

Extended Abstract

Paper/Poster Title	Household livelihood strategies and forest dependence in Tunisia
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Abstract	<i>200 words max</i>
<p>Forest environmental resources provide substantial contributions to the wellbeing of local forest communities. However, the level of forest use and the degree of dependence on forest environmental products differ across households. The factors that could affect a household's economic reliance on a particular economic activity in general and on forest environmental resources in particular may vary depending on the resource endowment of household, the household's demographic and economic characteristics, and exogenous factors such as markets, prices and technologies. This paper identifies the factors that determine a household's livelihood strategy choice with a particular focus on forest products. For this, we use the livelihood approach as a framework of analysis. The total household income data were collected from 330 sample households in Northern Tunisia. On the basis of the share of forest income in total household income, sample households were clustered into distinct livelihood strategies. Multinomial logit (MNL) model is used to identify the main factors that affect households' livelihood strategy choice and forest dependence. The analyses indicate that differential access to, or endowment of, livelihood assets determines the choice of a household's strategy.</p>	
Keywords	Livelihood strategy, Livelihood assets, Rural households, Forest collection, Forest dependence
JEL Code	C1, D3, O1, Q2
Introduction	<i>100 – 250 words</i>
<p>In Tunisia, rural households pursue a wide range of livelihood strategies. Some households diversify their livelihood strategies, while others rely on one or few activities. Forest products are providing substantial contribution to the wellbeing of local population. However, the level of forest use and the degree of dependence on forest resources differ across households. The factors that affect a household's reliance on forest products, depending on their socio-economic characteristics. In this context, understanding-determining factors in a household's activity choice and particularly its dependence on forest products is essential for both conservation and development-targeted policies. The aim of this paper is to identify the factors that influence a household's choice of livelihood strategy, with a particular focus on the dependence on forest products.</p> <p>Our guiding premise in exploring the determinants of household livelihood strategies relies upon the 'rationality' assumption of economic agents and the fundamental proposition of the livelihood approach. The latter states that the type of activity</p>	

undertaken and the amount of income earned by a household could be defined as a function of the assets at its disposal (Barrett et al., 2005; Brown et al., 2006).

Based on this proposition and the behavioral responses of a rational economic unit, we hypothesize that the less a household has access to livelihood assets, the more it relies on forest products.

To test our hypothesis, we carried out an econometric analysis using data from a random sample of 330 households in the northern Tunisia. Based on the share of forest income in total household income, sample households are clustered into four mutually exclusive clusters. A multinomial logit (MNL) regression is implemented to examine the main factors determining the household's livelihood strategy and its reliance on forest products.

Methodology

100 – 250 words

We first grouped our sample households into different clusters based on the contribution of forest income to total income. Accordingly, households generating less than or equal to 25%, 25–50%, 50–75% and above 75% share of their total income from forest sources were classified into four groups namely, group-1 'less dependent'; group-2 'moderately dependent'; group-3 'highly dependent'; and group-4 'very highly dependent' on forest collection. Second, a multinomial logit (MNL) regression of observed clusters on socio-economic explanatory variables was conducted to highlight key predictors that statistically differentiate households adopting different strategies and relying mainly on forest collection. The dependent variable is a polychotomous choice variable with four categories (Hamilton, 2004), i.e., the four livelihood strategies (degree of forest dependence) identified above.

To achieve the aforementioned objective, an individual questionnaire was employed to collect socio-economic data from a sample of 330 households located in Siliana governorate. The study areas are selected based on field visits, expert consultations and recommendation of local official forest Organisms in Siliana. The selected zones display similar climatic conditions and agro-ecological cropping patterns to obtain relatively homogenous samples of households. in the study area. Data available include information on the main actors involved in forest products collection, sources of households' income, contribution of this activity to interviewed households' livelihoods, food security, livestock production and management, and the socio-economic characteristics of all household members.

Results

100 – 250 words

Using the share of forest environmental income in total household income, the sample households were categorized into four classes, as noted above. This helps obtain a mutually exclusive choice of livelihood strategies of households. In the first group, about 60% of the share of an average household's total income comes from crop and livestock sources together. Thus, this strategy is called as 'less dependent' on forest products. With an average forest income share of 25%, households in the second group are generating nearly a quarter of their livelihood from forest collection. Given the high contribution of non-forest sources to the total income, households in this strategy type may be considered as only 'moderately dependent' on forest income. Both the last two groups derive the lion's share of their income from forest products about 50% and 65%, respectively. Consequently, these categories could be classified as 'highly dependent' and 'very highly dependent' strategies on forest income.

The MNL model results indicate the effect of explanatory variables on the relative likelihood that the household chooses, compared with choosing the forest-dominated strategy as the base strategy. We found gender of the household head and land size

significantly and consistently explained the choice of forest activity. Women are more likely to engage in the collection of forest products compared to the rest of livelihoods clusters. In addition, our findings show that households with large farm size are less likely to engage in forest extraction as the dominant strategy. Furthermore, men and better education and access to markets and credit are vital for local population to be 'less dependent' on forest products and have the opportunity to be engaged in more remunerative activities. On the other hand, households with livestock production are more likely to adopt a forest-dominated strategy. This could be explained by the valorization of forest by-products (glands, grazing, etc..) as animal feed for the livestock activity in forests areas in Tunisia, which in turn helps households reduce the animal feeding costs (Babulo et al., 2008).

Finally, our empirical findings suggest that larger household boosts the likelihood of higher dependence on forest products. A first possible explanation for this observed pattern is that a larger family means more children that would be engaged in various family activities, mainly cattle herding and fodder and firewood collection (Taghouti et al., 2021).

Discussion and Conclusion

100 – 250 words

Empirical findings reveal two important patterns. A first pattern is influenced by a household's access to natural and physical capital such as land, education and access to credit and markets. Ellis (1998) advocated that credit market failures motivate farm households to engage in wage employment in order to generate cash income to meet their basic consumption needs. Education and gender are determinant factors in defining the livelihood strategy of local and rural populations in the study area. The second pattern concerns the influence of demographic structure of households on livelihood activity choices where women play an important role in the choice of forest activity, especially to adopt a forest-dominated strategy. Local forests population ensure their living from various income sources. Using data from 330 sampled rural households in the northern Tunisia, we attempt to examine factors that could determine the livelihood strategies. We found that differential access to market and credits, land size and gender are affecting the household's livelihood strategy choice through the MNL regression.

References

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