

Local Market Surveys: A Tool for Assessment of Natural Resource Use Patterns

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Introduction

Participants undertook a market survey exercise. Diversity in use of plant and animal resources is best reflected in the local markets. Wild food plants, medicinal plants, edible insects and animals, and many other products of biological origin have a very specific regional value in the day-to-day life of local communities. Local market surveys, their qualitative analysis and quantification of certain aspects, such as the number of vendors, the products sold by them, commodities, prices, etc, are helpful in understanding the natural resource use patterns and availability of natural resources within a particular region. Proper quantitative analysis might prove helpful in defining the sustainability of natural resources used.



*Naga Women
Vegetable Vendors
- Pei Shengji*

The main objectives of local market surveys were

- to assess the local uses of resources,
- to determine natural resource use patterns for specific commodities,
- to understand the dependence of Naga tribals on the surrounding resource areas, and
- to evaluate the sustainability of the natural resources and the factors responsible for it.

The local market surveys carried out during the course of the workshop were conducted in Kohima town. Kohima township is the capital of Nagaland and has a fair representation of all the Naga tribes. Various tribal groups use many different plants and animals in their regular diet, as well as for other day-to-day needs. Most of these commodities are available in Kohima market, which caters to the needs of almost all tribes. Kohima is located in the south-western corner of Nagaland, therefore, a supplementary survey had been conducted earlier by the authors in Mon township, located in northern Nagaland. Mon is mainly occupied by *Konyak* Nagas and a few other tribes such as the *Aao* and *Chang*. The data presented in this section are a result of two years of field work and were used to familiarise the participants with the methodology and analysis used. The comparative analysis of both surveys indicated the different natural resource use patterns based on the availability of commodities in the surrounding resource areas.

Methodology

The simple methodology used for these local market surveys mainly involved the participatory observations of the vendors and buyers along with use of semi-structured and structured interviews. Similarly, informal discussions with interpreters helped with the analysis of the data collected during the market survey. After the market surveys in Kohima and Mon, surveys of Home Gardens were also carried out to check the origin of various commodities in the market.

Observations

Commodities' diversity. A variety of plants, animals and other products of biological origin were being sold (Tables 1, 2, and 3). These products were either harvested from *jhum* fields, Home Gardens, or collected from the wild. There was a clear division of items available from the Naga hills and from the Assam plains. Most commodities were being sold raw, i.e., fruits, vegetables, meat, fish, and insects. Only a few products were sold processed, e.g., fermented bamboo shoots, powdered *Rhus* seeds and dried *Zanthoxylum* seeds.

Vendors. Permanent vendors occupy the main shelter erected for the market. Temporary vendors are allowed to occupy any space after paying a nominal tax to Kohima town council. The number of temporary vendors far exceeded the permanent vendors in Kohima market. The permanent vendors are of the *Angami* tribe, which is dominant in Kohima district. The temporary stall owners were of different tribes such as the *Lotha*, *Chakhesang* and *Sema(s)* from districts adjoining Kohima. In Mon township, the vendors were mainly *Konyak(s)* from the surrounding areas. There is no permanent shelter available; the market runs along a road with vendors on both sides. Although most of the vendors are temporary, they occupy the same place almost every day.

Buyers. In Kohima market, buyers are of different tribes such as the *Angami*, *Aao*, and *Chakhesang*; however, in Mon township, the buyers are mainly *Konyak(s)* along with some *Aao* and *Angami(s)* settled in Mon town. In Kohima market, there are many commodities collected from the wild (ferns, birds, deer meat) and harvested from Home Gardens (beans, gourds and other vegetables). Such commodities are in demand as there is little space and time available in Kohima for collection from the wild or cultivation in Home Gardens. In Mon market, demand for products from Home Gardens was less as every village house still has a properly maintained Home Garden. Here the demand was mainly for products such as *tambul* (processed *Areca* nuts), fish and other products from the Assam plains, along with items such as wild animals and birds.

Role of women in the local markets. It was observed in both the Kohima and Mon markets that 90-95 per cent of the vendors and buyers were women. Women vendors reported that men are engaged in hunting and collection of commodities from the wild. Women look after the management, cultivation, harvesting and processing of products. Sometimes men help in bringing the products from their village to the local market. They also reported that, as a result of trading, they do achieve a certain control over the household economy, but it is usually restricted to using the money gained from marketing for buying other necessary commodities such as clothes, salt, bamboo baskets, etc.

Rhythms of the market. It is very interesting to note the rhythms of the market, i.e., the changes that occur at regular intervals. During the first two hours there is a particular range of products for sale such as perishable vegetables, high-demand items such as hornet bees and their larvae, oak-leaf borer grubs, etc. Marketing activities are at a peak during these two hours. After this initial sale another range of commodities, such as dried fish, spices, rats and snails, meat, fermented bamboo shoots, etc, become available. The main reasons for such changing patterns are the limited space available for the display of items, the creation of false shortages and the availability of storage space. The distance that has to be covered for bringing the product to market and the time required for travelling are also important. Temporary vendor stalls and the vendors of Mon may not exhibit such rhythms as they offer all their items for sale at once. Such changes are essentially a feature of bigger local markets. These are daily markets (Monday to Friday).

Economic transactions. Tribals carry their goods collected or harvested early in the morning to the market place. The permanent stall holders buy commodities from villagers on a wholesale basis. Villagers who do not have enough produce for sale in bulk to retailers occupy temporary places and sell on a retail basis. Permanent vendors also supply some products from their Home Garden or *jhum* fields. Prices varied depending on the amount, quantity and demand for particular commodities such as dog's meat, birds, wild vegetables and ferns, etc. All transactions involved money, bartering was observed only rarely.

Geographical setting. As stated earlier Kohima is located in south-western Nagaland. Kohima township is surrounded by Phek, Zunebato and Wokha districts. In Kohima and Phek districts there is less *jhum* cultivation and the forest areas are better preserved. Wokha and Zunebato districts have extensive areas of *jhum* with no traditionally preserved forests or terrace cultivation. Communications in these two districts are poor, therefore, the quantity of commodities originating from *jhum* fields, Home Gardens and *jhum* fallow is limited. Forest-originated products coming from Phek district are limited due to the distance and time required for travel. The bulk of forest products is supplied from Kohima district itself (from Zulake forest area). Interestingly products such as fish, dried fish, oil and salt also have a high demand; they come from the Assam plains. Poor communication does not affect the supply of these commodities as Kohima township is well connected to Assam via Dimapur.

In Mon market, commodities are supplied from the surrounding villages such as Mon village, Longching, Tanhai, etc. Most of the villagers walk from their villages to Mon to sell their produce at the market. Most of the forest-originated goods come from northern Mon district where there are preserved forests. Products from the Assam plains, such as *tambul*, fish, etc, have a high demand although the Assam plains are rather far away from Mon town.

Need for quantification

To make a systematic appraisal of market transactions and to evaluate sustainability of the natural resource use patterns of the Nagas, quantification is important. Quantification has been attempted to compare the prices and quantities available for sale in order to determine whether this can serve as an indicator of availability of these items. Similarly, quantification is also necessary in

terms of number of vendors, their total supply and sale, and the overall value of the resources. Such quantification is important for assessing the cultural importance and local use of resources. Quantification would also help to give a rating to ecological and cultural values, to identify the need for organized marketing of certain commodities, and to design strategies for their protection and conservation in the wild. It is also necessary to quantify the size of market transactions and its relationship with the average income of Nagas in Kohima in order to understand the economics of natural resource use.

Constraints

A quantitative comparison of items is not possible as the units for sale and uses of each item were different. A comparison between the relative effort needed for harvesting and collection from the wild and its relation with prices was not possible because a method could not be worked out for calculating the labour involved in bringing produce to market. The cost of processing, if any (e.g., fermented bamboo shoots), is not calculated and added to the prices of the commodities but considered as a part of day-to-day activities. Both Kohima and Mon markets are unorganized and there is no uniformity in the price indicators, which makes quantification more difficult. To estimate the cost of cultivation and other inputs for the production of various commodities from Home Gardens is also difficult, although this is an important factor in deciding prices. All present methods for collecting data for quantification are time consuming. It is necessary to develop simple, suitable and quick methods for data collection as most local market surveys are a part of larger ethnobiological research projects.

Conclusion

Daily markets in townships such as Kohima and Mon focus on local demand. Such local market surveys could be used to identify local resource needs. Such studies would also help to assess the role of existing agroecosystems in natural resource use and management. Quantitative studies carried out during such market surveys will help to evaluate the sustainability of resource use. Such studies can also identify commercial opportunities in resource utilisation and may also be used to develop enterprise potential for economic and environmental sustainability. Figure 3 explains the factors responsible for high prices and the unorganized state of local markets in Nagaland. Local markets and the transactions within them throw light on cultural aspects of natural resource use patterns.

Suggestions

A number of commodities such as wild vegetables, fruits, insects and animals have a high demand, and there is much scope for domestication of such items. Domestication will help to reduce the pressure on existing forests. It will also ensure a continuous supply. Some vegetables and fruits have a high demand but cannot be marketed because of the non-availability of proper post-harvest technology and storage facilities. Specific research is needed to develop proper strategies for improving post-harvest technology and storage facilities. The market is unorganized. Domestication, improved post-harvest techniques, and organized markets will help to achieve proper and sustainable resource use.

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Table 1: Products of Animal Origin

No.	Animal	Unit	Price	Availability
1.	honeybees with comb	piece	Rs 25	W
2.	hornet nest	piece (30 cm x 45 cm)	Rs 150	W
3.	borer larvae - 1	tub	Rs 50	W
4.	borer larvae - 2	number	Rs 100	W
5.	borer larvae - 3	tub	Rs 50	W
6.	borer larvae - 4	tub	Rs 50	W
7.	frogs' back legs	number	Rs 250	S&B
8.	frogs' front legs	number	Rs 200	S&B
9.	frogs' smoked	number	Rs 50/6	S&B
10.	frogs' live	number	Rs 20/6	S&B
11.	snails var. 1	mug	Rs 20	W
12.	snails var. 2	mug	Rs 20	W
13.	snails var. 3	mug	Rs 20	W
14.	snails var. 4	mug	Rs 20	W
15.	snails var. 5	mug	Rs 20	W
16.	bird - sengye	number	Rs 50	W
17.	bird - ewu	number	Rs 50	W
18.	bird - green pigeon	number	Rs 50	W
19.	bird - kev	number	Rs 50	W
20.	bird - goofy	number	Rs 50	W
21.	bird -blue rock pigeon	number	Rs 50	W
22.	duck	number	Rs 50	W
23.	squirrel	number	Rs 35	W
24.	bay bamboo rat	number	Rs 30	W
25.	deer	kg	Rs 50	W
26.	dog	kg	Rs 100	H
27.	smoked fish (17 types)	kg	Rs 100	P
28.	fresh fish	number	Rs 20	P
29.	fish fry	packet	Rs 10	S&B

Table 2: Products of Plant Origin

No.	Plant	Part used	Unit	Price	Availability
1.	(Liliaceae)	leaves	bundles	Rs 10	HG
2.	<i>Allium cepa</i>	cloves & leaves	bundles	Rs 20	HG
3.	<i>Allium sativum</i>	bulbs	bundles	Rs 10	HG
4.	<i>Amorphophallus</i> sp.	corm	kg	Rs 10	S&B
5.	<i>Ananas comosus</i>	fruits	piece	Rs 2	S&B
6.	<i>Areca catechu</i> (tambul)	fruits	bundles	Rs 5	P
7.	bamboo shoots 1	shoots	number	Rs 10	W
8.	bamboo shoots 2	shoots	number	Rs 10	W
9.	beans	sprouts	bundles	Rs 10	HG
10.	black beans	Pods	bundles	Rs 10	HG
11.	<i>Brassica</i> sp.	leaves	bundles	Rs 10	HG

Table 2 Cont.....

No	Plant	Part used	Unit	Price	Availability
12.	<i>Capsicum annum</i> dried	powder	packets	Rs 25	HG
13.	<i>Capsicum annum</i> var. 1	fruits	bundles	Rs 10	HG
14.	<i>Capsicum annum</i> var. 2	fruits	bundles	Rs 10	HG
15.	<i>Capsicum annum</i> var. 3	fruits	bundles	Rs 10	HG
16.	<i>Capsicum annum</i> var. 4	fruits	bundles	Rs 10	HG
17.	<i>Capsicum annum</i> var. 5	fruits	bundles	Rs 20	S&B
18.	<i>Colocasia</i> sp.	leaves	bundles	Rs 10	S&B
19.	<i>Colocasia</i> sp. 1	stem	number	Rs 10	S&B
20.	<i>Colocasia</i> sp. 2	stem	number	Rs 10	HG
21.	<i>Coriandrum sativum</i>	leaves	bundles	Rs 10	HG
22.	<i>Cucurbita maxima</i>	fruits	number	Rs 2-5	HG
23.	<i>Cucurbita</i> sp.	leaves	bundles	Rs 5	HG
24.	<i>Cucurbita</i> sp.	fruit	size	Rs 10	HG
25.	<i>Cyphomandra betacia</i> (tree tomato)	fruits	bundles	Rs 10	HG
26.	dried mushrooms	fruit bodies	packets	Rs 10	W
27.	fermented bamboo shoots	shoots	packets	Rs 20	W
28.	fermented <i>Glycine max</i>	Pods	packets	Rs 20	S&B
29.	fern	fronds	bundles	Rs 5	W
30.	<i>Ficus carica</i>	fruits	number	Rs 10	HG
31.	<i>Garcinia</i> sp.	fruit	bundles	Rs 15	W
32.	<i>Hibiscus mutabilis</i>	leaves	bundles	Rs 10	HG
33.	<i>Litsea citrata</i>	seeds	bundles	Rs 5	W
34.	<i>Lycopersicum esculantum</i> var. 1	fruits	bundles	Rs 10	HG
35.	<i>Lycopersicum esculantum</i> var. 2	fruits	bundles	Rs 10	HG
36.	<i>Mentha viridis</i>	leaves	bundles	Rs 10	HG
37.	millet 1	seeds	packets	Rs 10	S&B
38.	millet 2	seeds	packets	Rs 10	S&B
39.	millet dehusked	seeds	packets	Rs 20	S&B
40.	<i>Momordica charantia</i>	fruits	kg	Rs 10	HG
41.	<i>Musa sapientum</i> var. 1	leaves	bundles	Rs 5	S&B
42.	<i>Musa sapientum</i> var. 1	fruits	number	Rs 10-12	S&B
43.	<i>Musa sapientum</i> var. 2	stems	number	Rs 5/3	S&B
44.	<i>Musa sapientum</i> var. 2	fruits	number	Rs 10	S&B
45.	<i>Ocimum</i> dried	leaves	bundles	Rs 5	W
46.	<i>Ocimum</i> sp.	leaves	bundles	Rs 5	W
47.	<i>Oryza sativa</i>	grain	kg	Rs 12	S&B
48.	<i>Parkia roxburghii</i>	Pods	bundle	Rs 8	W
49.	<i>Passiflora edulis</i>	fruit	number	Rs 10	HG
50.	<i>Passiflora edulis</i>	leaves	bundles	Rs 5	HG
51.	<i>Piper betel</i>	leaves	bundles	Rs 5	HG
52.	<i>Psophocarpus tetragonolobus</i>	Pods	bundles	Rs 10	HG

Table 2 Cont.....

No.	Plant	Part used	Unit	Price	Availability
53.	<i>Punica granatum</i>	fruits	number	Rs 4	HG
54.	<i>Pyrus malus</i>	fruits	kg	Rs 30	HG
55.	<i>Pyrus</i> sp.	fruit	number	Rs 10	HG
56.	red beans	Pods	bundles	Rs 10	HG
57.	<i>Secgim edule</i>	leaves	bundles	Rs 10	HG
58.	<i>Secgim edule</i>	fruits	number	Rs 10/6	HG
59.	<i>Solanum melongena</i> var. 1	fruits	bundles	Rs 5/15	S&B
60.	<i>Solanum melongena</i> var. 2	fruits	bundles	Rs 5/15	HG
61.	<i>Solanum melongena</i> var. 3	fruits	bundles	Rs 5/15	HG
62.	<i>Solanum tuberosum</i>	tubers	kg	Rs 8	HG
63.	<i>Tamarindus indica</i>	Pods	packets	Rs 10	P
64.	<i>Zanthoxylum</i> sp.	seed	bundles	Rs 10	W
65.	<i>Zea mays</i> var. 1	cobs	number	Rs 10/6-8	S&B
66.	<i>Zea mays</i> var. 2	cobs	number	Rs 10/6-8	S&B
67.	<i>Zingiber officinale</i> var. 1	rhizome & leaves	bundles	Rs 10	HG
68.	<i>Zingiber officinale</i> var. 2	rhizome and leaves	bundles	Rs 10	HG

Table 3: Miscellaneous produce

No.	Product	Unit	Price	Availability
1.	brooms	number	Rs 10	H
2.	candle stand	number	Rs 20	H
3	containers made of gourd	number and size	Rs 5-15	HG
4	honey bottle	number	Rs 250	W
5	honey with comb pieces	packet	Rs 20	W
6	ornamental plants	number	Rs 10	P
7	<i>Rhus</i> seed coat powder	glass	Rs 5	W
8	shawls	number	Rs 250	H
9	sponge	number	Rs 5/3	HG

Availability	Wild	S&B	P	F	HG
No. of products	34	22	5	3	40
Abbreviations: H = house; HG = homegarden; P = plains; W = wild; S&B = slash and burn cultivation.					