



## **Understanding NWFPs Utilization, Marketing and Transportation in AJK, Pakistan**

**Muhammad Zubair<sup>1\*</sup>, Rana Mohsin Ijaz<sup>1</sup>, Syed Bilal Hussain<sup>2</sup>, Akash Jamil<sup>1</sup> and Imran Khan<sup>1</sup>**

<sup>1</sup> *Department of Forestry and Range Management Faculty of Agricultural Science and Technology Bahuddin Zakariya University, Pakistan.*

<sup>2</sup> *Institute of Molecular Biology and Biotechnology, Bahuddin Zakariya University Multan, Pakistan.*

### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author MZ designed the study, performed the statistical analysis and edited the manuscript, author RMI conducted the field work and wrote first draft of the manuscript, authors SBH, AJ and IK managed the literature searches, analyses and manuscript editing of the study. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/APRJ/2021/v8i330179

#### Editor(s):

(1) Shiamala Devi Ramaiya, Universiti Putra Malaysia Bintulu Campus, Malaysia.

#### Reviewers:

(1) Tareq NaeL Hashem, Isra University, Jordan.

(2) Giulia Corradini, University of Padova, Italy.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/75944>

**Original Research Article**

**Received 25 August 2021**  
**Accepted 03 November 2021**  
**Published 08 November 2021**

### **ABSTRACT**

The study assessed the utilization, marketing and transportation of Non WoodForest Products (NWFPs) in Azad Jammu & Kashmir (AJK) with the view to improving livelihoods of local inhabitants. Data collection were made in AJK districts of Neelam and Bagh. The respondents that were sampled for the study comprise of local inhabitants involved in collection of NWFPs. A total of 200 respondents were interviewed using simple random sampling technique. The results revealed most of the farmers were literate having very small land holdings with farming as their prime profession. The main reason for NWFPs collection and selling is to buy food and cater for health needs of the family. Most of the NWFPs are sold directly to local traders at spot and fellow collector/trader remained most worthy source of information in NWFP collection and selling. Regarding mode of transportation manual transportation (on foot) is being used due to low quantity of NWFP collection at most of the times. There is now the need of time that the people of this area involved with NTFPs should be trained. Trainings on collection, processing and packaging of NTFPs must be carried out. Therefore the local communities would be able to add value to their products and are able to fetch high premiums to support their livelihoods.

\*Corresponding author: E-mail: Zubair.fast@bzu.edu.pk;

*Keywords: NWFPs; marketing; market chain; rural livelihoods; NWFPs utilization.*

## 1. INTRODUCTION

Forests provide wood and Non Wood Forest Products (NWFPs) in plenty. NWFPs are diverse in nature and include wide range of medicinal, edible and aromatic products since time immemorial [1]. Resins, gums and barks, mushrooms, berries, medicinal plants etc. are the NWFPs that have been used in variety of forms in the preparation of various edible and domestic use products and clothes. These local communities living in and around vicinity of forests are heavily dependent upon NWFPs. They use them to obtain nutrition, construction material, health ailments and construction materials [2,3]. Such products have the ability to nourish the poor, recover their ailments as well as provide subsistence to livelihoods [4]. Thus, NWFPs are the mainstay of livelihoods of the communities relying on forests along with provision of jobs and services [5].

As more people have involved in selling and trading NWFPs, many market chains from collection points to markets have developed. The deliverance of NWFPs from forests to markets and traders carry on through a chain often called as market chain. This chain is called as the value chain because at each step from forests to markets value is being added by the actors before it reaches to the ultimate consumer [6]. Throughout this chain various people also known as actors in various parts of the chain produce value added processes such as processing, packaging and transportation. Most international forums have now started to incorporate market chains as important links towards a more sustainable business in NWFPs industry [7]. There are various reviews conducted on NWFPs and their value chains. Studies have shown that the market chains of NWFPs are mostly dependent upon the local communities, environmental knowledge of the people, business society in the region and advertisement potential [8,9].

Studies in various parts of the world have shown how NWFPs have significantly improved the livelihoods through better utilization and market channels [10]. Trainings on connection of local consumers with local collectors and their link with market place has resulted in better management and efficient protection policies [11]. Major function of NWFPs in a forest community is to alleviate the livelihood conditions and escaping poverty. These products are essential in

providing poverty stricken communities with security net for a short period of time. But proper marketing management and sustainable practices from collection to transporting can not only enhance the NWFPs production but can push these communities from poverty [12]. Thus NWFPs are pivotal for sustaining subsistence but also cater for nutritional requirements of communities especially children [13,14] and remained a major economic activity of communities living proximity to forest [15,16,17]. The present study was conducted in villages of Azad Kashmir's Neelam and Bagh districts. The major objectives set out by the study were "Evaluation of NWFPs utilization and Marketing in AJK.

## 2. MATERIALS AND METHODS

### 2.1 Study Site

The study was conducted in order to determine the dynamics of utilization, selling and market chain of the NWFPs used by the local people. The responses were collected mainly from two major districts i.e. Neelam and Bagh in Azad Kashmir. Total area of Neelam valley is 3737 km<sup>2</sup> with an altitude between 1124-6129 meters, whereas, Bagh covered an area of 1368km<sup>2</sup>. In Neelam valley mean temperature ranges from -10.9 to 17.3°C, whereas, in Bagh mean temperature ranges from 2.3-21.6°C. Mean annual precipitation is Neelam and Bagh accounts for 246-1048mm and 333-1249mm respectively. Both districts are situated in moist temperate forest, a distinct ecosystem with diversity of vegetation of all types. Majority of the people living there are dependent on forests for their livelihoods.

### 2.2 Research Strategy and Sampling

Simple random Technique of sampling was applied to select respondents. In the first step, liaison was made with forest department as well as shopkeepers, village oldman and other informants working in the area. This was helpful to identify NWFPs collectors in Neelam and Bagh districts. Later after identification of collectors a total of 200 respondents were selected randomly counting to 100 each in each districts. A total of 200 respondents were selected randomly from the targeted sites. In the 2<sup>nd</sup> step questionnaire was administered conducting face to face

interviews. Questionnaire was constructed containing the wealth of information regarding various components of use, selling and marketing of NWFPs in the form structured, semi-structured and open ended questions. The respondents were accessed by paying various visits to forests and area of NWFPs collection, markets and their place of residence.

### 2.3 Statistical Analysis

All the data was first entered in Microsoft Excel Worksheet. Afterwards, the data was entered into "IBM SPSS Statistics 21" for descriptive statistics.

## 3. RESULTS

### 3.1 Respondents Personal Information

Respondents personal information is presented in Table-1. Maximum respondents are well literate and attained their secondary level of education (72%) in AJK districts of Neelum and Bagh. Most of the respondents made part of this study were married (95%) involved in the collection of NWFPs. This might justify their involvement to collect NWFPs to quench their family thirst for products and income. Regarding land holding status, most of the sampled population remained in possession of low land holding, just 1-3 kanals (one kanals is 1/8<sup>th</sup> part of an acre) in present case which is barely enough to meet demand for food and income for the family. When it comes to occupation majority of respondents remained farmers (46%) followed by their work status as daily wages working in the forest with the contractor/ trader (29%).

### 3.2 Income from NWFP and its Uses

Fig. 1 illustrates uses of income obtained from NWFPs by the survey respondents. The major portion of NWFPs are sold out and income has been utilized to buy food as well as being used to treat various domestic ailments or to pay expenses of doctors/ hospital. Most of the respondents (63%) use NWFPs income in building houses in providing shelter for the family followed by keeping a handsome amount (56%) as saving for household expenses arise at a later time.

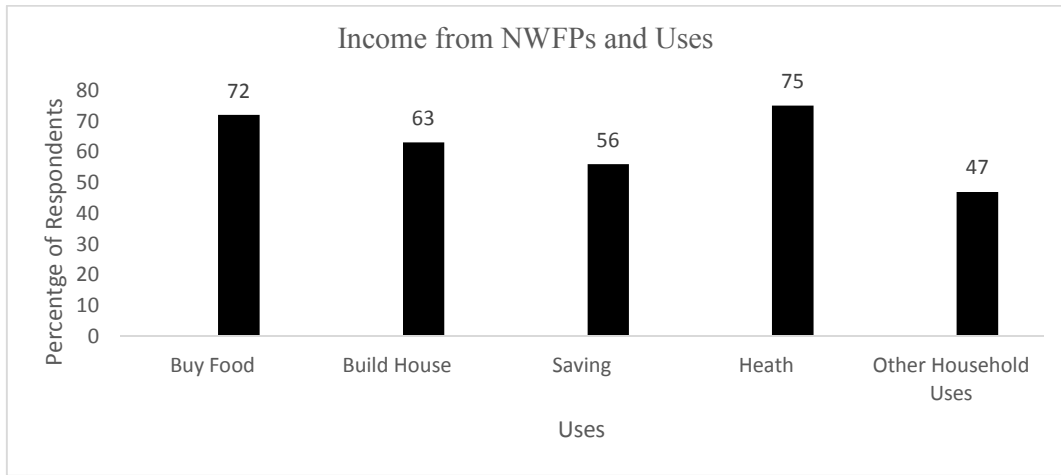
### 3.3 NWFPs Marketing Channels

Outcomes regarding three variables i.e. NWFPs were sold to i) village traders; ii) middle man; iii) local processors are displayed in Fig. 2. Majority of the produce collected from forests as NWFPs sold to village trader (41%) followed by middleman (28%) and local processor (16%). It is to clarify that middleman are the traders come from other areas to buy NWFPs in the study area.

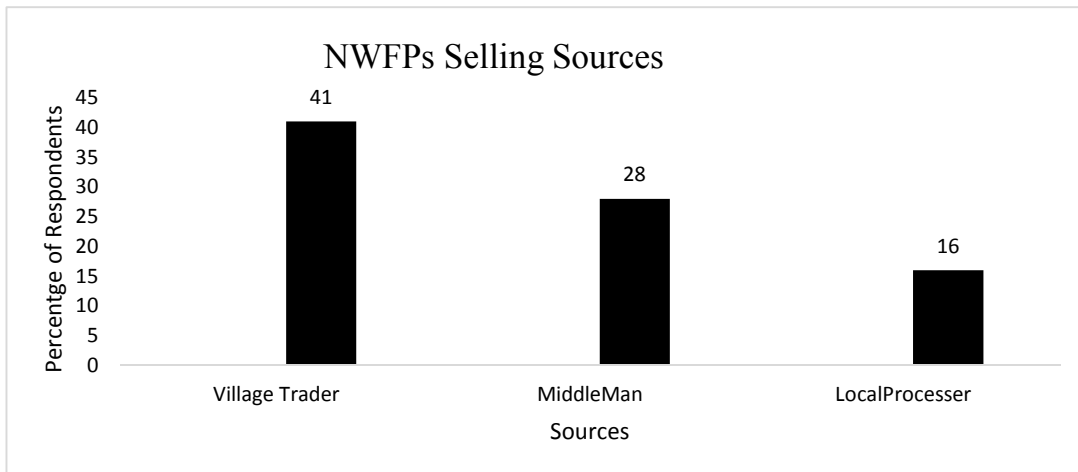
When it comes to mode of selling (Fig. 3), majority of respondents prefer direct selling (84%) to either local traders or middle man to fetch instant premium, whereas 69% of the respondents sell their products after auction usually held many times during collection season and only few of the sampled population (16%) sell their NWFPs after contractual employment, e.g. agreement beforehand, whatever is collected to be sold to contractor already decided.

**Table 1. Socio-economic status of the respondents**

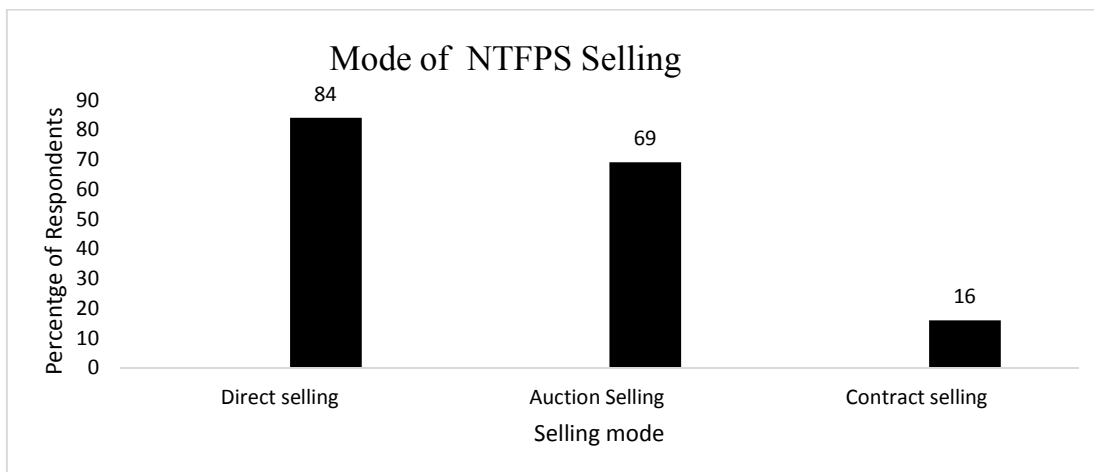
Socio-economic Variables	Category	Percentage of respondents
<b>Education</b>	Illiterate	14
	Primary	04
	Secondary	72
	Bachelors & above	10
<b>Marital Status</b>	Single	5
	Married	95
<b>Land holdings</b>	1-3 Kanals	71
	4-6 Kanals	28
	Above 10 kanals	01
<b>Occupation</b>	Daily wages	20
	Permanent	05
	Farmer	43
	Retired	28
	Business	04



**Fig. 1. Income obtained from the sale of NWFPs and its uses**



**Fig. 2. NWFPs selling sources**



**Fig. 3. Mode of selling of NWFPs**

Market information is an important ingredient to abreast seller with latest price and priority NWFPs in the market. Source of NWFPs marketing information sources are depicted in Fig. 4. Fellow collector/ trader (78%) remained high rated and most reliable source to fetch market information followed by local traders (20%) and friends and family (12%).

### 3.4 Mode of NWFPs Transportation

Results regarding mode of NWFPs transportation are displayed in Fig. 5. Most of the respondents donot use any source (72%) and prefer to collect and transport manually (on-foot). Since at times the quantity is too low to invest on any mode of transportation, however, bigger collection often

entails trucks (9%), canoe (16%) and carry pick-ups (9%).

### 4. DISCUSSION

NWFPs are important resource contributing towards livelihoods of forest dependent communities. Most of the NWFPs collected in AJK has been utilized for domestic consumption and health needs and excess amount has been sold out to various available sources for income. Similar results were observed in Shackleton *et al.* [18], that described that the people were actively saving their income for utilizing it in their daily life such as in medicinal, constructional and edible activities.

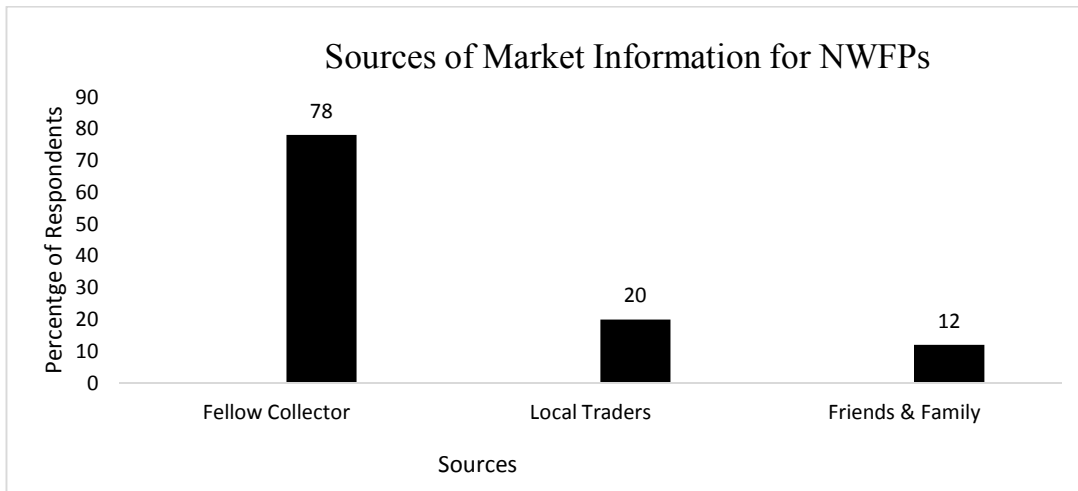


Fig. 4. Sources of market information for NWFPs selling

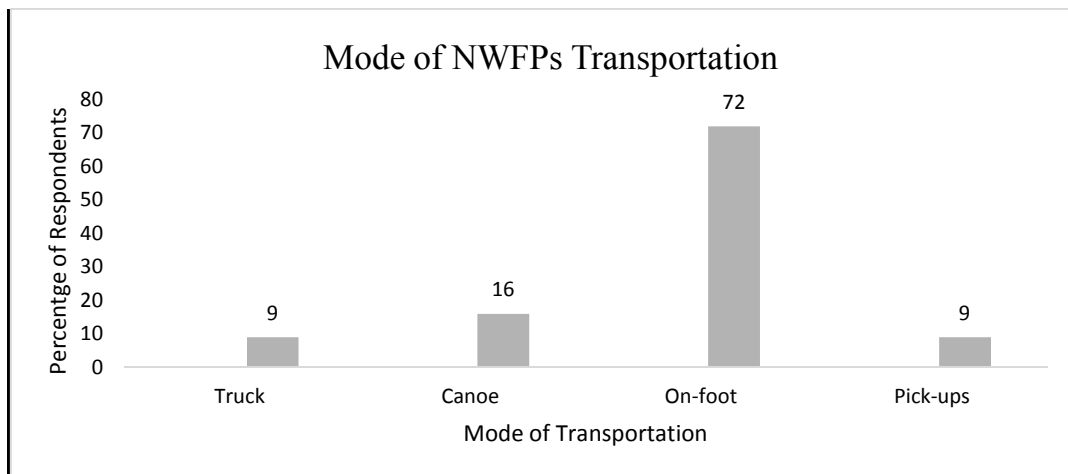


Fig. 5. Mode of NWFPs transportation

A similar study concluded that the local forest dependent communities use their NWFPs related income for building their houses, buying household items and paying their children school fees [19]. Study conducted in Ghana reveals that the people were using NWFPs in their daily life mainly for its health ailment properties. Shanley *et al.* [20] showed that respondents were utilizing their income in order to perform everyday household activities excluding paying school fees of their juveniles. Adepojuet *al.* [21] found that among all the respondents most of the people were using their incomes for local ceremonies. This helped them to attend or conduct a ceremony in good way as their budget didn't disturb.

It has been observed that most of the collected NWFPs are either sold directly of trader at spot or village local trader middleman for higher income and mostly manually on foot mode of transportation is being used to save precious money for livelihoods. Fellow collector is the prime source to collect market information in seeking NWFPs in the study area.

The results obtained by Kar and Jacobson [22] conducted in Bangladesh showed that the people were sufficiently satisfied with the profit obtained from the middle men. As these people gave them good returns and it also saved them transport cost and damage. Study carried out in Nepal showed that the people were not selling much of their produce to the middle men as they were of the opinion that middlemen were not giving them proper returns as compared to the direct sell in the market. Various surveys conducted by Zubair *et al.*, [5] suggests that people were not happy while doing business with the local NWFPs processors. Local processors gave them little profit. In order to attain maximum profit people sold NWFPs to the traders in markets.

Similarly another study showed that rural communities were also not interested in selling their NWFPs produce to road side local traders as they were also not giving appropriate prices for their products [23]. A few other studies also have shown disinterest of most NWFPs collectors to sell their produce to local markets, but showed interest in selling to the regional markets. The reason behind selling NWFPs in the national market was that there are many traders present there and rural communities sold NWFPs there in good rates [24].

It is observed from studies that most of the NWFPs collectors wanted to sell their produce directly in to the market [13]. This can be explained by the fact that by selling directly they get to know the price information and the current status of the produce in the market. It can be seen and compared from the results in west Bengal where people were selling produces on their door step which showed their poor information regarding pricing and current status of the products in the market [25].

Ingramet *al.* [26], after performing similar research, came up with similar results. They witnessed that majority of respondents went individually for selling purpose as it helped in saving transportation cost. The other reason was that people usually sent the wise and experienced person so that they could earn more. Similar research was conducted by Roy [27] in Nepal and he told that majority of the respondents there used foot for transportation to the market as it reduced the cost and also loses. Contractors and other farmers who collected NWFPs in hundreds or tons of kg used vehicles such as pickups, trucks, canoes and cars.

## 5. CONCLUSION

It is displayed in the study that though there are proper actors and complete market chain of NWFPs but there is very little value added in each of the stage. The study recommends that there is lots of scope and need for proper trainings in collection, processing, packaging, transport and marketing of NWFPs. It is recommended that the government must initiate loans and small startups for the local communities to start small business related to NWFPs. By doing so small and sustainable NWFPs collection processing and packaging units will start resulting in sustainability of the Communities NWFPs activities.

## CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Sunderland TC, Harrison ST, Ndoye O. Commercialisation of non-timber forest products in Africa: history, context and prospects. *Forest Products, Livelihoods and Conservation: Case studies of non-timber forest product systems*. 2004;2:1-24.
2. Shackleton C, Shackleton S. The importance of non-timber forest products in rural livelihood security and as safety nets: a review of evidence from South Africa. *South African Journal of Science*. 2004;100(11):658-664.
3. Shackleton RT. Loss of land and livelihoods from mining operations: A case in the Limpopo Province, South Africa. *Land Use Policy*. 2020;99:104825.
4. Schmidt L, Widianingsih NN, Kaad AP, Theilade I. The impact of deforestation on collection and domestication of *Jernang* (*Daemonorops* spp.) and other NTFPs in southern Sumatra, Indonesia. *NJAS-Wageningen Journal of Life Sciences*. 2020;92:100325.
5. Zubair M, Jamil A, Lukac M, Manzoor S. A. Non-Timber Forest Products Collection Affects Education of Children in Forest Proximate Communities in Northeastern Pakistan. *Forests*. 2019;10(9):813.
6. Pandey AK, Tripathi YC, Kumar A. Non timber forest products (NTFPs) for sustained livelihood: Challenges and strategies. *Research Journal of Forestry*. 2016;10(1):1-7.
7. Cosyns H, Degrande A, De Wulf R, Van Damme P, Tchoundjeu Z. Can commercialization of NTFPs alleviate poverty?: a case study of *Ricinodendronheudelotii* (Baill.) Pierre ex Pax. kernel marketing in Cameroon. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*. 2011;112(1):45-56.
8. Paumgarten F. The significance of the safety-net role of NTFPs in rural livelihoods, South Africa (Doctoral dissertation, Rhodes University); 2007.
9. Chamberlain JL, Cunningham AB, Nasi R. Diversity in forest management: non-timber forest products and bush meat. *Renewable Resources Journal*. 2004;22(2):11-19.
10. Belcher B, Kusters K. Non-timber forest product commercialisation: development and conservation lessons. *Forest products, livelihoods and conservation: case studies of non-timber forest product systems*. 2004;1:1-22.
11. Ambrose-Oji B. The contribution of NTFPs to the livelihoods of the forest poor: evidence from the tropical forest zone of south-west Cameroon. *International forestry review*. 2003;5(2):106-117.
12. Laird SA, Ingram V, Awono A, Ndoye O, Sunderland T, Fotabong, EL, Nkuinkeu R. Integrating customary and statutory systems: the struggle to develop a legal and policy framework for NTFPs in Cameroon. In *Wild Product Governance*. Routledge. 2010;81-98.
13. Mull LD, Kirkhorn SR. Child Labour in Ghana Cocoa Production: Focus upon Agricultural Tasks, Ergonomic Exposures, and Associated Injuries and Illnesses. *Public Health Rep*. 2017;120: 649–655.
14. Nkamleu G, Kielland A. Modeling Farmer's Decisions on Child Labour and Schooling in the Cocoa Sector. *Agric. Econ*. 2006;35:319–333.
15. Sher H, Shah AH. Traditional role of morels (*Morchella* spp.) as food, medicine and income in palas valley, Pakistan. *Biol. Med*. 2015;7:1.
16. Shinwari ZK. Medicinal plants research in Pakistan. *J. Med. Plants Res*. 2010;4:161–176.
17. Ahmad K, Pieroni A. Folk knowledge of wild food plants among the tribal communities of Thakht-e-Sulaiman. *J. Ethnobiol. Ethnomed*. 2016;12:17–36.
18. Shackleton S, Paumgarten F, Kassa H, Husselman M, Zida M. Opportunities for enhancing poor women's socioeconomic empowerment in the value chains of three African non-timber forest products (NTFPs). *International Forestry Review*. 2011;13(2):136-151.
19. Ruiz-Mallén I, Morsello C, Reyes-García V, De Faria RBM. Children's use of time and traditional ecological learning. A case study in two Amazonian indigenous societies. *Learning and individual differences*. 2013;27:213-222.
20. Shanley P, Da Serra Silva M, Melo T, Carmenta R, Nasi R. From conflict of use to multiple use: forest management innovations by small holders in Amazonian logging frontiers. *Forest Ecology and Management*. 2012;268:70-80.
21. Adepoju AA, Oladeebo JO, Ojedokun IK. Demand for Non-Timber Forest Products. *Int. J Innov.Sci. Res*. 2016;5(5):736-742.

22. Kar SP, Jacobson MG. NTFP income contribution to household economy and related socio-economic factors: Lessons from Bangladesh. *Forest Policy and Economics*. 2012;14(1):136-142.
23. Pandit A, Jain A, Singha R, Suting A., Jamir S, Pradhan NS, Choudhury D. Community perceptions and responses to climate variability: Insights from the Himalayas. In *Climate Change Adaptation Strategies—An Upstream-downstream Perspective*. Springer, Cham. 2016;179-194.
24. Adam YO, Pretzsch J, &Pettenella D. Contribution of Non-Timber Forest Products livelihood strategies to rural development in drylands of Sudan: Potentials and failures. *Agricultural Systems*. 2013;117:90-97.
25. Bauri T, Palit D, &Mukherjee A. Livelihood dependency of rural people utilizing non-timber forest product (NTFP) in a moist deciduous forest zone, West Bengal, India. *International Journal of Advanced Research*. 2015;3(4):1030-1040.
26. Ingram V, Schure J, Tieguhong JC, Ndoye O, Awono A, Iponga DM. Gender implications of forest product value chains in the Congo basin. *Forests, Trees and Livelihoods*. 2014;23(1-2):67-86.
27. Roy R. Contribution of NTFPs [Non-Timber Forest Products] to Livelihood in Upper Humla, Nepal. Thailand: Asian Institute of Technology School of Environment, Resources and Development. *The Journal of Nepal PhD Association*. 2010;3(1):121-123.

© 2021 Zubair et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*

*The peer review history for this paper can be accessed here:*  
<http://www.sdiarticle4.com/review-history/75944>