

# Globalised forest-products: commodification of the matsutake mushroom in Tibetan villages, Yunnan, Southwest China

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## SUMMARY

Recent economic policies in China demonstrate a growing recognition of the potential of the commercial utilization of Non-timber forest products to contribute to sustainable forest management and improve local livelihoods. However, little attention has been paid to understanding the socio-political contexts or the distributional effects of NTFP commercialization. This commodity chain analysis of the matsutake mushroom market in Yunnan Province, Southwest China, identifies the different actors involved in the trade and mechanisms that shape their access to, and benefits from, the market. This study finds that market regulations meant to promote exports have constrained market development and limited participation at the most lucrative node in the chain to a few powerful actors. Also, while economic activities continue to be structured by local cultural, historical and political forces, the interactions between local and global processes significantly shape distributional equity in the matsutake commodity chain.

Keywords: Commodity Chain, Political Ecology, Access to Resource, NTFP, Middlemen

## Produits forestiers globalisés: développement de la marchandise des champignons matsutake dans les villages tibétains du Yunnan, Chine du sud-ouest

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La politique économique chinoise récente démontre une reconnaissance grandissante du potentiel de l'utilisation commerciale des produits forestiers autres que le bois pour contribuer à la gestion forestière durable et améliorer le niveau de vie local. Toutefois, peu d'attention a été apportée à la compréhension des contextes socio-politiques ou aux effets de la distribution commerciale des produits forestiers autres que le bois. Cette analyse de la chaîne de la marchandise du champignon matsutake dans la province du Yunnan en Chine du sud-ouest, identifie les divers acteurs impliqués dans ce commerce, les mécanismes qui régissent leur accès au marché, et les bénéfices qu'ils en retirent. Cet étude met en lumière que les réglementations du marché qui visaient à promouvoir les exportations, ont restreint le développement du marché, et limité la participation au niveau de l'anneau le plus rentable de la chaîne à un nombre limité d'acteurs puissants. De même, alors que les activités économiques continuent d'être structurées par les forces de la culture, de la politique et de l'histoire locale, les interactions entre les processus globaux et locaux modèlent fortement l'équité de la distribution dans la chaîne de la marchandise du matsutake.

## Los productos forestales y la globalización: la comercialización del hongo matsutake en los pueblos tibetanos de Yunnan, en el suroeste de China

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Las políticas económicas recientes en China demuestran una mayor concienciación del potencial comercial de la utilización de productos forestales no madereros (PFNM) para contribuir a la gestión forestal sostenible y para mejorar el nivel de vida de las comunidades locales. Sin embargo, se ha prestado poca atención a una comprensión de los contextos sociopolíticos o de los efectos distribucionales de la comercialización de PFNM. Este análisis de la cadena de comercialización del mercado del hongo *matsutake* en la provincia de Yunnan, en el suroeste de China, identifica los diferentes grupos interesados del comercio y los mecanismos que determinan su acceso al mercado y los beneficios que pueden obtener. Este estudio descubre que los reglamentos del mercado que tenían como objetivo fomentar las exportaciones han afectado negativamente el desarrollo del mercado y han limitado la participación en la fase más lucrativa de la cadena a unos pocos grupos de poder. Mientras que las actividades económicas siguen siendo estructuradas por factores culturales, históricas y políticas de la zona local, la interacción entre los procesos locales y globales afectan de forma importante la equidad distribucional de la cadena de comercialización del matsutake.

## INTRODUCTION

Over the past ten years, forest conservation has received a great deal of attention from national and international agencies. The assumption underlying recent efforts to maintain forests and their biodiversity is that sound management can best be achieved by making forest products economically relevant to nearby residents (Sayer 2005). Compared to timber production and logging, the extraction of non-timber forest products (NTFPs) generally does not interfere with the functions, or damage the structure of, forests. Thus there is hope that development strategies based on NTFP markets could both ensure the protection of natural resources and contribute to people's economic and cultural well being (He *et al.* 2009, Nepstad and Schwartzman 1992). In China, the implementation of the Natural Forest Protection Program in 1998 (widely regarded as a logging ban) and two decades of market liberalization have also led to the gradual recognition of NTFPs as important components of local community development.

Yunnan province is of great importance in Southwest China for its relatively well-preserved, rare and valuable forest resources. After the launch of the logging ban in 1998, the collapse of timber-driven economy led to the intensive utilization of NTFP resources in this province. However, little research has been done on the impact of commercialization on local communities themselves. Nor is it clear how benefits from NTFP markets are distributed among local and non-local actors (see also Arnold and Perez 1998, Fox 1995, He 2002, 2003, Rijsoot and He 2001). The broader issues related to socio-political aspects and management practices in commercial NTFP markets therefore need to be taken into account to shed light on the socio-ecological impacts of China's transition to a market economy.

The Matsutake Mushroom (*Tricholoma matsutake*) is an NTFP that experienced a large upswing in trade in the mid-1980's. This paper uses the case of the matsutake to document the economic impact of new forest management policies in light of the broader context of China's transition to a market economy.

## COMMODIFICATION OF THE MATSUTAKE MUSHROOM IN YUNNAN

The Matsutake Mushroom, a non-cultivable wild mushroom, grows in a symbiotic relationship on the roots of various soft wood trees such as *Pinus spp.* and Angiosperms such as oaks. Historically, the matsutake has not been highly valued in Yunnan. Until recently, Matsutake were only occasionally collected and were used exclusively for domestic consumption.

In Japan, however, the matsutake has been a prized edible mushroom since ancient times. Once used to pay tribute to the royal family—leading to its nickname, “King of Mushrooms”—the matsutake is still a luxury product. Japanese production of the matsutake, however, has fallen steadily since the mid-1800s. In recent decades, Japan has

actively sought alternate suppliers of matsutake, especially since an insect infestation in Japanese pine forests in the early 1980's led to a dramatic decrease in matsutake yields (Yeh 2000). Of the 3 000 tonnes consumed per year in Japan, 1 000 are domestically produced, and the remainder is imported (He 2003). Imports of matsutake to Japan now come primarily from China, Morocco, North America, and South and North Korea.

The increased demand for matsutake mushrooms in Japan coincided with a growing emphasis on NTFPs in Chinese conservation and poverty alleviation strategies. In great part due to Japan's greater need for matsutakes, China started exporting them in 1985. China now produces about 1 200 tonnes of matsutakes for export annually, accounting for forty-eight per cent of all matsutakes traded world-wide.

Growing well at altitudes below 3 200 meters, matsutakes are found in most of the Tibetan area of Yunnan Province. In 1986, Yunnan saw a veritable explosion in the trade for matsutakes. Refrigerated trucks and airplanes annually transport hundreds of tonnes of mushrooms from Yunnan to Japan each year. In the last nine years, more than 9 000 tonnes of matsutakes have been exported to Japan from Yunnan, generating nearly 350 million USD in foreign exchange and accounting for sixty-nine per cent of all matsutake exported by China. Table 1 details export quantities from Yunnan since 1997 (see table 1).

The commercialization of matsutake in China, while partly made possible by the Japanese demand for new suppliers, has also been shaped by policy reforms in China that have given villagers increased economic opportunities to engage in commercial harvesting. In major Matsutake productive region of Yunnan Province, eighty percent of the population is now involved in the matsutake business in one way or another (He 2003). At the community level, matsutake collection accounts for fifty to eighty per cent of total cash income: it is usual for ordinary households to make 5 000 USD to 7 000 USD during the matsutake season.

Clearly, the commercialization of matsutakes has brought economic changes to Yunnan. But, it has also altered social relations and transformed the local institutional landscape, as traders and marketers, local communities, lawmakers, and a range of authorities have become involved in shaping this new natural resource market and in determining access to it. Through a commodity chain analysis (CCA), this paper identifies the actors and institutions involved in commercial matsutake mushroom marketing and establishes the distribution of benefits to different market actors in this context. The case study demonstrates that the interaction of local and extra-local cultural, historical, political *and* international factors in shaping participants' access to the market and to benefits derived from it.

## COMMODITY CHAIN APPROACH

The Commodity Chain Approach (CCA) has roots in work of world systems theorists such as Hopkins and Wallerstein (1986) and Gereffi and Korzeniewicz (1994). By tracking

TABLE 1 *Exported matsutake mushroom from Yunnan Province in 1997-2006*

Year	Exported Amount (KG)	Income (USD Million)
1997	774,000	37.31
1998	950,000	28.98
1999	887,000	32.76
2000	774,600	31.00
2001	1,250,000	38.75
2002	753,450	29.30
2003	1,070,630	43.69
2004	1,244,000	53.61
2005	1,367,600	52.31
2006	1,070,000	52.38
Total	10,141,280	400.09

Source: Department of Commerce of Yunnan Province

the flow of commodities and documenting different actors' involvement in their marketing, the approach has been used to identify potential opportunities and imbalances in contemporary capitalism. This macro perspectives has been useful and has recently been complemented by analysis taking place of specific sectors within economic system (Ribot 1998), and perspectives that take into account the role of local cultural, political and economic dynamics (Achrol *et al.* 1983, Clammer 1993, Dilley 1992).

In Gereffi and Korzeniewicz, commodity chains are composed of networks of actors "clustered around one commodity....[and are] situationally specific, socially constructed, and locally integrated, underscoring the social embeddedness of economic organisation" (1994: 2). Commodity chains are not only regulated by economic rationality, but are both constrained and enabled by a vast array of social relations and culture (Belcher 1998, He 2002, Le Billon 2000, Ribot 1998). As a tool, CCA enables researchers to understand how, and by whom, a commodity is moved from the site of production to final consumption. By exploring the organisation of commodity chains and the behaviour of local and regional market participants (Clammer 1993), CCA also enables understanding of specifically who benefits from particular markets and how, and how patterns of benefit distribution might be changed to improve equity for the poor (Ribot 1998). In sum, commodity chains are formed by not only economic rationality and by social and cultural consciousness, but also by government policy and international regulations (He 2002).

This paper uses a commodity chain approach to understand how social and cultural rules and politics, as well as ideas about moral economy, influence different actors' calculations and preferences at any given node in the movement of matsutakes from collection to export. It tracks the articulation of multi-leveled and overlapping regulations, forces, and institutions that continuously affect social actors' access to either resources or markets. This paper considers formal rules (such as the official allocation of property rights) and informal factors (such as cultural norms, social identity and capital of actors and institutions

and so forth). Regulations regarding quotas and the granting of licenses and permits also heavily affect the organisation of the matsutake commodity chain. Relationships among institutions at different scales are of central importance, influencing which actors gain access to market opportunities, labor, and knowledge, thus enabling or restricting control and maintenance of access (Ribot 1998, Ribot and Peluso 2003).

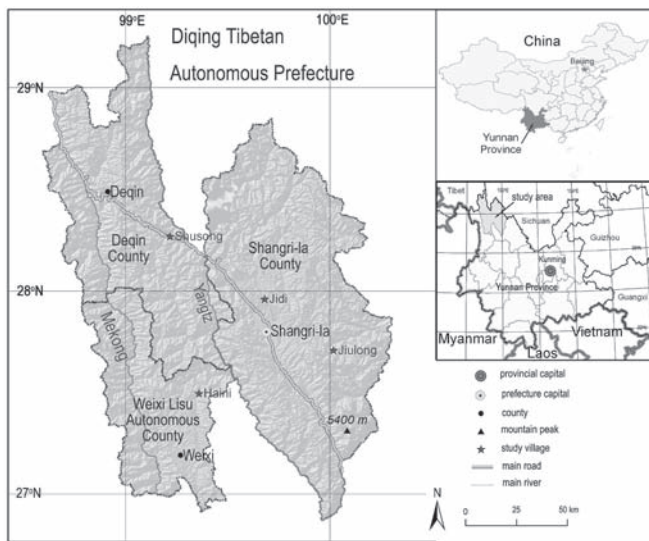
## RESEARCH METHODS AND STUDY SITES

This study adopted a descriptive qualitative case study approach to obtain an in-depth picture of Matsutake commodity chain and its context, and quantitative methods was also applied to analyze the quantity and price of the mushroom related to the differentiated social actors' benefits gained along with Matsutake commodity chain. The qualitative strategy is aimed to generate insight into the concrete processes and practice through which Matsutake Commodity Chain are organized. Special emphasis is given to the analysis of social actors' economic behaviors which are regulated by economic, cultural and policy factors, as those are difficult to be quantify. That is the whole array of the underlying institutions and mechanisms which is shaping the commodity chain and enabling/constraining social actors' access to the chain, and eventually access to benefit. The quantitative strategy, on the other hand, serves to support the insights from qualitative analysis by analyzing the distribution of benefit from Matsutake trade among the actors. Both qualitative and quantitative data analysis strategy is used in the aims to strengthen research findings.

Data was collected from May to December 2002 in Diqing Tibetan Autonomous Prefecture, the main Matsutake productive region, is located in the northwest Yunnan province. This research focused in four different villages including Jidi (Tibetan), Jiulong (Tibetan and Yi), Shusong (Tibetan) and Haini (Tibetan and Naxi), which covered both ethnic and geographic diversity in this region. The selection of village is based on previous local relationship and

recommendation from other researchers. The study observed mushrooms that were flowed through multiple scales to the point of export in Kunming Municipality (see figure 1), while Snowball Sampling methods for commodity chain analysis suggested by Bryman (2001) was applied for the survey of the actors involved in the trading. Semi-structure survey in field work consisted of in-dept interview of mushroom harvester (n=80), village-based traders (n=40), town-based middleman (n=30), large-scale traders and exporters (n=15), as well as government officials at different institutional levels (n=17). The research focused on the matsutake trade in China only; actors and processes characterizing the Japanese market were beyond the scope of this study.

FIGURE 1 Location of Diqing Tibetan Autonomous Prefecture

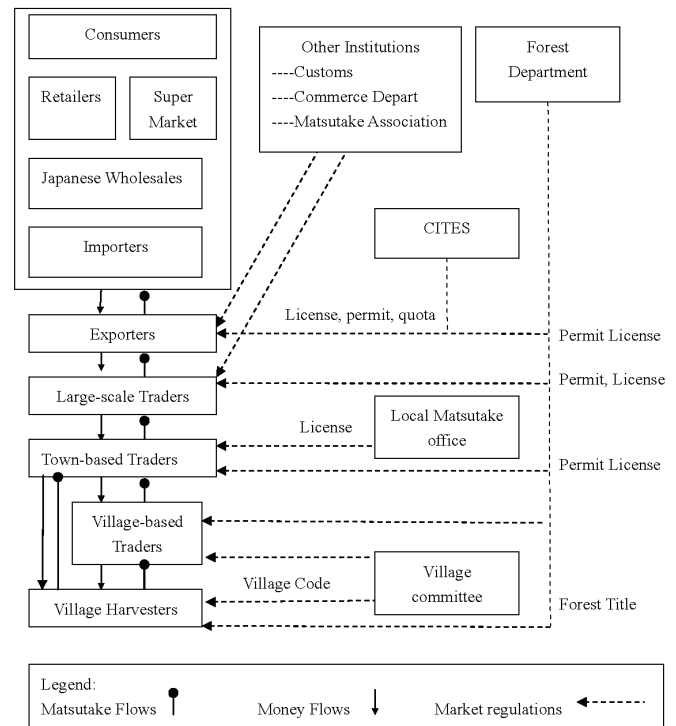


OVERVIEW OF MATSUTAKE COMMODITY CHAIN: 48-HOURS TRADE

Matsutakes are valued for their fragrant odor when fresh and they are shipped from remote mountainous areas of Yunnan to Japanese markets in as few as forty to sixty hours (mostly within forty-eight hours). The much prized fresh fragrance of the mushroom means that matsutakes lose value over time and therefore must be traded rapidly. Despite the rapid movement of the product, the mushrooms may change hands six or seven times before reaching Japanese buyers.

Nodes in the matsutake commodity chain consist of harvesting, selling, packing, grading, transporting, customs declaration, and inspection as well as a series of procedures occurring after receipt of the product in Japan (see figure 2). Along the chain, and within just forty-eight hours, the price increases from 25 to 63 USD/kg in local markets, to 200 to 400 USD/kg in the Japanese import market. In addition, prices can fluctuate widely in response to rapid shifts in supply and demand at both regional and global levels. It has been observed to change from 30 USD/kg to 3 USD/kg within one day. Under these conditions, merchants are eager to sell the products as soon as possible in order to ensure

FIGURE 2 Regulatory relation of actors in matsutake chain



its good quality on the one hand, and to reduce the risk of a price decrease on the other.

In Diqing prefecture, the matsutake season starts in July and ends in October. During the mushroom season local Tibetan, Lisu, Yi and other ethnic minorities normally enter the forest at the six am to pick mushrooms and bring their harvest to the market by four pm. Markets are located either in villages where Matsutake production is high, or at the main town of Shangri-la county. There, both village and town-based traders purchase directly from the village harvesters. Markets at the village level vary from only two or three traders to as many as thirty to forty. In the main market of Shangri-la, there are typically 150 businessmen acting as middlemen. The market at the village level ends between six and seven pm in the evening. At that time, the traders hire a car to send the matsutake to the main Shangri-la market where they sell their collection to large-scale middlemen in the town. In addition, there is often a number of back and forth exchanges among small and large-scale middlemen, which continues until late at night.

The mushrooms are packed in cold storage, and brought to Kunming airport, a 12-hour drive from Diqing prefecture. There they are inspected, and forms are submitted for customs declaration and export permits. Then they are flown to Japan via Shanghai, arriving in Japan by about three pm in the afternoon barely thirty hours after harvest. In Japan, importers sell the mushroom to wholesalers. Finally, Japanese consumers purchase the Matsutakes from retailers or supermarkets, who buy the products from wholesales.

## ACTORS, ACCESS, AND PROFIT IN THE MATSUTAKE COMMODITY CHAIN

The matsutake commodity chain includes actors and institutions interacting at multiple levels to guide the product's flow. Actors directly involved in the matsutake commodity chain (actually handling the product) consist of harvesters/collectors, local traders, large-scale traders (wholesalers) who buy from local traders, and exporters. Actors whose involvement in the market is indirect include government officials in the Forest Department and local administration who formulate or implement policies governing the trade. Actors occupying different positions interact and negotiate throughout the process of acquiring and marketing matsutakes. Figure 2 illustrates the interactions between various actors — price-based, legal, and non-priced based mechanisms— as well as flows of mushrooms and revenues.

### Mushroom harvesters

Mushroom harvesters are the first link in the chain. As mentioned above, eighty per cent of villagers in Shangri-la county are involved in matsutake collection during the season. Between seventy and eighty per cent of household cash income is raised through mushroom collection. Other income can be generated from yak- and sheep-herding, mineral and timber transport, the collection of herbal medicines, and in some places, the sale of fuel-wood or butter. Most households also cultivate agricultural products such as barley, potatoes, buckwheat, and oats, primarily for domestic use.

While it appears that more women and children than men engage in matsutake collection, harvesting is by no means exclusively a female task. During the peak season (August to September), it is common for all villagers to participate in the collection of matsutakes.

For most communities, there are generally no *de jure* restrictions on members' access to matsutakes. Villagers harvest the mushroom within their collective forest that village collective owned with the forest title issued by Forest Department and, in general, there is little question that community members have a right to harvest matsutakes (He 2006).

Within each community, harvest activities are managed by the *xiang gui ming yue*, the 'traditional' village 'code of conduct' or 'village rules' (Yeh 2000). The *xiang gui ming yue* constitute what Ribot has called "extra-legal," or *de facto* mechanisms that are based on social identify and relations (1998). Villagers use the village 'code of conduct' to determine who has socially sanctioned rights to matsutakes and who does not, or who should pay a fee to engage in their extraction. The village 'rules' are thus relied upon by villagers themselves to manage the extraction of matsutake mushrooms and to ensure sustainable mushroom harvests. In some areas, for example, those who have married outside the village pay an extra fee for access to her/his original village's collective forest. Social ties and identities can therefore restrict or raise the costs of access

These mechanisms of customary access to the matsutake resource don't sit well with the Forest Department, which is pushing for the formulation and codification of village-level regulations and sustainable forest management practices. Lack of capacity, however, makes this difficult to implement from above. In practice, the village committee still has more power to make its own regulations, and the *xiang gui ming yue*, differing from community to community, are the primary source of guidance.

In general, matsutake-producing forests are open to all community members who can spare the labor time for collection. Nonetheless, access and ability to profit from the market do vary. Some villagers can earn about 30 000 CNY in one year, while others' earnings remain between 1 000 to 2 000 CNY. Some villagers interviewed attributed this difference in profits to luck rather than skill. But those who have been collecting for many years have an obvious advantage. In each village, there are so-called 'matsutake-collecting-experts' who know the terrain well, and therefore know which areas are best for harvesting. While expert collectors did not typically exclude others from the harvest, first-time or less experienced collectors could spend more time hunting for mushrooms and therefore end up with few or even no gains. Experienced collectors, through repeated use of certain areas, also established *de facto* 'rights' to them; although no firm rule prevented others from collecting there, the informal boundaries established through repeated use were recognized by villagers.

While customary guidelines and differences in experience among individual collectors shape access and profit in each village, variation in profits across communities is also determined by ecological conditions. Communities that have forest cover suitable for matsutake growth can earn more than those communities with smaller forests or whose forests have less favorable growing conditions for matsutake mushrooms. Forest management practices, which have an impact on matsutake yields, also varied from village to village: after several years of matsutake collection, the villages with good forest management might harvest more mushrooms, and subsequently earn more than those villages with poor management.

### Village-based traders: "The middlemen"

The next set of actors involved in the commodity chain are the village-based traders or middlemen (*xiao laoban*) who buy mushrooms from village harvesters. Village-based traders buy the matsutakes from village harvesters directly in the villages or along nearby roads. In some communities, there are formal markets where local traders rent stalls and collectors bring their harvest daily. Unlike the town-based traders (see below), the village-based middlemen require very small sums of startup capital to enter the matsutake business.

In most cases, village traders have intimate social connections with the villagers involved in harvesting, grounded in shared ethnicity; they may reside in or be from the same community as the villagers who bring mushrooms

for sale. As a result, even though quality and subsequent prices are determined later in the process, the traders are apt to do business in favor of the villagers. Favorable terms might include slightly higher prices for a given grade of mushroom or a looser adherence to quality standards. Such behaviour reinforces our understanding of the socio-cultural bases of the interaction between traders and villagers. At this level, moral economy, rather than pure economic rationality, is put into play (He 2002).

There is also a lot of buying and selling at village level among the traders. Village traders may pool their resources to transport the mushrooms to Shangri-la, or sell the matsutakes they have acquired to another local trader who will take them to the central market. While up to twenty matsutake traders may operate in the village market, only eight or ten rented vehicles may travel out of the village to Shangri-la. Village traders who do go to Shangri-la's market will typically have developed a long-term relationship built on trust with a particular town-based trader, and may sell repeatedly to that trader alone. Village-based traders have long-standing cross-cutting ties with different town traders and sell matsutakes to different traders on the way to Shangri-la.

For village-based traders, maintaining social and business ties to higher level actors and with village harvesters can be more important than access to capital. Higher level actors do not typically advance funds to the village-based buyers, but they can provide village-based traders with timely information that is often key to securing benefits from the trade. For example, the information village traders get each morning about that day's prices guides their business for the day. If the price should fall in the afternoon, town-based buyers may still buy the mushrooms at the price they conveyed to the village-based buyers earlier that day; they thus decrease the village-based buyer's potential losses.

Social identity also plays a role in access to this node of the market. Traders of various ethnicities (including Han, Yi, Naxi, and others) do participate in the trade of matsutakes; but because the villages located in the most productive matsutake forest areas are generally Tibetan, so are most village-based traders. Village residents may generally participate in mushroom-buying without hindrance, provided they have the capital to do so. Outside/non-local buyers wishing to participate in the market, however, may only do so with the assistance of a local villager. (He 2002). In some communities, at the peak of the mushroom season, more than fifty (both local and non-local) traders are engaged in village markets. At this node of the commodity chain, the gender balance shifts, with more men involved than women.

So, at the village level, there are also non-local traders who are able to enter the village market through two ways. First, outsiders may hire a villager as a 'market guide.' Since most outsiders do not speak Tibetan, the local market guide acts as an interpreter during negotiations over price and quality. When a villager is acting only as a 'guide,' the decision-making power with regard to price, quality, and ultimate purchase rests with the outsiders: the villager only provides translation and other required assistance. Another second way for outsiders to enter the market is to hire

a villager as a 'market agent' to buy the product on their behalf. In this case, while market agents are accountable to outside employers, they nonetheless have greater control over the bargaining process with local harvesters than simple 'guides' do. Although the outsiders bring the necessary capital, they typically follow the agents' lead.

In local markets that are dominated by 'locals' (in the prefecture these are often Tibetans, but in a few markets other ethnic groups are the 'locals'), those designated as outsiders have trouble gaining access. In some instances local traders have grouped together, while to employing various strategies to impede non-locals' access to the market. They may, for example, slow report to the authorities that outsiders are trading in immature or overripe mushrooms. The government officials from Local Matsutake office responsible for quality control will respond by checking outsiders' products more thoroughly. Since the inspection process adds to the transit time, the non-local's matsutakes will consequently lose value. In other cases, villages charge outsiders an extra fee for road use, which local people are not charged. In some cases, local traders have also used violence to maintain their access to market and keep non-locals out.

As a result of demographic patterns, cultural rules favoring local residents in the gathering and sale of NTFPs, as well as intentional practices aimed at barring outsiders from participation, most actors in village-level matsutake markets are local people. The *de facto* mechanisms regulating access to the market thus also serve to *localize* participation and 'ownership' of NTFPs, stimulating and strengthening local identities. This phenomenon directly links the sharpening of local and ethnic identities to the emergence of global markets for local forest products (See Section 7 and also He 2002).

### Town-based traders

Villagers who reside close to the town generally take their products to the main market in Shangri-la and sell their mushrooms directly to town-based traders, who operate from rented stalls in the market. With approximately 150 middlemen buying matsutakes at the main market, the village collectors are able to visit different stalls, seeking a satisfactory price. As a result, prices are negotiable, and villagers at this point have some ability to influence their own profits.

Most town-based traders come from outside Shangri-la, primarily from Chuxiong prefecture and they only stay in Shangri-la during mushroom season. Therefore, more Han Chinese than Tibetans participate at this stage of the market. In general, town-based middlemen, particularly those from Chuxiong, are employed by or have strong socio-economic ties with larger-scale traders or export companies. After buying matsutakes in Shangri-la, they send them on to higher-level actors. During the peak season, due to the large quantity of good-quality mushrooms, air transport is most common; at other times, some town-based buyers may transport mushrooms by road. Good-quality matsutake that meet Japanese standards are sent on for export; 'out-grade' mushrooms that cannot be sold as 'fresh' are sold to

processors or to local restaurants.

In terms of market access, traders operating in town require a substantial amount of startup capital (4 000-5 000 USD or more to ensure they can collect enough quantities as their customers required). Groups of friends or relatives often pool their resources to go into the business together. In addition to the need for significant capital, other *de jure* and *de facto* mechanisms exist that support or restrict access.

The *de jure* mechanisms that influence access include obtaining commercial permits and paying the various taxes imposed at different steps in the trade. In order to do business in the main Shangri-la market, town-based traders must register with department of commerce and acquire a temporal commercial license which is renewable every year based on their business performance. Once registered, they are required to abide by quality control standards: immature and over-ripe matsutakes must not be sold. Additionally, since 2002, in order to purchase matsutake, town-based traders must register with the Forest Department. This registration ensures their rights to collection matsutake, while the registration with department of commerce aimed for taxation. Transporting the mushrooms from Shangri-la to Kunming is also subject to regulation and to three different taxes: the agriculture and special forest product tax, the commerce and trade management fee and the plant inspection fee. Receipts for the payment of each tax must be presented to officials both at roadblocks and at the airport before the matsutakes are sent on to Kunming.

The *de facto* mechanisms of access consist primarily of their socio-economic ties with higher-level actors. These relations ensure that their product can be sold. The relationship between middlemen and higher levels actors resembles “patron-client relations”. It common the “patron” (high-level actor) provides capitals as loans to the “client” (middlemen) for the mushroom collection. While the price is change over the time in a day, the patron in most case take the cost of price decrease, on the other hand, they give the profit margin to client while the price is increase. In turn, the client is continuously supply the production for their own patron. In comparison, information and knowledge in products grading and the market is not the factors support their access to market.

Income distribution among middlemen varies widely. Town-based traders, whose access to capital enables them to purchase matsutakes in large quantities, typically earn more than the village-based traders. However, they are also subject to greater market risk. Another factor that shapes profits for town-based traders is their individual ability to respond to market changes and to make skilled judgments in volatile conditions. One factor that affects both village-level and town-based traders, however, is the quality of their relationships with higher-level actors.

### **Large-scale traders and export companies**

The next set of actors in the matsutake commodity chain are large-scale traders and the enterprises, both state-owned and private, whose representatives and employees purchase

matsutakes and transport them to Japan. Export companies typically acquire matsutakes from large-scale traders, who may get the mushrooms from either town-based or larger-scale traders with agents active in the villages. In past five years, the number of large-scale traders operating in Kunming increased from approximately twenty to thirty to between fifty and sixty.

Until 1992, two import-export companies monopolized the trade in matsutakes. After the 1993 reform of the international trade system to enable decentralization in export sector, additional companies were permitted to export matsutakes. Export companies are required to have both export permits and their own regular customers in Japan. By 2002, more than thirty-four companies had received export permits.

Permission to export matsutakes today is based on an annual evaluation of business achievement that rests principally on the quantity of mushrooms an exporter has sold. Export quotas are managed by the Endangered Species Import and Export Management Office (CITES) in Kunming, which also issues export matsutakes permits and licenses. This office, together with the Yunnan Department of Commerce, has developed rules for market management and established the Yunnan Matsutake Association (YMA) with the aim of promoting ‘regulated market competition.’ Exporters must belong to the YMA in order to participate in the market. All certified companies exporting less than 300 kilograms of matsutakes each year are denied a permit for the next year’s season. While over thirty companies were approved for business in 2002, currently only eleven certified exporters of matsutake are in operation.

The quota system has eliminated small-scale export companies’ access to the market. It has also excluded many large-scale traders from participation in the actual export of matsutakes: the majority of large-scale traders, typically denied both export permits and licenses, are forced to sell their mushrooms to the export companies rather than organise exports themselves.

While registered export companies currently monopolise the export process, some large-scale traders with contacts among Japanese importers or their representatives in China do participate in the export market, selling their matsutakes to Japanese buyers with the help of a licensed export company. In these cases, official documents and declarations are submitted by the company, to which the trader pays an “export agent fee.” The fee charged by the company is proportional to the quantity and value of that traders’ mushrooms.

The fact that the government offers subsidies and tax breaks to export companies is important to consider. Mushrooms collected by independent traders who sell their mushrooms for export through a certified company are counted in that company’s export total. Benefits from subsidies and tax breaks accrue only to the export companies; large-scale traders who pay “export agent fees” to companies are not in a legal position to claim these advantages.

In sum, at this level—the most lucrative in the matsutake commodity chain—market access is primarily structured

by *de jure* factors; export licenses and permits, customs declarations, and the quota system. These factors enhance access for some large-scale traders and export enterprises, but work against independent traders without permits or contacts in the Japanese market.

#### PROFIT DIFFERENTIATION AND DISTRIBUTION

Because matsutakes lose value rapidly with time, and because prices fluctuate unpredictably, no actor can afford to hold on to the matsutakes until the price is right. Thus, the matsutake trade can be risky for all actors. The risk faced by individual actors is proportional to the volume in which they trade and the benefits that they can potentially capture. In this sense, it is difficult to evaluate true winners and losers along the chain. Nevertheless, some patterns emerge, with clear differentiation of profits at different stages of the commodity chain. The price structure present in table 2 shows the vertical differentiation of profits. (see Table 2).

What does emerge clearly from the data is that exporters holding export rights and licenses monopolize the market at its most lucrative node and profit the most from it, although most of them do not directly engage in the matsutake flow. The limited and selective granting of export permits and licenses enables companies to do the vast majority of the exporting, and also to gain profits from the traders who, unable to secure licenses themselves, employ the companies

as exporting agents for the mushrooms they have acquired independently. Without bearing any risk due to changes in price or devaluation in mushroom quality, the export companies also benefit from government subsidies and tax refunds. Thus the relatively low investments required of large companies to participate in exporting, and the generally low risks they face in price fluctuant and qualities degradation, lead to an unreasonably high proportion of profits staying in the hands of a few large-scale, government-licensed actors.

On the other hand, middlemen make reasonable profit because they do invest a number of resource and capital as well as bear the biggest risk of price change. Town-based middlemen, however, play a crucial role in enabling village-level traders and, importantly, village harvesters, to generate income, often substantial, from the matsutake trade. Village collectors ultimately continue to control the resource itself, and do reap arguably reasonable profits.

Both *de jure* and *de facto* institutions shaped the organisation of the matsutake commodity chain. Table 3 illustrates access and access mechanisms of different actors who are directly involved in the trade. Clearly, both price-based and non-price-based mechanisms, as well as multiple economic, cultural, and policy-related factors, enable market actors to maintain their access to the resource and the market.

TABLE 2 *Price structure of mastutake mushroom from Diqing Prefecture in 2002*

Price	price/expense/ Margins (CNY/kg)
Harvesters price to village/towns-based traders	140
Village/towns-based Traders price to Large-scale traders	180
Large-scale trader price to exporters	230
Exporters price to Japanese Customers	447
Expenses	
Transportation	
-Local transportation(paid by local trader)	5
-Transportation to Kunming (paid by large-scale traders)	10
-Kunming to Japan via Shanghai(paid by exporters)	60
Packing	
-Local packing(paid by large-scale traders)	2
-Packing for exporting(paid by exporters)	8
Storage cost(paid by exporters)	4
Agency fee(paid by large-scale traders to exporters)	5
Tax at prefectural level (paid by twos-based/large scale traders)	16.42
Customs declaration/inspection (paid by exporters)	9.5
Margins	
Harvesters	140
Village/town-based traders	35
Large-scale traders	16.58
Exporters	140.5

## INSTITUTIONS ALONG THE CHAIN

The sections above have outlined the activities and profits of those actors most directly involved in the matsutake market—those who handle mushrooms themselves either by collecting, selling, transporting, or exporting them. This section briefly reviews the institutions and environmental agencies that regulate the matsutake trade through the development and application of regulations, and summarizes the ways that government and economic agencies influence and limit the activities of different actors in the chain (see table 3).

At the prefecture level, the Matsutake Management Office, which founded in 1995, determines how and where traders can sell their mushrooms. Prior to 1995, the traders could do business anywhere in the town. Then, the office built a central market area with more than 150 wooden stalls for the middlemen to rent. All business transactions must now take place within this area. This facilitates both taxation of the traders on and overall regulation and monitoring of trade. The office also set up several roadblocks and an office at the airport the check whether the traders have completely paid the required taxes.

At the provincial level, the Endangered Species Import and Export Management Office (CITES) in Kunming,

the Yunnan Department of Commerce, and the Yunnan Matsutake Association collaborate to set and manage quotas of matsutakes for export, as well as issue export permits and licenses, and to promote particular market practices. Today, membership in the Yunnan Matsutake Association is key to participation in the business at the level of export.

Although village-level collection is officially regulated by the Forest Department, which is in some sense accountable to the CITES office in Kunming, village harvesters rely primarily on customary rules and their own sense of sustainable resource management. They manage access to forest products and the local market in order to maintain their benefit from mushroom picking. Traders struggle with different regulatory market mechanisms in securing access to the market and ensuring profits from the trade. Traders must register with the Forest Department and, if they are selling in the central market, must pay rental fees for stalls and face inspections as they transport the mushrooms to sell. Export companies holding permits and licenses dominate the export business and reap the greatest profits. Even though the government is not directly involved in the marketing of mushrooms, its regulation of market access has had a profound impact on the flows and distribution of benefits. Taxes and fees applied at various nodes in the chain also enable the government itself to benefit significantly from

TABLE 3 *Mapping access along the matsutake commodity chain*

Actors	Access	Access Mechanism
Village Harvesters	• control access to resource	<ul style="list-style-type: none"> <li>• members of village committee</li> <li>• identity</li> <li>• forestry usufruct</li> <li>• village “codes of conduct”</li> </ul>
Village-based Traders	• control of access to villagers and market	<ul style="list-style-type: none"> <li>• identity</li> <li>• small capital</li> <li>• social ties with villagers</li> <li>• patron-client relationship with town-based traders</li> <li>• holding collection permit and license</li> <li>• social/economic ties with town-based traders</li> </ul>
Town-base Traders	<ul style="list-style-type: none"> <li>• control of access to market</li> <li>• control of access to Information</li> </ul>	<ul style="list-style-type: none"> <li>• capital</li> <li>• ability to organise products</li> <li>• storage capacity</li> <li>• information</li> <li>• patron-client relationship to large middlemen</li> <li>• social ties with village-base middlemen</li> <li>• social/economic ties with Kunming wholesales</li> <li>• holding collection permit and license</li> <li>• social ties with officials</li> </ul>
Large-scale Traders	<ul style="list-style-type: none"> <li>• control of access to information</li> <li>• control of access to market</li> </ul>	<ul style="list-style-type: none"> <li>• capital</li> <li>• economic ties with exporters</li> <li>• information</li> <li>• holding collection permit and license</li> </ul>
Exporters	• control of access to export market	<ul style="list-style-type: none"> <li>• export license and permit</li> <li>• holding collection permit and license</li> <li>• quota</li> <li>• social ties with officials</li> <li>• membership in Yunnan Matsutake Association</li> </ul>

this business, without, however, sufficient input into market management or active research into ways of ensuring the sustainability of this important NTFPs.

## CONCLUSIONS

The social, institutional, legal, and international factors and practices that structure the commercial matsutake trade in Yunnan Province constitute a complex network of influences and relationships that operate at a range of scales. At the lower local level of the matsutake commodity chain, cultural factors intimately guide and shape village collectors' and small buyers' access both to the resource and the market. Customary village codes and social identity as well as historical ties are the predominant factors influencing both the matsutake trade and the distribution of profits from it. Further along the supply chain, however, expressly political and economic factors figure more strongly in determining access to the market. At the international level, legal frameworks, government institutions and powerful actors shape the trade, enabling access for larger actors with capital and connections, and limiting access for independent actors with less support and means.

Unlike a conventional 'value chain analysis,' which would simply map out the nodes in a commodity flow and document profit distribution, the commodity chain approach emphasizes attention to access and to the quality of relationships between actors and institutions and their socio-political contexts. Commodity chain analysis enables an understanding of markets that can lead to policy recommendations aimed at improving distributional equity; in the case of the matsutake commodity chain, it also yields useful insights into and/or correctives to current scholarly assumptions about the quality of relationships between actors as well as the anticipated effects of the commodification of NTFPs.

### **Redefining middlemen, and globalisation as a localising Force**

This study of the matsutake commodity chain yields two related insights. The first has to do with the potential role of mid-level traders, or middlemen, in promoting distributional equity. The second confirms that global markets can contribute to increased 'localism' in areas where resources are extracted.

First, mid-level market actors, often presented in the literature as parasitic "middlemen" whose role is to exploit less powerful actors (De deer and Mcdermott 1996, Kusters and Belcher 2004, Rijsoot and He 2001), do not necessarily conform to theoretical assumptions. In the case of the matsutake market, local and town-based traders, or middlemen, do not primarily, either structurally or intentionally, benefit at expense of local farmers; in fact, they often understand their interests to be in line with those of village collectors. The small traders observed in this study play a crucial role in securing benefits for the market's

lower-level actors: the villagers who harvest mushrooms in their own communities and those who bring them to buyers for eventual sale to larger players. 'Middlemen' link physically and socially disconnected sets of actors in the chain; they also help to distribute risk among various groups. The elimination of middlemen as the best way for improving the market sharing and fair destitution should be critically questioned (Neumann and Hirsch 2000). On the contrary, at higher levels of the chain, it is the legislation regulating exports that constrains, rather than promotes, equitable distribution of benefits; export regulations fundamentally work against market development and fair benefit distribution by essentially locking out new entrants to the trade. A more critical and differential understanding of middleman is required.

Interestingly, the research also finds that, in the case of the matsutake market, globalisation is a key factor in strengthening local identities (He 2002). A sharpened sense of being Tibetan and of belonging to a coherent cultural community ensures local access to the matsutake trade and enhances local involvement in the market. Presently, the difficulties outsiders face in entering the market at the local level make their monopolization of that level impossible. Along with increased local involvement in the matsutake trade, and the so far effective protection of the local market from outsiders, more benefits from mushroom picking and trade could flow to the locality. Understanding that globalisation can strengthen local communities' sense of identity may lead to ways of mitigating the negative effects of globalization.

### **Policy recommendations**

The three broad policy recommendations arising from this case study focus on enhancing local-level resource management and coordination between regulatory agencies while decentralising market activities at the higher levels of the chain. First, the Forest Department should determine feasible methods for enforcing villagers' legal right to collect NTFPs. That meaningful decentralization of resource management could also enhance local control of matsutake collection and sale, enabling communities to implement the village codes. Second, the Forest Department could interact more closely with the different stakeholders in the market, including farmer groups, the Matsutake Association, CITES-office, traders, exporters and the Department of Commerce to enhance cross-scale institutional linkages, thus avoiding the institutional conflicts and mismatch at different levels of the chain. Lastly, economic decentralization is required, especially at the level of export. The deregulation and decentralization of the matsutake market would enable increased competition and improve benefit sharing.

### **ACKNOWLEDGEMENTS**

The field work of this research is financially support by the German Society for Technical Cooperation (GTZ),

Ford Foundation's Beijing Office and MISEREOR. The author would like to thank Jesse C. Ribot who promoted this research as part of The World Resources Institute's Commodity Chain Analysis Project, for their support of writing up of this research. Thanks also go to Jesse C. Ribot, Arun Agrawal and Xu Jianchu for their critical comments and Chen Huafang's assistance in making the map. This paper would also have been impossible without the excellent editing work of Jesse C. Ribot, Parakh Hoon and Rob Bailis as well as the valuable suggestions made by anonymous referees.

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