude of 450 m. The following map locates the environment studied.

The reference material used for scientific identification consisted mainly of fibers from Raffia, Eremosphata, and *Urena lubata*.

The methodological approach boiled down to observations in the field, supported by inventories, statistical analysis and the ethnobiological survey. Clearly, the progress of the methodological approach was presented as follows:

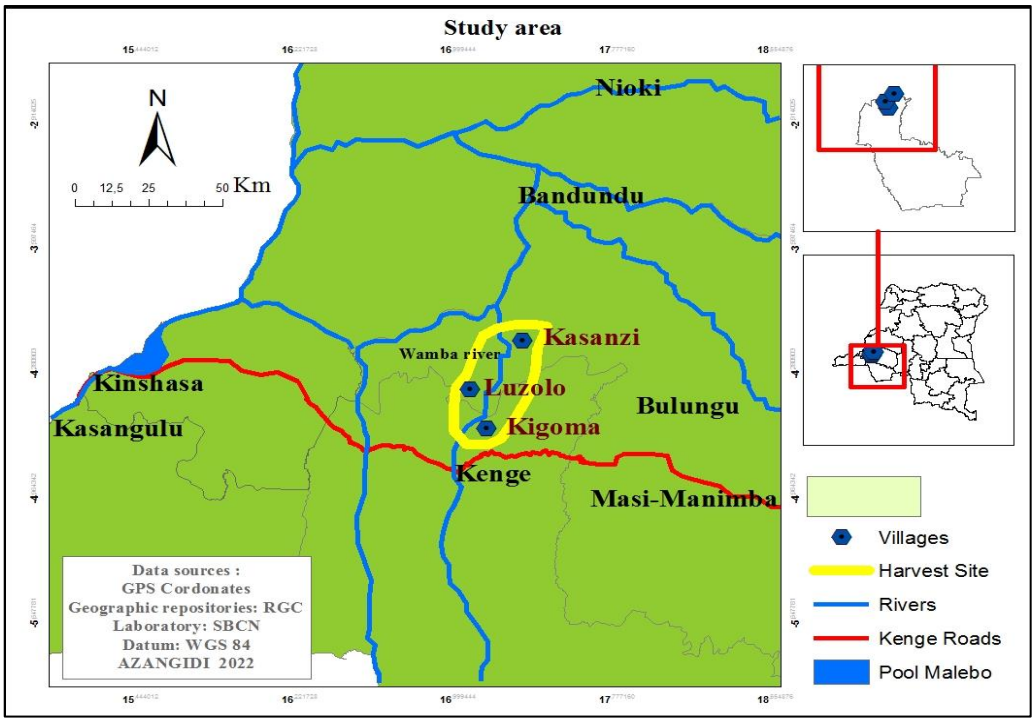

Figure 1: Location of the study environment (study area).

Survey of the Study Site

From observations, visits to the sites of manufacture and marketing of handicrafts made from plant fibers, inventories and identifications of fiber plants that were used for the manufacture of works of art and other tools in the valley of the Wamba (Kenge, Kigoma, Fatundu) have been completed. These observations provided information relating to the origin (the habitats of the species), the identification of the actors (manufacturer, seller, and user, etc.). The organized visits were conducted in all the sites of manufacture and sale of these products in the study area. These inventories also made it possible to collect fiber samples for their identification in the laboratory.

Inventory of Places of Manufacture and Sale of Handicrafts made from Fiber Plant Products

To obtain sufficient information on the socio-cultural and commercial values of handicraft products based on fiber plants from the Wamba Valley in the DRC, it was necessary to identify the sites for the sale and manufacture of these products. This, after having completed the administrative formalities at the level of the city of Kenge. From the authorization of the municipal authorities, the points of sale and manufacture of these products in Kenge (city and town), Kigoma and Fatundu were targeted to carry out the investigations. The identification of the fiber plants inventoried on the premises was made in relation to the different types of objects made and observed at the points of sale and to the biological material collected.

Analysis of Socio-Economic and Cultural Aspects related to the use and Promotion of these Products

This involves analyzing the various parameters related to the manufacture and sale of objects made from fiber plants. To complete the necessary information on the use of products from fiber plants, it was important to use the survey technique.

Actual Investigation

The actual survey took place in December 2021, using a survey questionnaire. It was a classic survey. It consisted of developing questions whose answers are likely to provide the researcher with answers and elements that he is looking for. In the present case, knowledge of the socio-cultural and commercial values of objects derived from fiber plants constituted the information sought. The questionnaire was characterized by the profile of the respondents and the technical elements of the survey itself.

Sample

In this case the manufacturers of fiber plant products have been defined as the basic unit. After identifying these manufacturers, 25 sellers and manufacturers of objects made from fiber plant products were selected and these therefore constitute the sample size for this research. For a population of 250 manufacturers of objects from fiber plant products, a sample of 25 manufacturers, i.e. 10 % of the population, was selected, according to the aspirations of Maamar Sameut and al., (2020). Apart from the selection criteria below, the constitution of the sample was more based on ethnic diversity according to the table below.

Table 1: Distribution of the sampls according to ethnic groups

Ethnic groups	frequency	%
Pelende	11	44
Yaka	6	24
Lonzo	5	20
Suku	2	8
Yansi (Fatundu)	1	4
Total	25	100

The analysis of this table reveals that the ethnic groups which predominate in this activity and for which the respondents are the majority remain the Pelende, the Yaka and the Lonzo.

Criteria for Selecting Respondents

To be part of the sample for this study, the respondent must meet a number of criteria, namely:

- the respondent was from the ethnic group of the indigenous population of the study area,
- have lived in a town or village located along the Wamba River;
- having been a seller or manufacturer of objects made from fiber plant products;
- have been a user of these objects;
- have had a seniority of at least five years in this activity;
- having been present on the day of our survey and agreed to answer our questions freely.

Statistical Analysis

The counting itself began with the control of the answers received on questionnaires then the encoding. It turned out that we can use the computer tool for data entry and processing.

RESULTS AND DISCUSSION

The results are based on the presentation of handicrafts made from fiber plant products, inventory of handicrafts made from *Raffia sese, Urena lobata* and *Eremosphata cabrae*, economic values of these objects, traditional use of the objects, means of manufacturing learning, and supply issues.

i. Raw Material used for the Manufacture of Handicrafts

For the manufacture of certain handicrafts as described below, the craftsmen use (riparian population of the Wamba valley) as raw material the fibers of the plants. These are *Raffia sese* De Wild., *Eremosphata cabrae* (T.Durand & Schinz) De Wild. and *Urena lobata* L. More precisely, from these plants are extracted the support fibers called sclerenchyma. With regard to *Raffia sese*, these fibers are extracted from the underside of the leaves. These are fibers from monocotyledonous plants such as the fibrous stems of *Eremosphata cabrae* and *Urena lobata*.

ii. Fiber-based Handicrafts

Several objects or handicrafts are made from the products of fiber plants. The results of the observations made are given in Table 2 below.

The results of this table reveal that the majority of the handicrafts inventoried are made from *Raffia* fibers.

- Objects made from the products of fiber plants
- Objects made on the basis of products from *Raffia sese*

Several observations were carried out in the town of Kenge (capital of Kwango province), the city of Kenge (capital of Kenge territory) and in Fatundu on the site of manufacture and marketing of the objects resulting from the products of *Raffia sese*. Town of Kenge and city of Kenge are two different entities. The results obtained show that various types of objects are made: hats, bags, sandals, loincloths, cassocks for customary chiefs. The following photos illustrate the various objects made on the basis of Raffia products inventoried in the study environment.

Table 2 : Handicrafts made from fiber plant products

Material	Types	Origin	use	users	Remarks
Clothers	Robe or cassok	*Raffia*	traditional ceremonies or festivals	customary chiefs or traditional chiefs	This habit has a great economic value because it is expensive and from a cultural point of view, it is an honorary outfit that symbolizes power.
	Shirt	*Raffia*	for traditional dancing and in customary wedding ceremonies	craftsmen use raffia fibers by placing them on sleeves, glues and the outlines of shirts	Its sewing is expensive compared to ordinary sewing.
	Skirt	*Raffia*	traditional dancing	these are worn by girls if not women	Most of those who buy it are presidents of folk groups.
	Loincloth	*Raffia*	for major ritual and ancestral ceremonies	customary and traditional chiefs, seers and marabouts	This loincloth is expensive compared to the ordinary loincloth worn by women.
Backpack		*Raffia*	especially travelers	by boys as well as girls, among marabouts especially travelers	These bags are expensive and are not used by everyone.
Handbag		*Raffia*	These handbags are used to keep school supplies	used more by schoolchildren but also by young girls and boys.	These handbags are more found in the village than in town
Kits		*Raffia*	use as household baskets, so you cankeep valuables and are also used as ornaments to embellish living rooms, offices, bedrooms	Everyone	These kits can be used in the village as well as in town
Sandals		*Raffia*	For walking and foot protection	admired by young people (girls and boys) thanks to their morphology	elegance that they are used by this category.
Shelves		Eremospatha	making shelves to hold plates, or other household objects	Everyone	These shelves do not have a fixed price because it depends from one customer to another
Chars		Eremospatha	luxury furniture in lounges or VIP straw huts and are essential in customary wedding ceremonies today	Everyone	These shelves do not have a fixed price because it depends from one customer to another
Baskets		Eremospatha	these are used for fishing for some but others as baskets of ornaments and flower skins	Everyone	used in the village for fishing and in town for ornament
Rugs		Urena	manufacture of carpets which are used more in offices	Everyone	These mats are of small dimensions and quantities, they are rare in the market. This scarcity is due to the lack of these fibers in the market and also the lack of abundant labor.

Photo 1: Cassocks for customary chiefs

Photo 2: Bags, loincloths and dresses for dancing

Photo 3: Hat made from Raffia

Photo 4: Handbags and sandals

Photo: 5 Shelf and chair

Photo 6: Basket and plates

2- *Objects made from Products from Eremosphata cabrae*

Commonly called Rattans, this species is recognized for these artistic objects widespread in rural areas. Based on products from this species, chairs, baskets, armchairs, shelves, plates, and fishing objects are traditionally made. The following photos illustrate the different types of objects inventoried in the field.

3- *Handicrafts made from Products from Urena lobata (Punga punga)*

On the spot, we inventoried some objects made on the basis of the products of *Urena lobata*. These objects are, among other things, bags and mats.

4- Inventory of Handicrafts made from Raffia sese and Eremosphata cabrae

In the study area, objects made from the products of fiber plants are displayed in the markets. We are noticing more items made from *Raffia* and *Eremosphata*.

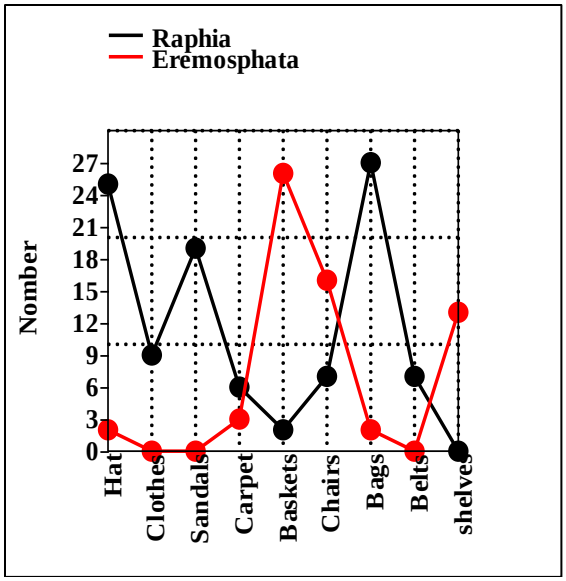

Figure 1: Inventory of objects made from *Raffia* sese and *Eremosphata cabrae*

However the figure below shows that objects made by *Raffia* predominate. Indeed, with the *Raffia*, several objects were investgated, including bags, hats, sandals, clothes (loincloths, cassocks for customary chiefs) and belts. With the products of *Eremosphata* we no longer manufacture baskets, chairs, and shelves.

5 Value of Items from Fiber Plant Products (Commercial Use)

This is to analyze the price of objects on the markets. Indeed, two sites are considered here to assess the value of objects made from fiber plant products; the market in town and the market in the city of Kenge. The results obtained do not show the existence of a statistically significant difference between the price of these objects in town and in the housing estate. Indeed, the points of the different prices of these objects revolve around the trend curve as well illustrated in the figure 2. On average, the overall value of these objects is 562 plus or minus $ 80 in city and 425,3 plus or minus $ 60.9 in the town.

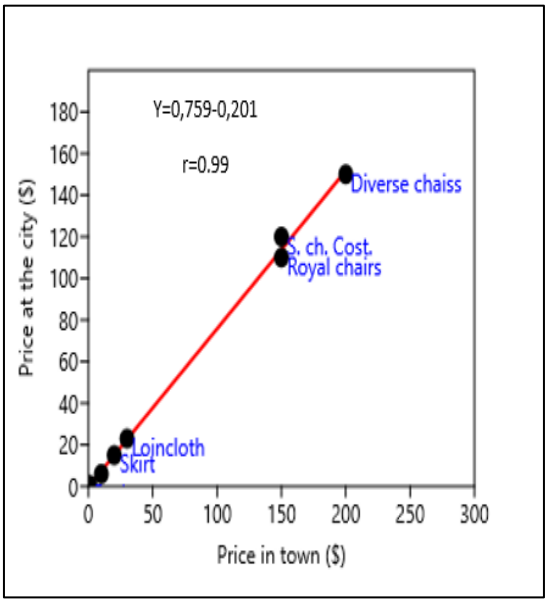

Figure 2. Value of objects made from fiber plant products

6 Traditional use of Objects from Fiber plant Products

Objects made from the products of fiber plants are traditionally used for a variety of reasons. These uses or endogenous knowledge are transmitted

from generation to generation, several tribes and ethnic groups identify with these different traditions. Thus, the various reasons mentioned by the respondents boil down to aspects of the enthronement ceremonies of customary chiefs, the burial ceremonies of the dead, the wedding ceremonies, reception of a high political or administrative personality of the country, and celebrations. These objects also represent the cultural identity of the population. Each artistically designed object makes it possible to culturally identify the tribe or ethnicity. Example: dances with skirts and loincloths made of Raffia are characteristic of the Pelende, Yaka, Yansi tribe in the region. The use of these objects also constitutes the symbol of power and the source of inspiration, also a means of communication with the ancestors.

7. *Learning how to make Objects*

The objects that have been the subject of our research have traceability. In this research, we wanted to look for the methods of transmission of this endogenous knowledge from generation to generation.

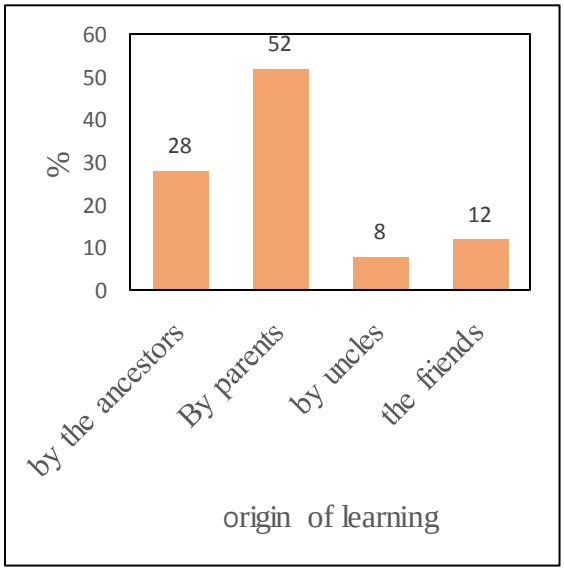

Figure 3. Origin of learning to manufacture these objects

The results obtained show that in most cases, this knowledge is transmitted by parents and ancestors (Figure 3).

8 Lifespan of Objects made from Fiber plant Products

The results obtained in the figure below sufficiently prove that the chairs have a very long service life and can be in good condition for more or less 60 months, or 5 years.

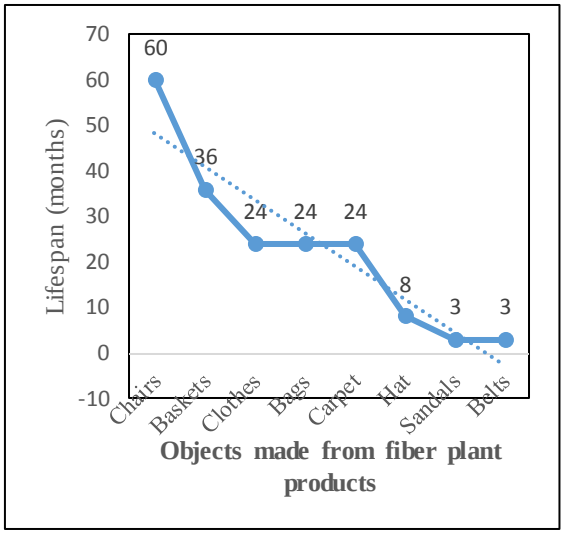

Figure 4. Lifespan of inventoried objects

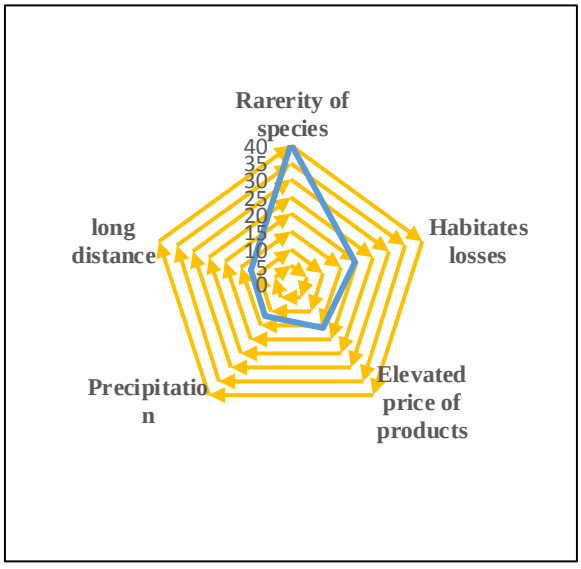

Figure 5. Commodity supply issues

9: Problems related to the Supply of Fiber Plant Products

Fiber plant products are not quite available in the market. These products are exploited in their natural habitats. However, some problems very often arise in the supply. As we can notice in the following figure, one of the major problems is the rarity of the species which is due to the losses of the natural habitats, long distance to find the forests and the precipitations prevent the exploitation because they are plants in swampy areas and when it rains exploitation becomes difficult.

DISCUSSION

This study focused on the socio-cultural and commercial values of handicrafts made from fiber plants in the Wamba Valley, DRC. The main objective is to study the socio-cultural and commercial values of handicrafts made from fiber plants in the study area with a view to considering the conservation and sustainable use of plant resources. Analysis of the results shows that several objects are made from fiber plant products: hats, bags, loincloths or cassocks for customary chiefs, sandals, shelves, chairs, mats and plates. These objects are made from *Raffia sese*, *Eremosphata cabrae*, and *Urena lobata* products. These species have been known for a very long time thanks to their fibers. The exploitation of these species for fibers for various uses dates back to ancient times (Mbandu, 2021 ; Biloso, 2008 ; Masens, 1997).

Craftsmanship is an old (ancestral) profession symbol of cultural identities. Before the arrival of so-called modern clothes and plates, our ancestors used the products of these plants to make their basic tools and clothes. Today this endogenous knowledge is neglected, Congolese society revolves around foreign articles designed or manufactured abroad (foreign knowledge). This situation does not favor the development of local natural resources, Mbandu (2021) emphasizes that the belief and tradition of people are an integral part of their relationship with the environment. Regarding the objects made on the basis of each species, the results show that hats, bags, sandals and clothes are made using *Raffia sese*. with *Eremosphata cabrae*, baskets, chairs and shelves are no longer made, while rugs are made from *Urena lobata*. The analysis of the economic value of these objects has been made. It emerges from this analysis that there is no significant difference between the prices of these objects in town and in the housing estate. On average, the overall value (the price) of these objects amounts to 562 ± 80 $ i.e. a median of 20 and a mode of 0.5 in the city and 425,3 ± 60.9 $ i.e. a median of 15 and a mode of 0.3 in the town.

The results on the economic value of objects made from the products of fiber plants show enormous economic resources. The development and large-scale production of these objects can help the country's economic growth; job creation and the fight against poverty (Mbandu, 2021 ; Arnold, 1995). Objects made from the products of fiber plants not only have economic value, but they also constitute the cultural identity of communities, they are used in ceremonies: traditional, festivals, enthronement of customary chiefs, and in weddings. Arts and traditions reflect the cultural values of an ethnic group and these arts and traditions must be promoted to allow society to benefit from the achievements of the natural and traditional heritage of the study area (Anonymous, 2010).

For learning how to make these objects, note that the results obtained sufficiently prove that this endogenous knowledge is transmitted from parents and ancestors and that from generation to generation. These fiber plants constitute renewable natural resources, their abusive exploitation, intense harvesting, degradation of ecosystems and natural habitats can lead to the local disappearance of these resources, if not to their scarcity

(Belesi, 2009 ; Hountondji, 1994 ; Lubini, 1990). The problems that arise for the supply of fiber plant products are manifold. The exploitation of these resources can also have impacts on the environment and some problems that are more related to the rarity of the species, loss of habitats and the long distance to travel to have access to the resource.

CONCLUSION

This research on the socio-cultural and economic values of handicrafts made from fiber plants was carried out in the Wamba Valley in December 2021. The main objective was to study the socio-cultural and commercial valuesof handicrafts made from fiber plants. In the study area with a view to considering the conservation and sustainable use of plant resources. The methodological approach boils down to observations in the field, inventories of objects made on the basis of fiber plant products and their uses. After presentation and analysis of the data, the main results show that several valuable objects are made on the basis of products extracted from *Raffia sese, Eremosphata cabrae* and *Urena lobata*. This is particularly the case for objects such as hats, bags, sandals, clothes (clothing), baskets, shelves, chairs and rugs. These objects have various economic values, but on average the overall value (the price) of these objects is 562 ± 80 $ i.e. a median of 20 and a mode of 0.5 in the city and 425,3 ± 60.9 $ i.e. a median of 15 and a mode of 0.3 in the town. These objects also respond to cultural and social values. They also sometimes represent a cultural identity of an ethnic group, tribe or country. The results also show that these objects are not domesticated or promoted for export abroad; while these respond to an enormous artistic value that can be put into contribution for the economic growth of the country.

Considering the results obtained, we suggest to the population and to the politico-administrative authorities of Kwango and Kwilu to think about the conservation of the natural habitats of these resources; the domestication of fiber plant species; the promotion of this endogenous knowledge, the appropriation and use of our local artisanal products.

AUTHORS CONTRIBUTION

Theophane Ntalakwa Makolo, The main author of this research which constitutes part of the results of the doctoral thesis in preparation. He participated in the data collection, and the final writing of this research article. Bibiche Mayanu Pemba, direct co-author, participated in interviews with investigations, photography of fiber plant tools and products in the field. Mapey Efifi, contributed in the literature and the translation of survey questions into local languages for a good understanding and collaboration with respondents. Eustache Kidikwadi, member of the supervision committee of the doctoral thesis, contributed in the orientations on the methodology of the work and the collection of data in the field. Honoré Belesi, co-promoter of the thesis, botanist contributed in the identifications of the botanical material collected on the ground. Constantin Lubini, thesis promoter: gives overall directions for research, supervises research work, also contributes to the reading and final validation of the text.

CONFLICT OF INTEREST

The authors certify on their honors that there is no conflict of interest with third parties with regard to all the processes of the mission of this research and the mechanisms which contribute to the publication of the results.

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