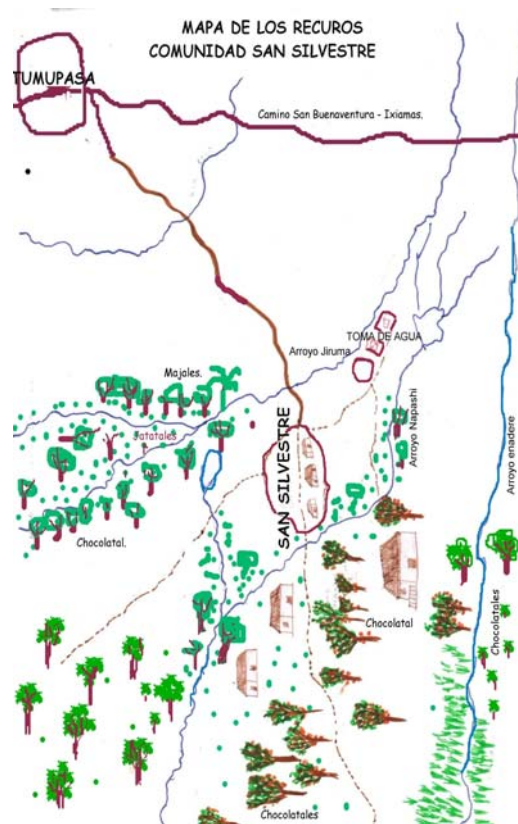

**"Commercialisation of non-timber forest products in Bolivia and Mexico:
factors influencing success"**

**"Analysis of case study communities from community level reports written
by research partners in Bolivia and Mexico"**



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Executive Summary:

This report is the analysis of 17 case study communities located in Bolivia and Mexico. It considers the commercialisation of 10 non-timber forest products (NTFPs) from the community perspective against the six overarching hypotheses. It evaluates the both impact that different commercialisation strategies have on these communities and also how different community structure and function influences the approach to commercialisation. The reports were written by the lead researchers in each case study community and are available in full on the CD-ROM.

The community reports are one of three detailed data sources collected under this project. This analysis is part of a 4-year research project on NTFP commercialisation being carried out by the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC) and The Overseas Development Institute (ODI). This project is financed by the Centrally funded Forestry Research Programme (FRP) of the Department for International Development (DFID) UK government.

DFID has a mission to eradicate poverty and, in this context, is interested in understanding why commercialisation of NTFPs does not consistently contribute to poverty alleviation. This project has analysed the opportunities and constraints to commercialisation of NTFPs at the household and community level, through comparative analysis of case studies in Mexico and Bolivia (both FRP priority countries¹). Market structure will be analysed for selected NTFPs, to identify interventions necessary for successful commercialisation. Gender issues and community perceptions of success will receive particular attention.

The report documents the methodology used to collect and analysis data. The analysis of the different case studies is structured around a rigorous framework of research questions. A discussion and conclusions section brings the analysis together, synthesising the salient points and summarising the approach taken. Overall, whilst trends and patterns have been identified across "community: product" groups, some key findings do inevitably remain of exclusive relevance to individual cases.

Acknowledgements:

Without the participation of in-country project partners and the dedicated involvement of case study communities in this research, it would not have been possible to undertake such an extensive data collection and analysis. The data collection and analysis methodology was designed with Kate Schreckenberg. The author specifically wishes to thank the close involvement of Drs Schreckenberg and Newton in providing key feedback on earlier versions of the analysis and this report.

¹ Mexico is no longer a priority country, but work in Oaxaca and Guerrero, two of the country's most impoverished states, is still considered to be of relevance by FRP for neighbouring countries.

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Introduction:

Our research partners have written reports on each of 17 communities (approximately 2 per NTFP, with some overlaps), to a common structure as detailed in Annex 1. The reports detail everything from levels of organisation and infrastructure to resource access, levels of involvement in different aspects of NTFP production, processing and trading, and impacts of commercialisation on marginalized groups. Reports are typically 60 pages in length and of variable quality.

Our objective was to document contextual information about each case study community and their use of natural resources, specifically the case study selected NTFP, and their awareness of how commercialisation takes place.

The community reports represent one of three sources of data (market reports and questionnaire forming the other two), designed to provide information needed to respond to the six research hypotheses and their related sub-questions. We could have asked authors to simply write a report directly responding to the hypotheses but felt that they needed to ensure that they had collected all the basic information first, before assessing it in relation to the hypotheses;

The analysis of our data at community level, was then compared, contrasted and integrated with findings from analysis of household and value chain level data, to produce the research finding chapter of the book²;

² See Rushton J. et. al, 2004 and te Velde D.W. 2005.

Methodology: production and analysis of community reports

The community level reports were written as the first stage of all the project's data collection. In many cases this provided our NGO partners, undertaking the field research, to opportunity to document and systematise previous work. However, to facilitate a more thorough community level analysis, the report content was verified and developed further directly with the authors, via iteration at two international project team meetings.

The structure for the community reports was provided to authors who were already familiar with the case study communities, together with suggested methods, usually based around PRA / RRA (participatory and rapid rural appraisal) tools, for obtaining the requested information. It was left up to each NGO partner to decide which methods they would use in each of their communities and in many cases some of the required information had already been collected during rural diagnostic appraisals.

The steps by which the reports were produced and the analysis undertaken are detailed below:

1. The first draft of the report was produced and feedback to the authors provided;
2. The reports were then updated as the research progress progressed and understanding deepened;
3. Initial analysis involved reading the reports and colour coding (highlighting) the text that corresponded to the six hypotheses. Then footnotes were added in specifically interpreting the information that pertained to a relevant research question;
4. A combination of the footnotes and highlighted text was then transferred to rows within a spreadsheet, community by community, research question by research question, to enable identification of information gaps and verification of findings;
5. Finally, during an interim data analysis workshop held in Bolivia in mid 2003, verification of information was undertaken between the project team and the authors, and knowledge gaps addressed. Specifically, the authors were asked to consider the set of research questions, under the six hypotheses, and provide additional information to allow data analysis to be completed.

The qualitative and quantitative information in the spreadsheet was then methodically analysed to draw out commonalities and patterns across the case studies, as well as outlier information that makes aspects of a case study particularly stand out. This was structured around the hypotheses and research questions, and is documented in section D.

The structure of this analysis report provides a hypotheses level overview which is essentially a generic answer to the overarching question, and then addresses each research question, illustrating with case study examples.

The cases have either been listed or grouped together where patterns occur to compliment and contrast the overview paragraph, or highlighted to illustrate inter-study variance.

The research hypotheses and questions:

The first four of the six hypotheses are predominantly concerned with the impact of NTFP commercialisation on different groups of participants in the commercialisation process (both within communities and along the market chain) as well as on the environment. The latter two are focused on understanding the different types of market structure and function that exist for NTFPs and, in conjunction with the earlier hypotheses, their relative impact on participants. The hypotheses were developed at a one-day workshop of the core research team on the basis of extensive knowledge of the literature and own experience. Each of the hypotheses contains within it a number of research questions that the project has addressed through analysis of data collected at community, household level and market chain.

The overarching hypotheses statements follow:

1. Changes in commercialisation in NTFPs have a greater impact on the poorest producers, processors and traders;
2. Changes in commercialisation of NTFPs have a greater impact on women's livelihoods;
3. Increase in the volume of NTFP commercialisation leads to (i) forest overexploitation, (ii) domestication and/or (iii) management strategies for the wild resource;
4. Changes in the volume of NTFP commercialisation lead to reduced rights/access to the resource for the poorest producers;
5. The successful commercialisation of an NTFP depends critically on: the existence of an accessible market; potential demand; the absence of substitutes; capacity to innovate; access by producers, processors and traders to market information; technical management capacity; organisation; high value / unit wt; trader characteristics (age, experience, education, etc.);
6. The success of poor producers, collectors, processors and traders in NTFP commercialisation depends critically on the number of suppliers and demanders (market structure); capacity to exert market power; barriers to entry; degree of vertical and horizontal integration.

Annex 2 documents how we planned to undertake and integrate the data analysis based around the research questions and their overarching hypotheses. It provided the opportunity for us to crosscheck that the data we collected would allow us to answer our hypotheses.

The detailed discussion of the data analysis required to support or reject the hypotheses, including definitions of key concepts, follows in section D.

Data analysis per hypothesis and research question:

Hypothesis 1: Changes in commercialisation in NTFPs have a greater impact on the poorest producers, processors and traders.

Whilst it is widely recognised that the most marginalized groups tend to be the most vulnerable to change, as it stands this question is too simplistic. There is firstly a need to know who is involved at the different stages of NTFP commercialisation and then what kind of change is occurring in that process in order to determine specific impacts on different individuals. There appears to be a commonality across the cases of a benefit differential along the value chain. There is a relative tendency for those lower down the value chain, nearest the production end, to be poorer than those operating at processing or trader levels. As such, they are likely to lack diversity of income generation and may have to rely more on NTFP trade income, and therefore be more vulnerable to changes in it.

In the case of incense, rubber and palm camedora, this hypothesis can be refuted. Those involved in the incense trade are not the poorest but instead community members who are in the position to be able to invert the necessary costs to collect the resource (or have the resource collected for them). A large proportion of collectors work on the basis of hiring their own labour and do so to obtain a secure source of income. This is also true of those involved in trade (rather than production or processing) in the rubber community whose resources are managed as concessions, where whilst only 5 % of the population work in rubber commercialisation they are not the poorest members. Likewise with palm camedora, where despite an increase in demand, there has been no outcome of improved conditions for producers, but market traders appear to be benefiting from an increase in trade.

However, with jipi japa, mushrooms and mezcal, there is evidence to support the hypothesis. The communities who work with jipi japa are considered to operate at high levels of vulnerability as a result of high product specialisation coupled with a relatively long length of time required to produce the goods. Harvesting and trading mushrooms has only been undertaken during the last decade (following interest by visiting Japanese traders). The income is not significant for all families but most are able to provide for basic needs with it, including purchasing schooling materials for their children. It is considered that the poorest survive from the cash income generated, whilst less marginal members use it to purchase luxury goods such as plane tickets to send children to find work in other parts of Mexico. The commercialisation of mezcal illustrates well the gross benefit differential from mezcal production between collectors / producers (poor *campesinos*³) and traders of the beverage (large enterprises often trans-national). There is a current movement of *campesino* producers to become better market integrated and receive more equitable benefits.

Finally, in the case of cocoa, the most significant change was an increase in trade which has generated an important income for the community. However, in terms of the "poorest of the poor", the positive impact was at best indirect and probably minimal, because this social group is composed of individuals such as the elderly, infirm, and "social outcasts" (drunks, etc), and as such not involved in NTFPs.

³ The word "Campesino" is the generic term used in Latin America for a small scale subsistence farmer.

1.7 What changes in commercialisation have occurred in the last 10 years?

See Table 1

Changes over the last 10 years have been largely related to volume and quality. Interestingly, those NTFPs which had been traded in an established manner, exhibited declining trends in volume, for example, natural rubber and camedora palm.

The commercialisation of camedora palm has been taken over in the last 20 years, by a market intermediary who monopolises all regional trade and half of the total required volume is now met from plantations (Mexico is the number one exporter of the palm). In addition, the wild harvesting of this palm is becoming increasingly expensive for producers due to the necessity of permits. Whilst the fluctuating but declining trend of camedora trade has been explained in part by waning prices, the decline in the volume of rubber traded appears to be the result of several factors. These include the increasing presence of synthetics on the market, and with the reduction in mining to which rubber was a secondary industry. Rubber producers have responded to the declining market via product diversification strategies. The successful marketing of the product in this case, largely relies on local niche marketing because of the quantity of imported substitute material into the national market.

Those NTFPs whose trade had become commercially significant over the last 10 years, appear to be characterised by expanding, and sometimes new markets: e.g. cocoa, pita, mushrooms, jipi japa, mezcal and tepejilote.

The local NGO and research partner Methodus Consultora has worked with communities to show the edible & thus economic value of mushrooms. It is only during that last 10 years or so that commercialisation has taken place, and buyers have arrived in the area looking for certain species of fungi. Established market trends in Europe and Japan appear to have secured mushrooms demand. The availability (size) of a nostalgia market is important in determining demand for mushrooms and a national demand for dried mushrooms is increasing as the fashion for Italian restaurants increases. Healthy eating "drives" are also important.

Changing trends and tastes, coupled with increasing recognition of indigenous and cultural practices has seen a marked increase in the trade of *mezcal*, which used to be considered an 'indian' drink. But demand has increased on the back of the boom in demand for tequila. Now mezcal is not simply sold as mezcal, but as mezcal from a particularly agave and origin. Until the mid 80s mezcal production was clandestine, and first attempts to bottle and enter the formal market place occurred during the mid 90s.

Cocoa production has increased with the identification of a market as previously it had been used only for consumption. However, these markets whilst expanding, are becoming increasingly demanding on producers and processors, in product quality. In both cocoa communities, "a bulking-up" committee has been established to orientate producers towards increased organisation and provide better quality products, whether as pods or as cocoa paste, exhibiting product consistency and free from mould. In addition, there are also several examples of producer / processor responding to market demands such as increased quality, by better organisation.

In the case of Pita, in the late 1990s a community based producer organisation initiated a commercialisation programme that competed directly with intermediaries in the region, accessing domestic markets directly. Pita producers used to sell all sorts of

qualities to middlemen, then the market bottomed out. Now, there is a high awareness of quality at harvesting stage, pertaining to the selection of increased leaf length.

The volume of tepejilote traded has increased especially from a community where plantations have been introduced and production now depends on land area and how established plants are. In addition, changes in physical access have been important for the trade, where we have seen a community better connected to markets and with access to buses, able to maintain its market hold.

Incense and copal appears to be the only product directly affected by change in tenure impacting on access, and mezcal the only product affected by a change in the legal situation facilitating the development of a formal market for producers, processors and traders.

Table 1: Summary characteristics of the 10 case study products:

Product	Trend in volume traded by the case study communities in last 10 years	Trend in demand along the market chain in last 10 years	Evidence of resource depletion in the case study communities	Do the biological characteristics allow for domestication?	Does any form of domestication occur in the study communities?	Any other response to depletion?	How far is the consumer of the community product from the producer?	Relative value per weight	Monopoly or not?
Cocoa	up	up	No	Yes	Yes, domestication of wild cocoa as well as plantation of hybrid	N/A	National	Medium/high	Carmen – oligopoly San Silvestre - none
Rubber	down	Down, now very slight increase	Only in Tomachi (for agric)	Yes, but 15 years to productivity	No	Go further	National	Latex low	Tomachi – Oligopoly S Rosa Challana-open
Incense and copal * are treated as one product unless differentiated	Down (because of the creation of the park)	stable	Incense - some due to poor harvesting technique	Subject of experimentation	No. Very slight beginning for incense.	Project is promoting better management	National	High	Oligopoly
Jipi japa	up	up	Yes, clearing for agric	Yes, 2 years to productivity	Yes, transplanting from the wild	Purchase of raw material	National	Medium	"Country– Art Monopsony, Carmen Surutú open
Soyate palm	stable	stable	Overcutting leaves	No	No	Better resource management and purchase of Palm real from other communities	National	Low	Open

Maguey	up	up	Yes, overharvesting of whole plant	Yes	Yes, enrichment planting	No	National	Medium	Open
Mushrooms	up	up	No	No, need mycorrhiza	No	N/A	Blanco – international Fresh – local Dry - national	Blanco – high Fresh – low Dry - high	Blanco – Monopsony Fresh – open Dry - open
Pita	Up in Arroyo Blanco because of plantations; Down in Agua Pescadito (because of diseases)	Up until 1995 and then decrease (now there are fewer intermediaries)	Yes, conversion to coffee	Yes	Yes, enrichment planting	Some in Arroyo Blanco gave it up because of disease	National	High	Open
Camedora palm	Down (no 16-35 year olds available to do the work)	up	Overcutting of leaves	Yes	A little, but mostly by the intermediary		Intl	Low	Monopsony
Tepejilote	Up in Yagavila because of plantations; Stable in Tilttepec	up	No	Yes	Starting enrichment plantations	N/A	Local	Low	Open

1.2 *Are the same individuals involved in production (wild collection and cultivation), processing and trade?*

In the majority of cases, different individuals are involved in production and processing or trade. A great deal of differentiation exists. In most chains the roles of producer, processor and trader are very distinct.

There is a trend across most of the products which are wild harvested (incense / copal, rubber, cocoa,) to be collected predominantly by men, and where processing occurs to be undertaken by women. Processing is often by women in collector households, or in some cases (e.g. mushrooms) the processing (drying) of certain species has been handed over to a community enterprise, or where it involves many stages, the latter steps are undertaken by a community organisation (e.g. pita and maguey). The commercialisation of jipi japa, once the plant has been weaved into arts and crafts, is undertaken exclusively by "Country-Art"⁴. The wild harvest of mushrooms provides an interesting example where predominantly women and children make foraging visits into the forest.

With respect to collection versus cultivation, it tends to be the same people in a community who collect and are starting to do enrichment/agro-forestry planting (for cocoa, jipi japa, maguey, pita, camedora). In the case of pita, one of the communities has established a pita association and practically everybody is member, allowing them to get germplasm for free to plant on their own individual lands – there is no communal land form which people can collect (as is the case of the other case study community) but here the communal lands are far away and dangerous to access because of snakes so people collect the wild germplasm and plant it nearer home on their *ejidal* land). In the case of tepejilote, the difference is between one community sourcing exclusively from plantation and the other continuing to wild harvest. All this domestication involves enrichment planting and planting within agroforestry systems. It requires very low-level investment, does not generally increase yields or quality much, but does bring the resource closer to home. Therefore, it does not support the general theory that domestication will disadvantage the poor.

It appears that most people prefer to sell the raw plant and not to get involved in processing as this is just a cost (in terms of time) and their main aim is to get a good price for their product. Traditionally, *mezcaleros* have passed the tradition on from father to son. The different stages of commercialisation (namely raw material production & the maguey owners; elaboration of the drink by "mezcaleros"; and its commercialisation, by "fabriqueros") are characterised by different actors. This is the only NTFP within the study that is exclusively and traditionally male oriented. The various roles undertaken along the commercialisation chain of tepejilote and incense / copal are carried out by completely different people.

Finally, rubber provides an interesting example of where tenure and access entirely influencing actor involvement. Rubber harvested from the few large concessions in Tomachi which is the community that trades only latex, illustrates different people contracted to tend the stands, harvest the latex, transport it, and process it, which takes place in small external enterprises. Conversely, in Santa Rosa de Challana de Challana, where smaller rubber "stands" are owned by most households in the community, everything from tending the stands and tapping the rubber through to selling final goods is undertaken by the same individual or household. This continuity of

⁴ a private enterprise which provides a market via regional shops, for community produced crafts. Members of the association are provided with some capacity building, but product range is controlled by the company.

individual's involvement along the value chain is unique from our sample of case studies.

1.3 *What is the level of poverty of those involved in NTFP extraction – is it true that it is the poorest that are most involved, and what share of income do they derive from NTFP trade?*

All the communities in the case studies are classified as marginalised rural poor, but within each community there exists "well being" strata, and in general those households involved with NTFP commercialisation activities, do not belong to the poorest category, nor the least poor category.

Whether or not it is the poorest wealth categories involved in collection depends largely on what is involved in and where the product is collected from. Thus, incense and mezcal producers require quite an investment and are so often characterised by the involvement of middle and wealthier ranked people (within essentially marginalized communities). It is worth pointing out that maguey (the NTFP) owners tend to be poor, but mezcal (the end product) producers and factory owners are among the richest of community members to be able to afford the capital investment required to enter into commercialisation. They earn enough to stave off migration from the community, with mezcal representing between 50 – 70% of total annual income for a lucky few.

In general, where collection is from the wild and communal areas and requires little investment, the theory that it involves the poorest applies, as in the case of mushrooms and with Palm soyate, where some 95% of the community are involved in the activity that generates 20% of their total annual income. However, for many products, collection is now happening from semi-private land, and agroforestry plantations (e.g. pita, maguey, tepejilote) – these tend to favour the less poor as the poorest have no land. In addition, the young who do not have their own land, are also excluded from being able to establish plantations.

The community Tomachi which trades latex rubber had a gold mine cooperative which held land use rights but when they finished mining they sold concessions for rubber collection (in the late 1960s and 1970s) although the community is theoretically still the land owner. The concessions were probably for a limited timeframe and may have run out (in which case they should revert to the state) but we don't know the status of the different concessions. The concessions were sold when the community was more interested in the gold in the rivers than in their land and boundaries. They still don't have legal titles, and land distribution has remained as such resulting less equitable allocation of resources. Santa Rosa de Challana de Challana had no gold so never had any concessions, which is why smaller rubber stands producing smaller quantities of latex brings in smaller incomes, but to more households.

It is worth acknowledging that the commercialisation of some NTFPs benefits the whole community as in the cases of cocoa, soyate palm, and the rubber community of Santa Rosa de Challana de Challana, whilst others where only a few individuals benefit directly include La Esperanza where mezcal is made and the rubber community of Tomachi.

1.4 *Do people engage in NTFP extraction because they are poor or are they poor because they are dependent on extraction for their livelihoods?*

None of the case studies from Mexico and Bolivia illustrate that those involved in NTFP trade are poor as a result of their involvement (unlike the brazil nut collectors who get indebted by their trade). It is most likely that all those involved in NTFP commercialisation choose to do so because they are poor and the cash income that NTFP commercialisation generates, makes an important contribution to their livelihood portfolios.

In many cases NTFP trade is limited by natural production cycles to a few months a year, as in the case of mushrooms and cocoa, and if this coincides with periods of slack (e.g. labour not tied up in agricultural activities), then it is likely that people will choose to engage with it. Conversely, other NTFPs which are available to be harvested throughout the year, represent a potential "on-tap" income generating activity when most needed. With incense and rubber, the poorer families sometimes sell their labour to collect the resource, but the process is organised by less-poor families who have the money to fund the up-front cost of hired labour. In the case of Palm soyate, it is such a combinable activity that the strips of palm leaf are plaited in preparation for weaving, in conjunction with a variety of other activities that don't require both hands! It is worth noting however that reportedly 20 years ago this income was sufficient to provide for reasonable family expenditure, but with inflation and rising costs of living, it now struggles to provide for the most basic of needs.

Many of the products within the study provide the only source of cash income for communities, including incense, mushrooms and cocoa, and as such often cited as providing for basic needs. Therefore in areas where there is little and often no opportunity cost of labour, it is unlikely that dependence on extraction is negatively linked to poverty.

1.5 *Do NTFP extraction activities primarily make up shortfalls in income or do they provide a path to socio-economic advancement? In other words, are they alleviating poverty or just providing a means of survival?*

In general all the NTFPs help to achieve basic subsistence. In many cases, whether or not you earn enough for savings depends on how much time you invest in the activity. The more time you invest, the more you earn – and these earnings do not replace other income sources (e.g. agriculture).

In Bolivia the cash from the NTFPs is the only source of cash and pays for anything they cannot produce (e.g. for medicines, schooling), so are important to get beyond basic subsistence but not sufficient for savings and investment.

In Mexico, there is evidence that NTFP trade has facilitated the generation of savings, etc, but only when it is undertaken on the back of other subsistence activities (i.e. agriculture provides food). Soyate palm is a basic survival product for most collectors, but the people involved in bulking up can make some savings, and a few who have been involved since 40-50 years have built up quite a wealth.

Mushrooms commercialisation has in some cases resulted in community members being able to acquire land to build a house on, or to be able to afford to send a family member to the U.S.A. to find paid work opportunities (considered a success), or purchase a sewing machine to generate other incomes. It is unlikely that NTFP

commercialisation makes a significant contribution to socio-economic advancement but it is certainly capable of providing a means to generate personal savings and meet economic shortfalls. It is worth noting that the benefits of trading mushrooms have been realised by less than a fifth of the community but should the entire community decide to participate in this activity, the individual gains would not be significant.

Maguey producers receive all payments for the raw material and their time in the form of mezcal (which they can sell or drink or save for parties); in one factory there is a poster saying 'Do not work if you are too drunk'. Most are surviving but for some the income provides for socio-economic development from the activity. Some rely upon the income for survival, others are able to use it towards community costs, for example, paying authorities. It is considered an internal success when mezcal producers "mezcaleros" make enough money *not* to have to migrate out of the community.

Increased evidence that NTFP trade plays a role in picking up shortfalls in income is indicated in that there also appears to be temporal reliance on NTFPs as a result of other economic changes: for example numbers of households trading tepejilote increased with the coffee crisis that resulted in the price falling out of the market. The trade in pita also increased when the coffee prices fell and helped overcome the crisis, particularly in the community which had been previously completely dependent on coffee trade for income.

Cocoa trade is largely executed on a barter system which whilst providing basic needs (sugar, oil, etc) does not allow for the community to engage in a financial economy, nor does it allow for producers to increase the value of their product. Whilst intermediaries who travel 10 hours to one of the communities to buy cocoa, community members feel disadvantaged by their lack of market power in losing out to "exchange rate" differences (the intermediary makes money on the goods he exchanges) and in addition, if men are traded with instead of women the likelihood that the goods purchased will be of benefit to the whole family, rather than alcohol, etc, is diminished!

Rubber trade illustrates well the ability for those individuals further up the value chain to meet more than just their basic needs, and actually achieve some economic advancement: stand owners have benefited significantly from the trade, where as producer / processor level individuals in both communities have generated cash income to meet daily needs, but rarely enough to save. Likewise, the "bulker-uppers" in the Soyate palm trade are reported as able to generate savings, which is clearly unobtainable for those a level below in the value chain.

Finally, oral testimony from an incense collector, illustrates the safety net function of NTFPs very nicely: "the knowledge that incense and copal is available to be harvested and traded acts as a guarantee that no matter what, some income can be obtained".

1.6 *Does reliance on NTFPs perpetuate poverty, e.g. by increasing debt?*

None of our NTFPS lead to people becoming indebted (only cases like brazil nut provide people with advances which collectors may not be able to pay back after harvest). The time invested in NTFPs is also not displacing any other activities, but combining with subsistence ones: in most communities there are no other activities for generating income. Nor is there any evidence for any of the individuals involved in the trade of any the products having to remain involved: it is all undertaken on a voluntary basis.

Hypothesis 2: Changes in commercialisation of NTFPs have a greater impact on women's livelihoods

There is evidence from our study to support this statement when women have greater involvement in the commercialisation of a NTFP. However, this is not necessarily true across all of the case studies. In the majority of cases, the changes have not impacted specifically on women as opposed to men.

It is often reported that women's social status is not directly enhanced, nor their position empowered by NTFP commercialisation, but that women who are part of a family who dedicate to NTFP commercialisation do benefit from being economically better placed through the accumulation of some financial capital, as is well illustrated with the case of incense, palm camedora, soyate palm and rubber. Both men and women undertake defined activities and fulfil certain roles in the commercialisation of rubber, and thus both benefit. However, it is worth noting that when women principally undertake processing which leads directly to selling the product, that they benefit from being able to exert more control over the expenditure of the income.

Jipi japa has had a positive and direct effect on women where there is 95% involvement, but increased recognition of the role of women in local economy is appreciated and recognized generally more within the household, than at community level. Likewise, the introduction of the mushrooms trade has been positive for women, because of their direct and almost exclusive involvement in it.

Tepejilote is the only case in which there has been a clear detrimental effect on women as a result of a change in the commercialisation. Where once an intermediary supplied a market for women in a marginalized community, there is now no one who comes to buy and women have no means by which they are free to search for an alternative market. The trade is now undertaken by men for whom leaving the community to facilitate the visiting of a market is feasible.

2.1 To what extent are women involved in harvesting, processing, transport and marketing the NTFP?

We expanded this question to look at both who undertakes the activity and who takes the decisions (see Table 2). In a few cases like jipi japa, only women are involved and it is they who take the decisions (except for processing and trade in the one community where "Country-Art" basically takes decisions). In most cases there is involvement of both men and women either working together or with defined roles, however mezcal is exclusively and traditionally a male activity, as is incense.

Broadly speaking collection (from the wild or plantation) tends to be a male activity and processing tends to be a female activity but this can vary with product. In the case of palm soyate, men traditionally collected or accompanied women as "women shouldn't wander the hillsides on their own.....", however with ever increasing emigration especially of young men, women's traditional roles are being forced to adapt and change. In terms of decision-making, in cases where both men and women are involved, it is nearly always the men that take the decision. However, this is a cultural thing and has nothing to do with NTFP activities *per se*.

Table 2. Matrix of activity and decision-making responsibilities across genders

	COCOA	COCOA	RUBBER	RUBBER	INCENSE	JIPI JAPA	JIPI JAPA	JIPI JAPA	SOYATE	MAGUEY	MUSHRO OMS	MUSHRO OMS	PITA	PITA	CAMEDOR A	TEPEJEL-OTE	TEPEJEL-OTE
Collects	both	both	men	men	men	men	N/A	N/A	men	men	women	women & men	men	N/a	men	N/a	both
<i>Takes decision about</i>	men	men	men	men	men	men			men	men	women	women & men	men	N/a	both	N/a	both
Produces	both	women	N/a	N/a	N/a	N/a	Women	Women	N/a	N/a	Women	N/a	men	men	N/a	both	both
<i>Takes decision about</i>	men	women	N/a	N/a	N/a	N/a	Women	Women	N/a	N/a	Women (drying plant)	N/a	men	men	N/a	both	both
Processes	women	women	men	women	N/a	both	Women	both	women	men	N/a	N/a	Women, men & children	Women, men & children	Both (essentially grading)	both	both
<i>Takes decision about</i>	women but not fermentation	women	men	women	men	women	women/Country Art	women/Country Art	women	men	N/a	N/a	men	women	both	both	both
Transports	men	women	men	women	men	Country Art	Women	Country Art	women	men	both	N/a	men	men	men	men	men
<i>Takes decision about</i>	men	women	men	women	men	Country Art	Women	Country Art	women	men	women	N/a	men	men	men	both	both
Markets	women	women	men	women	men	"Rural Crafts"	Women	Country Art	women	men	women	N/a	Men	Men& women	men	both	both
<i>Takes decision about</i>	women	women	men	women	men	Country Art	Women	Country Art	women	men	Women & men in dryer	N/a	men	men	both	both	both
Sells	women	women	men	women	men	Country Art	Women	Country Art	women	men	women	women & men	men	Men& women	men	both	both
<i>Takes decision about</i>	women	women	men	women	men	Country Art	Women	Country Art	Both but > women	men	women	women & men	men	men	both	both	both

2.2 *To what extent do women have control of the income derived from NTFPs, and therefore to what extent do they benefit from their sale?*

There is to some extent an overall cultural tendency for decision-making regarding expenditure of "cash" income to be shared between the heads of the household. This is true of incense and jipi japa. However, the majority of our case studies illustrate that the person who sells the goods is generally the one who controls the income. This is the case with women selling palm soyate, cocoa, rubber, tepejilote and mushrooms, and men selling mezcal. There is, in addition, much oral testimony (from women) to substantiate women's expenditure patterns being directed towards the household in a more strategic and altruistic manner, and men's towards the purchase of "selfish goods", such as alcohol, cigarettes and coca leaves in Bolivia!

With cocoa trade in the community located 10 hours upstream from Rurrenabaque, the control of the income is determined by when the external trader arrives in the boat, and who happens to sell the product. "With my husband, he will try and sell the cocoa for products he wants such as alcohol and cigarettes; but us women buy things for our families, like medicines and school books". Men control the rubber latex sales, but women control the income generated from trading processed rubber goods. In Tomachi where the latex is processed, men harvest the latex and then give it to the women to process while they go on to the mining centre (gold digging) to earn better wages. All men go to migrate for a maximum of three months per year (in periods of weeks, months).

In the case of jipi japa, "Country-Art" retains a proportion of the price until the end of the year and then gives it to the women or in some cases gives it in the form of social services (e.g. medical help, a party, etc)

In the case of tepejilote, women have more control over the income when it is bartered in the home, as they can decide to exchange their product for goods that they want, e.g. fish or other food products. However, when it is bundled for sale outside the home, it is the men who control the use of the income. When the intermediary stopped coming to the community, women lost out because they could no longer sell in the home but men took it to the next community to sell.

In the case of maguey production for mezcal, which remains a traditionally male dominated activity, the man decides how much of income goes to the woman.

2.3 *Are women displaced by men when new technologies for NTFP processing are introduced?*

We have no examples of introduction of new technologies that might displace women. Rather we have several that improve the case of women.

In the case of "Country-Art" new colours and styles are introduced by the organisation in (relation to items which sell) and women continue to produce them. Similarly in the case of soyate palm there is some new subcontracting (to make parts) but all of this also involves women.

Mushroom commercialisation is a relatively new activity (developed over the last decade) and has been taken up by women, probably because it is related to a food which is the domain of women (the activity was not targeted specifically at women nor are there any other activities that men could be doing at the same time). The

introduction of the mushrooms dryer has had a positive effect: there is a near continuous need for female labour in processing (and selling).

There is also a tradition of women to be associated with making cocoa paste, which is also probably because it is a foodstuff. Whilst the majority of cocoa processing techniques are rustic, any new innovations that have occurred brought about improved conditions for women.

The case of pita is interesting because introduction of a machine to extract the fibres has not led to women using it – the machine is managed by men but provided almost free for women to use (not at home) so this probably shows that the weight of tradition and women's desire to retain control over this part of the pita fibre cleaning is still strong.

2.4 Is women's social, political and economic status being helped or harmed by NTFP commercialisation?

In general, when the women control the income, and particularly if they are involved in further trade, it also improves their social and political status. The down side of this, is that any negative economic impacts of commercialisation tend to be felt more by women than men, as it directly limits their ability to buy essential household goods, as in the case of processed rubber and cocoa. Due to the nature of goods chosen for exchange in cocoa trade, the impact of commercialisation on women (and subsequently the family) tends to be greater.

In the case of dried mushrooms, the drying factory has created new employment for women. In the case of fresh mushrooms going to Japan, this is a new activity for women and has increased their participation in the communal assembly.

The case of jipi japa is interesting: the women working with the "producer organisation" "Country-Art" have less freedom of choice of what they make, but are more successful (in terms of money earned) compared to those in the community which is not associated with the organisation. Here, the women have more freedom but take home less money. Thus, improved status has been less about NTFP commercialisation, and more about association with organisations who help secure positive benefits.

It is doubtful that there have been many measurable improvements in political status, such as increased representation or voice in community assembly. However, much oral testimony states that through the very involvement of women in income generating activities realises a greater sense of self confidence in their ability to learn new skills and achieve new goals. Through the collection of Mushrooms, women have been able to work alongside other women in a marketing and selling project, developing alternative ways to process the product, including conserving techniques to produce chutneys, etc.

Hypotheses 3: Increase in the volume of NTFP commercialisation leads to forest overexploitation and/or domestication.

Basically yes but there are other options such as giving up the activity, improving management of the wild resource or purchasing the raw material from another resource. In many of the case studies there is evidence of forest overexploitation, but it is not necessarily focussed exclusively on the NTFP species, but rather as a combined result of land use change in general, and in the case of fungi, climatic variability.

The cases which illustrate the most resource depletion as a result of commercialisation are incense / copal, camedora palm, jipi japa palm, soyate palm and maguey.

Commercialisation of incense has had a negative impact on the resource population. It is predicted that this may be due to a lack of management plans and legislation coupled with collection techniques that can damage immature trees. This has provoked overexploitation and a resulting reduction in production volume. Lack of knowledge in harvesting techniques accompanied by a lack of understanding of domestication or enrichment potential, and the geographical isolation of the resource complicate matters (3-5 days walking).

In two of the 3 case study communities, collectors have exhausted the jipi japa base and now have to buy from other communities. The resource depletion of the NTFP species is not solely attributable to direct overexploitation but also to high levels of deforestation. Attempts to domesticate have been inconclusive.

The increase in trade in camedora palm has led to over exploitation of wild populations, and approximately half the leaves harvested are sourced from cultivated stock.

In the case of cocoa there has been increasing demand for wild cocoa and both communities have embarked on resource domestication and established nurseries from wild germplasm. Some trees are already producing. Thus, overexploitation has not occurred, but domestication has. (However, it is worth noting here that whilst the nursery is a community resource, only those individuals with their own land will be able to bring the trees onto farm).

With rubber, there is no domestication. However individual management by producers encourages sustainable resource use.

Externally initiated support (via a NGO) established a community based Monitoring and Evaluation system 5 years ago, to assess harvesting impact and regeneration of different fungi species in sample plots. Global environmental effects have impacted on fungi production: when there is reduced rain, production is reduced. Timber extraction disturbs soil and results in several years of no production. Community is trying to establish spatial zone management.

3.1 *Is there any evidence of an increase in the volume of NTFP trade in the last 10 years: overall & for the community? And if so, why?*

See hypothesis 1 and comparative table for the trends within the communities and in general.

There is evidence of an increase in the volume of NTFP trade for several products, including cocoa, jipi japa, maguey, mushrooms, and in one of two case study communities for each tepejilote and pita.

Increase in cocoa and fungi illustrate the relatively recent discovery of a market place, this is in part true for mezcal, coupled with a favourable change in the legal exploitation and production of this product. As soon as the commercialisation of mezcal became legalised, there was a marked increase in production of maguey and the amount of factories, and the area opened up and improved infrastructure better connected communities. Increases in tepejilote are as a result of the establishment of cultivated plants in one of the communities, approximately 10 years ago.

General increase in pita is due to changes in fashion. Although the quality demanded has gone up, the price hasn't illustrating a classic case of overproduction. The likely future scenario is that there will be increased specialisation and fewer people involved in the trade.

Camedora palm is the only case where even though the general demand has gone up and is not being met, the trade from the communities has decreased. This is because the buyers prefer not to go to the communities (as they are not producing a critical mass) and find it easier to buy from plantations. Much of the possible manpower in the communities (age 16-35) has migrated to the U.S.A so nobody is there to start plantations or collect sufficient from the wild to make it worthwhile for the trader to come to buy. Whilst there are several communities who have access to the resource and have permits to collect they don't do so because the price is so low.[also relevant to Ho 1].

There is no evidence to support an increase in trade for rubber or incense and in the other community, Agua Pescadito, which commercialises pita, the activity has been practically abandoned due to a plant pathogen which wiped out the majority of the plants.

3.2 *Is there evidence of resource depletion? What are social, economic or biological causes of any depletion observed?*

See Table 1.

Yes, there is evidence to support resource depletion for some products. From our cases, there was no depletion for the products where the flowers or fruit are collected, as is the case with tepejilote and mushrooms. The exception is cocoa, where there was previously observed reduction in yield linked to poor harvesting and chopping down the most productive branches. This reduced activity has been ameliorated by the low scale domestication that is taking place involving manual cross-fertilisation and enrichment planting of individuals closer to the community.

In four cases, the value of the product was not high enough to resist conversion to agriculture and thus there is a marked decline in resource availability (pita, palm camedora, jipi japa and rubber in the community with the concessions). Wild populations of pita were destroyed in the 1980s, when large scale "under shade "

coffee plantations were introduced and the spiny pita was removed. There is now some increase due to a trend in plantations as a result of the market dropping out in world coffee prices.

The remaining case studies show depletion because of poor harvesting techniques and not allowing sufficient recovery time between each cut, as in the case of incense / copal, or over-harvesting of the harvestable part, as in the case of soyate palm, jipi japa and maguey. Therefore one would need some form of management plan to meet market demands in a sustainable manner. The monitoring of incense appears to slip through the net, with management of NTFPs in Bolivia falling outwith both the forest law and protected area planning. Over harvesting of soyate palm has resulted in both reduced quantity and typically smaller, poorer quality leaves.

Maguey (*Agave cupreata* Trel. et Berger), is endemic to the Province, and unlike other Agaves it does not reproduced via vegetative growth or bulbs, instead relying exclusively on seed fertilization. The plant flowers at maturity between seven and twelve years, and then dies. As the plant is harvested just before flowering, the opportunity for seed dispersal is diminished in most cases completely. Harvest is of whole plant so this has resulted in resource depletion in some communities. There is currently a programme of *in situ* enrichment planting, from a community nursery project.

Mushrooms are the only product which suffer from great variation in yield from year to year because of the climatic conditions, namely rainfall. However, there has been a move to encourage harvesting best practice by explaining to collectors that excessive soil disturbance and not replacing leaf litter results in lack of fruiting bodies. In addition, there has been a move towards zoning of communal fungi productive areas, in response to ever encroaching agriculture.

3.3 *Is there evidence of harvesting moving to different areas in response to depletion?*

Yes there is evidence in some of the cases including maguey and the three palms (camedora, soyate, and jipi japa), of harvesting relocating as a response to depletion. However, whilst there are differing reasons to depletion, there are also varying responses.

In the case of maguey, some formerly populated areas are now resource deplete, and there is documentation of community collectors having to walk further to harvest. In the case of incense, the productivity of individual trees has reduced as a result of overharvesting which has then in turn resulted in harvesters accessing more remote areas to harvest in.

The camedora palm buyer prefers cultivated source because it has more leaves and they are greener. But he can only meet half his needs (for his business) from cultivated sources, so he needs to supplement with forest-collected. Camedora collectors are going further to collect spending up to 8 hours a day, mainly because large areas of land have been deforested for farming.

Depletion can lead to better management of the resource: soyate palm cannot be cultivated, but there is management of the resource, as the plant density is reducing and the distance to preferable harvesting locations is increasing. Mushrooms also show better management as a result of worries about depletion, including organisation of cutting areas and techniques, and replacing leaf litter after harvesting. Depletion can

also lead to enrichment planting and domestication, as illustrated by maguey and cocoa.

Depletion can lead to purchase of the raw material: As Jipi Japa has become less available, users have switched to purchasing the raw material: and now a man in the community nearest to the market town, collects the palm, and all processors in neighbouring communities buy it from him. In other communities in the area, processors now source leaves from collectors located in the buffer zone of Amboró National Park.

Another observed response is to stop undertaking the activity, as in the case of pita where a disease stopped the yield (without killing the plants) so people gave up and it is now just starting again as the plant recovers.

Does the theory that the poorest will be forced to overexploit apply? Looking at our communities, where the poorest sectors of the population are collecting, there doesn't seem to be correlation with overexploitation. However, the most marginalised of the case study communities in Mexico and Bolivia (e.g. soyate palm and palm camedora) are suffering from resource depletion, resulting from overcutting of the leaves and land conversion to agriculture.

Product	Response to resource depletion
Cocoa	Little depletion, but domestication occurring to bring tree closer to home
Rubber	No depletion
Incense / copal	Harvesting location moved to new areas
Jipi japa	Harvesting location moved to new areas
Soyate palm	Harvesting location moved to new areas
Mezcal	Harvesting location moved to new areas and enrichment planting
Mushroom	Difficult to observe depletion and attribute it to harvesting (largely cyclical production influenced largely by rainfall). Possibility of harvesting location moving to new areas
Pita	Cultivation
Camedora palm	Harvesting location moved to new areas (principally as a result of deforestation)
Tepejilote	Cultivation

3.4 *Is there any relationship between property regimes / institutional conditions and forest overexploitation, domestication or development of management strategies for the wild resource?*

There appears to be a tendency for overexploitation to occur and less incentive to domesticate when property regime is common access, resulting in a "tragedy of the commons" scenario, as is the cases of direct overharvesting of incense, maguey, palm soyate, and to a lesser extent, jipi japa.

With communal tenure governing resources, it appears that either individual plots for people to take responsibility are needed, or stronger community norms and monitoring to protect the resource. This is well illustrated by cocoa which is a communal resource

and this has facilitated the establishment of a communal nursery, from where trees can be planted on individual plots of land. However, it was decided to put in place a set of effective community generated and implemented norms (dating from 1995-96) for harvesting, to stop people cutting trees down when collecting pods. This is also illustrated by mushrooms, where there was a need identified by the local NGO working closely with the communities, to establish a community resource management and forestry service to monitor proper harvesting methods.

In Mexico, the national legislation has no impact on whether the resources are overexploited unless the products are exported outside of the country, when they need certificates, i.e. it appears that local level norms are more effective. Within Bolivia, forestry legislation states that it "be recommended to develop a management plan which includes the extraction and commercialisation of NTFPs", however there currently exist no technical norms, other than for *castaña* (brazil nut) and palm heart. When NTFPs are harvested from within buffer zones or protected areas, such as Madidi (incense and copal)and Amboró (jipi japa) National Park, management plans recommend that their utilisation should come under protected areas jurisdiction.

Whilst the discussion of domestication initiatives surrounding incense are just beginning, as is sustainable management of the resource and harvesting, there exist problems of enforcement, and monitoring. The resource is located 2 days walking from the nearest case study community, within a protected area, so harvesting visits are sporadic and implicate cutting of the tree and leaving it sometimes a couple of weeks before returning to collect the resin. Due to remoteness of resource and lack secure of tenure between resource users, coupled with an absence of either state or communal regulations, resource management is non-existent and there are no incentives for individuals to harvest sustainably. Historically, stands of trees were associated with individuals who cut them on rotation. However, there are increasing reports of people robbing incense which others have cut, which has an overall negative impact in the more trees are cut, and there is reduced motivation for harvesters to care for their individual trees. Incense is more affected by harvesting than copal: it is a smaller tree with lower distribution density.

In the rubber community where the majority of households are involved in the NTFP activity and processing occurs, individuals take responsibility for their own "stands" and there is no overexploitation. Conversely, in the community where there are a few richer individuals with concessions, there is depletion due to agricultural conversion. Rubber collectors who want to continue with the activity have decided to travel further to collect instead of domesticating because of the low price of the product coupled with a 15 year lag time for production. Oral testimony indicates that people haven't given up because it provides one of the only cash income generating opportunities.

Soyate palm is inherently difficult to domesticate therefore a current NGO initiative is promoting better management of this common resource, at community level. There has also been a shift towards using palm real, a substitute, which the case study community has to buy in from other communities.

Maguay, which occurs in the same case study communities as palm soyate, can be both a private or communally owned resource. Mezcal producers often source the maguay from community members who are paid for harvested quantities. Maguay plants located on private land will often be sourced by factory owners when raw material is required. A price will be agreed as will the extent to which plants are harvested. Whilst a community assembly collectively decides where and how much to harvest, there is evidence to illustrate that factory owners sometimes source immature raw material from communal land, to obtain a larger volumes for fermentation, and this

is difficult to police. Legislation exists but is unrecognised in the community & there is a constant fear that producers / traders will be caught and fined. Depletion is leading to enrichment planting and creation of a communal nursery to produce germplasm, but no management plans.

3.5 *Is there a relationship between biological characteristics of the NTFP and whether increased NTFP trade leads to domestication?*

Yes there is, as illustrated by cocoa, maguey, pita, and tepejilote. It is also possible to domesticate camedora palm, and rubber trees, but neither are in our case study communities.

See Table 1.

3.6 *Are there biological / ecological constraints to successful commercialisation? E.g. low or variable productivity, etc?*

Yes, there is evidence from some of our case studies that biological and ecological characteristics may present a *challenge* to successful commercialisation, as is illustrated in the cases of mushrooms, palm camedora, tepejilote, palm soyate, maguey and incense. However, whilst natural productivity does not seem to be a limiting factor in actually *supplying* markets for the majority of the NTFPs harvested within our case studies, perhaps due to more opportunistic gathering, there is much evidence of cultivation. Camedora palm is the best market illustration of demand not being met by wild harvest (see below). There exists a variety of response mechanisms by which resource managers can, to varying degrees, overcome these biological challenges. In many cases the commercial exploitation of a species necessitates a certain management approach to overcome or negate limiting factors, as illustrated by cocoa, pita, camedora, tepejilote and maguey, such as inherently low productivity, high variability of quality, and product perishability.

Mexico is the world's largest exporter of camedora palm to the floral greens industry of North America and Europe, but wild source only provides for half of current market demand, with the other half provided from plantation. Incense collectors also noted that low productivity of trees complicated harvesting a tradeable quantities. Tepejilote productivity varies greatly from year to year, as does mushrooms yield (subject to rainfall) and cocoa yield per individual tree which tends to be good every other year (however high and low producing individuals balance out). The species lends itself well to domestication and producers are beginning to manipulate characteristics of both varieties to induce greater numbers of pods and pods with higher numbers of beans. Pita is now predominantly harvested from plantation (partly to ease of harvesting), from stock originally wild sourced. The maguey population has been dramatically diminished by harvesting for the mezcal industry, and the community led response within our case study, has been to establish a plant nursery from wild sourced seed, and commence a programme of enrichment planting.

Inherent natural variability versus consistent quality demanded by markets presents challenges for the commercialisation of pita (leaf length), camedora (leaf width and colour), incense and rubber. When a programme to cultivate jipi japa was initiated, it failed because the plants were grown under the sun and the leaves became marked and were smaller, than those wild harvested. Whilst rubber trees need to reach an age of 15 years before they can first be harvested from, and incense produces different

resin qualities from different varieties, neither phenomenon was cited as a constraint to successful commercialisation.

Finally, camedora palm faces perishability problems as the leaves only last for 2-3 weeks once cut, so there is need for producers to transport the leaves to the bulking up point as quickly as possible and for the trader to have access to cold chain storage. This is a similar challenge faced by mushrooms collectors, but where Mushrooms specifically have a fresh market, they are left with as much soil on as possible to preserve them, and other species are now dried and packaged to increase their shelf life.

3.7 *Is there a relationship between poverty and domestication and / or a relationship between poverty and distance to resource?*

Yes there appears to be for several of the case study NTFPs including, cocoa, jipi japa, rubber palm soyate, maguey. However, there does not appear to be any relationship between poverty and domestication of pita.

Whilst there is equal access to community lands where cocoa is harvested, the domestication of the resource, involving bringing wild stock onto farm, only occurs with the richer households in the community who happen to have enough of their individual land to grow trees on.

This is also true of the community where the rubber trees are on land owned as concessions. The landless poor have no land to domesticate on and walk up for 4 hours from the community to collect rubber. In the rubber community with concessions (who are owned by wealthier individuals, often no longer resident in the community), the poorer people have to go further to access common land and collect rubber.

There has been no domestication of jipi japa in the poorest community, but patterns of continuous overexploitation of new areas.

There has been an indirect effect of poverty on the management of soyate palm, through migration. The majority of young men migrate from the region to look for paid work, so the management of the resource is neglected, and overharvesting occurs which then results in collectors having to move further from the community to find the product.

The poorest communities apparently have less capacity to control extraction of their maguey and often fall prey to disadvantageous agreements, e.g. sell their crop too cheaply, and other resources required to process (water, fuelwood, palm). Reforestation to date has benefited everyone, both poor maguey producers and mezcal producers.

Hypothesis 4: Changes in the volume of NTFP commercialisation lead to reduced rights / access to the resource for the poorest producers.

The majority of evidence provided by our case studies does not support this statement, for a variety of reasons.

In Mexico, the soyate palm, maguey (mezcal), mushrooms and tepejilote cases do not support this.

In Bolivia, this does not apply in the case of cocoa, due probably to the large quantity of land area available to the community, coupled with a low population density.

Depletion of incense has resulted in enabling "new nominal properties" which lack papers, but within the group of collectors, are mutually respected. No single community administers the production zones.

There is significant variation between each rubber community. In one, access to the rubber trees is unlimited (95% of the population) but this access has resulted in part with fewer trees and smaller harvesting areas. In the other community, access is in the hands of only 5 % of the population, and many of these are concessionaires. These concessions are not written nor legally documented. Access is linked directly with the social organisation of the particular community.

There are however three exceptional cases.

Where there is no longer availability of wild sourced jipi japa in Bolivia, only those families that can afford to purchase raw material can work as weavers.

Likewise, in Mexico, the need to invest in pita plantations means that poor people often cannot afford to obtain the vegetative material, and other capital to invest in them. Their rights are theoretically the same, but in practice limited by lack of capital (it requires up to \$1000 USD to establish a hectare of crop, and takes 5 years to yield).

Finally, increased volumes of camedora harvested coupled with deteriorating market conditions for other products, such as coffee and maize, has reduced access possibilities to the palm in particular, for the poorest members of the community.

4.1 Has the change in commercialisation had an impact on rights/access to the resource?

There is no evidence to support a change in rights to access the resource as a result of commercialisation, from any of our case studies.

It is worth noting however, that pita is considered to be a forest plant and current legislation does not permit the creation of a plantation in the forest, so a permit for 'forest supply' needs to be acquired. This is much more complicated than, for example, maguey which is considered a cultivated product. Changes in commercialisation of Maguey are just beginning to happen thus it is too early to see what impact they are going have. It is planned however that community access to the resource will be maintained.

In addition, mushrooms collectors did not previously need permits to harvest *Matsutake* and *Boletus*, however these two species have been put on the Mexican list (059) of protected species. This means that new communities would need to carry out an ecological study to obtain a permit, but this would be prohibitively expensive unless they had extensive NGO or private sector support.

The case of jipi japa illustrates the displacement of collection areas, attributable in part to resource depletion and also in response to a government colonisation programme bringing in new people from the *altiplano*⁵. One of these settler communities has decided to split its land into individualised plots to give each household equal land. This means that people cannot collect jipi japa freely from other land as previously.

Whilst there has been a change in access rights for incense collectors because of the creation of the Park, they can still harvest in existing sites but cannot open new areas.

4.2 *Does the type of access to, or ownership regime of, resource constrain successful commercialisation?*

Many of our cases show that semi-privatisation of communal lands occurs to support commercialisation: sometimes of the actual NTFP, and sometimes of an agricultural product such as coffee with knock-on effects on access to the NTFP resource.

In Bolivia, only cocoa is managed as a communal resource and there is a recent move within both communities, towards individualising of their cocoa plots. All the other Bolivian cases are managed on an individualised basis according to community norms. It seems that commercialisation, because of investment needed in the resource, is a driving factor in splitting up communal lands into private plots.

The case of rubber shows that different ownership regimes can lead to different forms of commercialisation, but both are successful in their own way. In one community almost the whole community is involved in the activity and earns something, whereas in the other, very few families are involved but those who are earn very well.

In Mexico, mushrooms, tepejilote, camedora and maguey are managed as established communal resources. It is still too early to assess the impact of increased commercialisation of maguey, and whether this will reinforce communal management or challenge them. Pita however, is based on individual plots of land, which were split up for agricultural reasons (principally coffee plantations). In Arroyo Blanco where all production is plantation based, landless households would be unable to participate in commercialisation as there is no longer any wild resource available to harvest, unlike in Agua Pescadito.

By comparison, every household has communal land access in the community that cultivates tepejilote. The challenge is to have land located in a site which is biologically conducive to production, i.e. damp enough!

In the case of soyate palm, the communities can impose restrictions, e.g. harvesting only on certain days or of restricted volumes, which whilst possibly constraining individual commercialisation, may support longer-term sustainability.

⁵ The "altiplano" is translated from Spanish to English as the "high plains", and in Bolivia it signifies the higher ground located around the backbone of the Andes. The capital of Bolivia, La Paz, is located in the altiplano.

Hypothesis 5: The successful commercialisation of an NTFP depends critically on: the existence of an accessible market; potential demand; the absence of substitutes; access by producers, processors and traders to market information; technical management capacity; organisation; high value / unit wt; trader characteristics (age, experience, education, etc.)

Overall, the conditions needed for successful commercialisation of a product are very variable but existence of demand and access to the point of sale is of fundamental importance. However, degrees of success are clearly influenced by organisation, market information, technical capacity and trader characteristics. Absence of substitutes and value per unit weight are, according to our data, less important. The conditions are very linked, for example if access to the market is difficult then the fact that your product has high value per unit weight is very important as is the ability to organise yourselves to overcome the constraint, as illustrated by the community who trades rubber.

The existence of an accessible market and potential demand has been of key importance for cocoa commercialisation. There is large demand and intermediaries have brought the market closer to the communities, however there is still a lack of market information, which for the most part, the intermediaries choose not to share. Physical mobilisation and technical management capacity are lacking in both communities.

Rubber tapping and palm weaving are cases which best illustrate the market displacement of a product by cheaper, often more uniform, and sometimes cheaper synthetic. A response to this has been for rubber tappers to identify niche markets and trade products with added value.

The market for jipi japa traders from two of the three communities has been identified and made accessible to producers by the organisation "Country-Art". Whilst the association of producers do not have complete access to market information and are committed to providing certain designs and products on demand, payment is guaranteed within a stable market.

5.1 Does the successful commercialisation of an NTFP depend critically on the existence of an accessible market? (levels of access, physical market or access via an intermediary).

Yes, in all cases it is of recognised basic importance to have access directly to a market or to a market intermediary. Where access is extremely limited to one expensive transport medium coupled with an extremely remote community location, it can result in communities become totally reliant on buyers dictating purchasing requirements (prices, quality, timing), and an obvious lack of producer ability to exert market power.

Out of all our case studies, access is possibly most limited for collectors of incense and copal, who have to walk on average 4 days round trip to access the resource. In addition, only the more well off and better connected individuals are able to access buyers in Apolo and markets in La Paz. Only those individuals with contacts in La Paz are able to access the trade network directly.

The communities of Topiltepec and La Esperanza who commercialise soyate palm and mezcal illustrate relatively good regional access and market connectivity. The local, regional and national markets for mezcal are vigorous and growing, with a large and

constant demand, and with well established commercialisation networks. Communication and access to these markets is good and commercialisation is considered successful at community level. The local market of Chilapa is a key factor for the commercialisation of soyate palm products. There are more than a hundred stands where this product is traded and there is opportunity for small, medium and large scale buyers (who come from all over Mexico) to operate. With such a demand for a product, and with a downward trend in production of the raw material, it is difficult to understand why the value paid has not increased in real terms for producers, during the last decade.

However many of our case studies also illustrate that whilst various obstacles to market access may exist, there are examples of successful strategies which may help overcome these, including organisation and processing.

For example, the rubber community which processes does so in part due to the need to add value locally due to lower production rates, but also to overcome the challenge that is presented transporting a bulky and weighty product over rough terrain to a distant market. By adding value locally, it can both facilitate carrying and also results in having to trade smaller volumes to generate the same profit. By contrast, Santa Rosa de Challana de Challana who have both terrestrial and river access are well placed to transport bulky high volume products.

Community organisation is also extremely important in facilitating access by enabling communities to overcome obstacles to reaching markets. Community organisation for pita has enabled them to access to the market in spite of the fact that they are further away from the market than other communities who do not trade pita. Similarly, for mushrooms, there was no market for fresh mushrooms to Japan but it was created through good organisation.

Community organisation has made a guaranteed market accessible in the case of Jipi Japa, where producers sell agreed outputs to "Country-Art".

Whilst cocoa is naturally distributed all along the river Beni, as are many communities, however only those few where an intermediary visits (often to buy dried fish) have the opportunity to sell their cocoa. Our study community relies exclusively on barter trade with intermediaries and does not have easy direct access to the marketplace from where the intermediary arrives, as transport is limited to an expensive 10 hour long boat journey. Despite this isolation, compared to the community of San Silvestre which is situated only 2 hours from the marketplace, Carmen del Emero trades more cocoa. Whilst producers will claim that their commercialisation would be more successful if they were able to negotiate trading, this is an example whereby if a market were not provided by an intermediary there would probably be no market at all.

The case studies of tepejilote and pita illustrate a change in access to market intermediaries having a negative impact on commercialisation at community level. Whilst the commercialisation chain of tepejilote is short and producers sell close to home, and as such often have good market information, the loss of an intermediary to one of the communities led to a change in marketing strategy. When the marketplace relocated to a more distant community, men assumed control of the product, transporting it to sell and deciding what to trade in return. As a result women directly lost out. In Agua Pescadito, where the pita producers are not organised in a producer association, an intermediary stopped buying pita and the resulting commercialisation of small quantities has since proved difficult.

5.2 Does the successful commercialisation of an NTFP depend critically on potential demand?

Yes it does: for all of the case study products it appears that an identified demand is a foundational factor in successful commercialisation.

Demand appears to be largely influenced by fashion and trends for several of our products, including pita, which depends on fashion led demand. Increasing demand and interest in promoting indigenous culture has secured a growing market for mezcal. There is a high demand for mezcal and each year in December when supply reduces, the price rises, indicating that annual demand is not supplied. The local and regional market for mezcal continues to be very vigorous and at national and international levels the demand is increasingly growing. Good producers & processors "*mezcaleros*", who are the most successful, don't just produce quality mezcal, but have established agreements with good clients who pay well year after year.

The demand for both mezcal, and incense and copal (which is used in religious ceremonies), remains unsatisfied. When there is a general downwards trend in demand there appears to be a tendency to improve quality, increased price and maintain overall revenue.

The concept of potential demand, e.g. with fresh (matsutake) and dried mushrooms, and camedora palm, can only be useful if there is good information flow to the potential producer communities, either through an entrepreneur or a good community organisation. Theoretically it's not difficult to enter into the camedora palm trade, but it is actually difficult to get enough volume to make that trade worthwhile. Mexico is the largest single exporter of camedora but only 50% of the volume sought is supplied by wild harvesting, with the other half being sourced from plantation.

As with many of the NTFPs, it is not solely demand *per se* but a consistent quantity, a certain quality of product, often required at a certain time. There is therefore often a need to have market information about demand trends. There is a limited demand for rubber goods and in addition there is competition from external production, as when the price goes up, local rubber production increases, so there is a need to have good market information on price. There is a constant challenge facing producers in consistently meeting market demand all year round.

The demand for a product is in the case of cocoa largely dictated by intermediaries upon whom producers and community processors are reliant to sell their product. General market trends indicate that demand is growing and fortunately there are several intermediaries providing a selling point, and this number appears to be on the increase.

The availability, or size of a "nostalgia" market is important in determining demand for tepejilote, which has a finite demand niche. This is also seen in the Cuajimoloyas case study where initially the demand for fresh mushrooms was from individuals who had migrated to Oaxaca from the surrounding highlands where the mushrooms were from. The demand for fresh mushrooms whilst growing, is not vast, unlike the demand for dry mushrooms, which is far from being met.

5.3 *Does the successful commercialisation of an NTFP depend critically on the absence of substitutes? i.e. substitutes increase vulnerability of commercialisation*

No, there is not evidence to suggest that the absence of substitutes is a *critical* factor, and the presence of substitutes does not necessarily prevent commercialisation.

The rubber, soyate palm, pita and jipi japa case studies clearly illustrate the threat of substitution. It is also perhaps fair to attribute the low price for palm goods to the presence of substitutes, principally by cheaper synthetics (plastic) from Taiwanese and Chinese sources. Natural rubber is often preferred for less offensive smelling, cleaner, more uniform synthetics.

It does appear however that access to market information and processor and/or consumer needs, as illustrated by innovation of rubber processing and the focussed marketing of jipi japa, is a useful response strategy.

Substitution also appears to have a restricted impact when the market demand is strong and very specific, as in the case of niche marketing for products like matsutake mushroom and pita. Pita potentially has quite a high risk of substitution, by nylon fibre, but this is countered by the producers of belts who "niche-market" traditional, high quality articles, explaining to buyers that nylon product are not original. The success of this strategy is dependent on the specialised demand of clients. More serious competition is from cheap belts instead of expensive pita belts.

When the product is marketed locally (as with the rubber goods, and initially with mezcal) the presence of substitutes appears to have less of an impact. Mezcal is 90% substitutable with sugar cane alcohol: the very poor cannot afford to buy mezcal of which 1 litre equates to a day's wage. However, as the quality is so superior people do pay premium for mezcal, suggesting that it is considered a luxury good.

There is no reported substitution of cocoa, tepejilote, incense / copal or mushrooms

5.4 *Does the successful commercialisation of an NTFP depend on the capacity to innovate?*

Whilst evidence indicates that innovation increases the chances of successful commercialisation, it does not appear to be a critical condition. In many of the case studies, including rubber, jipi japa, pita and palma soyate it has proved to be a successful response strategy to products which are prone to substitution.

Rubber commercialisation occurs in both communities but both sell different products. In the case of the Santa Rosa de Challana de Challana, which has innovated in product processing, this has been a key factor in maintaining commercialisation in a small marketplace. In response to new market (customer) demands producers and processors continue to innovate and diversify products. Marketing may be a process of trial and error, e.g. the rubber processors ask the buyers what they want and then make some trial products and send them to the potential client, requesting feedback, etc. In the other community where latex is sold into a large market there does not appear to be either opportunity or gain in being innovative.

Other examples of product diversification come about as a response to substitution by similar but cheaper products, or new alternatives (plastic hats) as in the case of palm soyate, pita and jipi japa where producers and processors are constantly trying new

designs and attempting to bring different products to market. The two communities associated with "Rural Crafts" have introduced new dyes and new designs. The community, Carmen Surutú, which is not associated Country Art, is yet to innovate.

It is important to distinguish at what stage in the process of commercialisation one looks at innovation. For example, in the case of mezcal, there is an association that is trying to promote the product as an organic and sustainably harvested product (i.e. undertaking innovative marketing). But in the actual production, tradition is more important than innovation. Making a good mezcal is a skill acquired over many years, and often passed down through family tradition.

Communities commercialising cocoa were innovative in order to achieve better fermentation, leading to better quality product and potential to increase the price received. Whilst in many cases innovation has potential to increase sales but appears non critical for commercialisation *per se*, the community who established a drying outlet for mushrooms harvested for local markets, created new markets for a product with a prolonged shelf-life.

In some of our cases, including incense / copal, camedora and tepejilote, we have no examples of innovation but there is apparently buoyant commercialisation.

5.5 *Does the successful commercialisation of an NTFP depend critically on access by producers, processors and traders to market information?*

Access to information is not often considered a critical factor but always a desirable one. That is to say that commercialisation would likely occur in any case, but information can make the process more equitable, efficient and sustainable. There is evidence from the soyate palm case study that those able to identify and establish secure agreements with the "best clients" (who pay the most) are inevitably the most successful. Access to market information appears to vary with importance between cases from virtually unimportant for the local commercialisation of un graded produce such as fresh mushrooms and tepejilote, to very important for the commercialisation of dry mushrooms across the region, and matsutake mushrooms to Japan, which have a demanding market that necessitates grading.

Where there is no access to market information it reportedly limits producer's ability to exert market pressure as a result of buyers dictating price. If coupled with distance to market reducing the option of different selling routes, it compounds the problem. In most of the case studies, including rubber, incense / copal, cocoa, camedora palm, jipi japa and the fresh mushrooms to Japan, there is little or no contact between producers & consumers, and thus limited market feedback.

The most important market information is often that located at the next stage of the value chain, for example the rubber tappers need to know how much to collect and for when in order that processors have a supply when necessary. However, if you want to improve commercialisation it's also important to know what's going on further down the chain. Producers of latex rubber recognise the value in discovering that their latex rubber competes directly with natural rubber from other countries in dried form, which the processors prefer.

Whilst access to market information is desirable and can be extremely helpful, it does not appear to be critical, and indeed it may not always be possible to act upon. In the case of camedora palm some people have awareness of market function and access to information about buyers and prices, but it doesn't help them as they need to be in an

association to bulk up sufficient product to be purchased. In addition, trade is captured by a single market trader (a monopsony), and information is also only directly available via this one route.

There is much evidence from all of the case studies that highlights the fact that market intermediaries are able to determine what information they share. As such, it can be important to have several intermediaries to help facilitate the trickle down of sufficient market information to producer level. In the case of cocoa commercialisation from Carmen del Emero, some 10 hours downstream from the nearest market town, there is no direct access to market information. Intermediaries provide the only marketplace and trade is undertaken by barter, which further undermines the seller's knowledge point in terms of product exchange value.

5.6 *Does the successful commercialisation of an NTFP depend critically on technical management capacity?*

There is a need to distinguish technical capacity to manage the resource and the technical capacity related to processing, or indeed to market it (defined as product placement: pricing and grading). In the case of processing, technical capacity is considered helpful but rarely critical to achieve commercialisation, although soyate palm weavers would likely benefit from machine assistance and the ability to create new designs. It is perhaps more critical in terms of resource management and impact on potential and future yields via lack of appropriate harvesting techniques, and it is likely most critical in terms of product placement.

A variety of technical management issues have been addressed, which the NGO partners of this project, who work directly with the case study communities, considered important. These include cross pollination of domesticated cocoa plants brought onto individual land from the surrounding forest and an attempt to produce a consistent grade; the management of mushroom resources by replacing surrounding leaf litter post harvest; the establishment of nurseries and enrichment planting of maguey; the introduction of different chemicals and techniques in the processing of rubber (ammonia is difficult to acquire because of its use in the narcotics industry); and various strategies for achieving more consistently graded produce, as in the case of pita.

The majority of the resource management, harvesting and processing is undertaken with knowledge that is passed from generation to generation, with little outside intervention or support. It is therefore unsurprising that in some cases product consistency and quality struggles to meet that required by more demanding markets, as in the case of cocoa and pita. In addition, in many of the cases, including incense / copal, jipi japa and camedora, there has been no dedicated resource management for the species or the habitat, and a maintained or increasing level of commercialisation has impacted negatively upon the resource base. This is exacerbated by the fact that NTFPs generally fall outwith the remit of many management plans. Despite the fact that incense / copal is located within a protected area and jipi japa a buffer zone, overexploitation has occurred.

5.7 Does the successful commercialisation of an NTFP depend critically on organisation?

There are several conditions for which organisation is very important:

- Quality of the product;
- Distance to the point of sale;
- Need to bulk-up;

Organisation, or concerted action, has resulted in greater overall success through achieving particular qualities and quantities of marketed products. Quality of the product, achieved through product diversification, specialist processing or physical grading, is not critical, but undisputedly helpful, in the commercialisation of, amongst others, pita, rubber, jipi japa and cocoa.

Interestingly, in the case of jipi japa, organisation via membership of the association, is a condition of commercialisation. "Country-Art" provides transport and marketing for jipi japa weavers, and this level of organisation guarantees a success outcome for producers/processors. Improving organisation is also being successfully and collectively addressed by communities commercialising cocoa. The NGO partner CARE Bolivia has played the role of innovator, working with cocoa producer households already organised into existing internal organisations (e.g. the education committee), and as a result these communities have been able to meet new market demands including higher yields, and better quality (fermented) beans.

In the case of pita, producers formed an association (UPIS-L) to promote the product directly to final processors as a result of a diminishing yet ever demanding market. It can be noted however, that some producers consider the availability of only one buyer (the association) as a non-success, preferring to have several middlemen to choose between. There have been few technical or marketing innovations to date, but there is currently a project underway to bring seven pita producing organisations together to agree on a collective seal of standard for community harvested produce.

Other benefits of organisation in the commercialisation of pita in Arroyo Blanco include learning and practicing new techniques, the ability to obtain credit resources and to hire equipment, buy plants, and buy fibre to process, and to be able to establish a solid working relationship with clients on the understanding that there will be guaranteed supply and demand. The ability to bulk up the required monthly quantity of at least 50 kg of pita has been facilitated by good organisation. "Bulking-up" achieved through good organisation has also been observed in the mushroom and camedora palm case studies: the latter helped producers overcome the obstacles presented by the distance to the point of sale. By contrast, the other pita community is yet to successfully harness an organised administration to manage a credit fund, and as a result the project failed.

There are success stories of communities commercialising on an essentially independent basis, as with tepejilote and as in the case of fresh mushrooms, to the nearby town of Oaxaca. These are traded independently and marketed without an organisation, but always as a component of a portfolio of goods. In addition, the commercialisation chain is short and local. Conversely, the market for fresh *matsutake* mushrooms exported to Japan is largely dependant upon good community organisation and the involvement of the drying factory in Oaxaca as a point of contact, to facilitate the management of collection permits and buyer payments. Previously, mezcal producers had operated at an independent level, but the new community enterprise is intending to capture success through collective organisation.

Organisation does not appear to be important for communities selling small quantities of product, requiring no processing, locally, such as tepejilote.

5.8 *Does the successful commercialisation of an NTFP depend critically on high value / unit wt?*

This is a critical factor when physical access to the market is difficult.

For example, the community trading rubber latex has easy access via river transport, so the fact that it has low value per weight doesn't matter. The other rubber community has no river access and more remotely located with seasonal terrestrial access so efficient transport is critical. By adding value locally, the value per weight increased.

Incense / copal are the most remotely located of all the resources harvested in the sample of case studies. Due to remote and difficult access and several days round trip collection, the importance of a high value per weight is becomes critical. The more valuable incense is traded for approximately \$3 USD per pound, whereas copal (a direct substitute, collected in the same location and naturally more abundant) in general only reaches a price of \$ 0.5 USD per pound.

Higher value products such as quality mezcal and fresh *matsutake* mushrooms can, to some extent, offset a negative weight value ratio. The dried and lighter mushrooms have a very low price in the region of \$100 USD per kg, compared with the fresh and heavier variety, exported to Japan at around \$25 USD per fresh kg.

In the case of Palm camedora, whilst the volume of the leaves is quite large they are quite light. With pita, the fact that the end product (a fantastically strong thread) is light and of relatively high value, does attract people to the activity, as opposed to coffee, maize or timber production. It is desirable for collectors of soyate palm, which is also light, to work with high volumes. This is due to the fact that each piece of plaited palm has a low individual value and as such it is by far preferable to obtain a large order incorporating many pieces.

5.9 *Does the successful commercialisation of an NTFP depend critically on trader characteristics (age, experience, negotiating skills, market contacts, education, gender, etc)?[are we defining traders as people who buy and sell, or is every seller (including collectors) a trader?]*

Overall, it appears that when there are many traders the individual skills are less important, but they become very important when the trade is more specialised. The general skills that have been observed across the case studies are experience, honest and reliable, numerate and with some business acumen, and being a little bit bold!

The characteristics of the cocoa traders (intermediaries) from outside the community appear of much more importance than those of household traders from within.

Successful characteristics associated with the latex rubber trade are experience and market contacts, whereas, these are much less important for the value-added community processed rubber, as all community producers sell in the same place.

Jipi japa depends a great deal on "Country-Art", established and directed by a female Peruvian entrepreneur who clearly continues to play an influential role in the organisation, but not so in the daily commercialisation.

The more successful traders of soyate palm, who are from outside the case study community, are good at finding markets, bold and a little audacious, honest, and able to gain the confidence of clients. In addition, the more successful mezcal traders pride themselves in being able to maintain a high quality product.

The trader skills for mushrooms are particularly important for fresh *matsutake* to Japan, which requires an individual who is willing to take risks. In this case he is a first generation Mexican of Taiwan descent, and has the ability to work comfortably in both a business environment and establish and manage rural contacts. The other mushroom traders (local fresh and regional and national dried) need to be dynamic and understand both the producer needs, the mushrooms characteristics, and the consumer demands, including those of local restaurants. The local traders of the fresh mushrooms are originally from the Sierra where the mushrooms are collected, and are knowledgeable of the product they are selling.

Characteristics for successful pita commercialisation have been identified as having the ability to understand the quality desired by users, and a good sense of financial management. There is evidence to support that younger men are more successful, in part because they are better educated, but more probably because they are prepared to take risks. The President of the pita association (a community established co-operative) is a very dynamic young man.

There is also some evidence with camedora palm that young traders are successful, because they can draw on the experience of their fathers. A good trader in a regional market is someone who knows where to look to trade, and is honest, gains client confidence and maintains quality. The access to credit has been established as important in this trade as you need large volumes to make it worthwhile.

In the case of tepejilote, men have more opportunity to get out of the house to sell, and the more successful sellers are those who know the prices well, where to sell (have market contacts that will let them sell wholesale rather than selling from house to house), and know how much they will be able to sell (so don't lose any through perishability). The level of experience is also important and people who have been selling for longer are able to sell larger volumes.

Hypothesis 6: The success of poor producers, collectors, processors and traders in NTFP commercialisation depends critically on: the number of suppliers and demanders (mkt structure); capacity to exert market power; barriers to entry; degree of vertical and horizontal integration.

Yes it is fair to say that market structure, specifically the number of demanders, is a key determinant in the likelihood of communities being successful at NTFP commercialisation. In turn this influences the power dynamics around the trade network, with a monopoly rarely favouring the producer. The exception to this in the case studies we have considered is the commercialisation of jipi japa via producer association with the socially grounded "Country-Art."

There are between four and six intermediaries trading cocoa to one essential point of demand in the region, a cooperative run processing factory, established initially with Bolivian and foreign government support. Barriers to entry for producers revolve essentially around lack of market information and price setting by associates of the cooperative. In addition, trade is undertaken as barter, which denies communities to engage in a financial economy. Whilst in the community located furthest from the market point, they only trade in dry pods, in the other community, San Silvestre, located closer to Rurrenabaque, they actually grind and ferment the beans to make chocolate paste. As a result of this increased vertical integration it has allowed producers to access regional markets such as Tumupasa and Rurrenabaque, where there is local demand.

Jipi japa presents an interesting comparison of market access via association or communities independently trading. For those associated with "Rural Crafts" benefits include access to a secure market which buys goods effectively on order. The weavers, who are not associated, rely on common knowledge and only have a limited access to local markets in the towns of Buenavista and Montero.

A barrier to entry for rubber processors in marketing semi-industrial goods, such as football "bladders" and rubber bands, is essentially information which processors further up the chain control and the financial cost of investing in machinery to undertake the next stages of processing. A barrier to entry into the trade of mezcal is the need to pay for equipment and hired labour, but payment is often made in mezcal, therefore there is no real need for up-front capital!

Incense / copal collectors have no opportunity to exert market power despite the fact that the demand for the product is consistently high, because of the distance between collection and sale. In addition, one or two individuals from Apolo (2 hours from the collection community which is in turn 4 days from the collection site) have the financial means and the connections in La Paz (a journey more than 10 hours overland) and are in a position to monopolise the buying, bulking up, transport and sale of the product. They also have complete control over market information, so vertical integration is low.

Whilst there is apparent stable and significant demand for soyate palm products in the regional market of Chilapa, producers are unable to negotiate price and this has fallen away so much that even basic necessities are no longer covered by the income commercialisation brings in.

The collectors of camedora palm have little market and pricing knowledge, which is almost exclusively controlled by one individual trader and distributor .

6.1 What is the equitability of profit distribution along the market chain?

In many cases the communities feel hard done by in terms of prices paid for their products, but talking to the traders in the chain, it becomes clear that they are often bearing a great deal of risk in providing a market, including investing time and money in visiting communities where there is no guarantee of produce to buy, and often have high costs, including transport and packaging, that community members are often not aware of.

In Tomachi, where there are rubber concessions and latex is sold without any processing, the richer individuals are able to migrate seasonally. There are fifteen people who are concessionaires and live in La Paz and the latex income has been sufficient to provide the platform by which these individuals can migrate from the community. The exception from our case studies is the rubber community Santa Rosa de Challana de Challana, who add value locally and control the whole chain, taking, for example, waterproof ponchos to the miners. Whilst the earnings are modest compared to concessionaires in neighbouring communities, they are equitable.

In the case of jipi japa, the communities in association with "Country-Art" are content with the level of benefits they obtain through membership. On average the proportion of end price received by the producer for each article sold is in the region of two-thirds.

In the communities trading mushrooms the profit made in the local drying of the mushrooms is given to the whole community, and not just to the individual collectors. The price for the collectors is still being experimented with as the drying factory is still trying to find its point of equilibrium. There are no reports that collectors feel "hard done by". The repartition of profit in the case of fresh mushrooms to the local market is considered relatively equitable considering the high risks that the trader takes with a perishable product. The processors are reported to take an elevated share of profits from the dried mushrooms however the technical investment is high.

Whilst collectors of the fresh mushrooms for the Japanese market receive relatively high levels of return for their harvest, the greater part of the profit definitely stays with the trader, as is also the case for Palm camedora. However, in both cases, these products are perishable and being transported, at great risk and cost, to distant markets.

Whilst it appears that both pita and tepejilote are relatively equitable commercialisation chains, neither producers of soyate palm nor local traders consider the benefits fair or equal: the price has stayed the same for the last decade, whilst the cost of living has increased dramatically. If one considers the opportunity cost of labour/time, the raw material, and the fuelwood to prepare it (which no one does), there is no actual profit from the activity. Despite this, some 400,000 tonnes of palm are supplied every year, which more or less meets demand.

If the mezcal producer pays his workers in mezcal then his profits are lower, cultural reasons, than if he pays them in cash. Gross income is substantially greater than the production costs of mezcal. There is an average profit of 30-50% / litre, depending on the producers' experience, the quality of the raw material, and skill at improving the final price. Therefore, equitability of the market chain is questionable, with producers realising limited profits and traders and factory owners, in many cases, making respectable profits.

6.2 *Who controls the profits along the value chain?*

From our case studies we can see that, essentially, "control" is exercised by those who have access to market information and financial capital. This is an external individual in the cases of incense / copal and camedora palm, but may be a community as in the case of dried mushrooms and maguey, or association as in the case of pita and jipi japa.

In the community that processes rubber, it is the producers themselves, whereas in the latex producing community, it is the concessionaires. The community established organisation that manages the processing of dried mushrooms fixes their purchasing price. The communities fix the price of the maguey (in terms of mezcal produced) and community norms state that 50% of the profit has to be given back to the collector. The second level "bulking-up" is where the significant money is to be made.

In the case of incense / copal and the fresh mushrooms to Japan, the power lies with the intermediaries. The price for matsutake is fixed the both the purchase price in Mexico and the sales price in Japan. With incense the price received by the producers hasn't changed for at least the last 10 years, the producers have no opportunity to negotiate with a single buyer (monopsony), and would need to be more organised to go out and find other buyers.

In the case of Camedora, the power lies with a key individual and the company "Floral Greens". In the case of jipi japa, it is "Country-Art", who controls the profit along the commercialisation chain.

The commercialisation chain of pita from the community of Arroyo Blanco, which established a union of producers to achieve direct market access, no longer has any market intermediaries. The cooperative has an agreement with the association of artisans, and at the present there is overproduction so they've decided to keep the price stable and not promote more production, thereby operating on a quota system. This protects the producers from being negotiated down by unscrupulous intermediaries. However, the client (craft association) has the final say, as they could simply break the agreement and offer a lower price.

Whilst tepejilote is traded locally, there are several of traders and thus no real problem with control.

6.3 *Are markets for NTFPs perfect (e.g. are prices closely linked to the cost of production and markets reflect supply and demand?)*

In all of the case studies, apart from tepejilote, the answer is no. Often we see a few intermediaries who fix the price, as in the case of incense / copal, or in case of jipi japa with "Country-Art". Whilst the buyer is a socially oriented organisation, what they pay for some of the products, e.g. a hat that takes up to 5 days to make, is low and actually works out at about half of the daily wage rate for a woman. This is of course assuming that the local economy is such that women have an opportunity cost of their time.

In the case of cocoa that is sold to the factory "El Ceibo", the wholesaler is making much larger profits than anybody else. During the research in this project, it was attempted to try to and facilitate direct community trade with El Ceibo, but the factory refused because of poor and or inconsistent quality. The factory has confidence in the wholesaler to filter out the poorer quality product. Therefore, the wholesaler clearly has some skills that are important, but still arguably do not justify such large profits.

The "Matsutake" mushrooms sold fresh to Japan, has an international demand. The market is not perfect, and an obvious barrier to entry is the need for financial capital to buy sufficient volume to make the trade to Japan possible. In addition, because the product has a recognised international demand, whilst the supply in Oaxaca may be low in some years because of a lack of rain, the price does not go up because there are cheaper sources of supply around the world.

In the case of tepejilote, there is no speculation as there is no variation in production from year to year.

There is some speculation in the market for pita commercialisation with reports of some intermediaries buying up the product to dump it on the market to keep the price down.

There is a growing market in China for mezcal (from Maguey), and there is a concern about how to meet the potential demand, in relation to pure plantations moving the industry away from essentially a traditionally community managed activity and enterprise, based upon a characteristic species of tropical dry forest.

With soyate palm everybody plait the fibre into "trenzas" but only one person has realised that it is possible to make more money by selling hats. In order to do this, sewing machines had to be purchased from family savings.

6.4 (i) What is the demand, and are the demand curves inelastic? (ii) What is the likely trend in future demand? (iii) Is there a link between price and resource depletion as Homma suggests?

Product	Trends in demand	Relationship between price & resource depletion
Cocoa	Appear to be increasing, but whilst both communities produce organic cocoa, neither is certified, so no price premium is paid.	Not applicable and domestication occurring
Rubber	The demand for latex does not appear to change much as price goes up or down, because it is easy substitutable, but demand is generally on a downward trend. As the demand for rubber products diminishes, the price also falls.	Not applicable, no resource depletion
Incense / copal	Incense and copal are expected to remain stable or possibly increase, as demand is currently not met.	Low, although incense commands a higher market price, and it is a more scarce resource.
Jipi japa	Jipi japa is being promoted by the Bolivian government as a substitute product for "coca" (the leaf which is processed into cocaine), which has potential to flood the fairly small market and cause prices to crash. The government thinks it will be able to export products, but it is unlikely to be able to compete with the better quality jipi japa products originating from Ecuador.	Low, there is resource depletion and now leaves are harvested from other areas and brought into sell to weavers.
Soyate palm	The high demand for soyate palm is expected to remain the same, but with some changes to the goods produced to meet market tastes.	Very low as the resource has been over harvested and the real value paid is on the decline
Mezcal	The demand for mezcal will increase, but the price is not expected to go up much.	Low, the resource has been over harvested to the extent that enrichment planting is taking place
Mushrooms	The demand for fresh mushrooms sold locally and as dried for regional markets appears stable and growing, and price somewhat reflects the scarcity of the resource. The price of <i>matsutake</i> is elevated and some actors along the commercialisation chain make extraordinary profits. However, being a product that is collected in various countries the price paid to the collector in Oaxaca does not reflect the scarcity of the product at certain times during the production cycle.	Low, the resource naturally fluctuates with climatic changes and does not reproduce in drier rainy seasons. The price does not increase at these times, suggesting local demand is limited and the international price for matsutake is agreed by market brokers
Pita	The demand for pita is price inelastic: demand is going down but the price is staying the same because the artisans are keen to maintain product quality and thus willing to pay the same to maintain relations with producers.	Not applicable
Camedora palm	The demand for camedora palm is expected to remain stable with an inclination to keep growing,	Low, the wild resource is under threat to land conversion for agriculture, but increasingly the palm is being grown in plantation.
Tepejilote	Locally commercialised tepejilote is expected to remain the same.	Not applicable

6.5 How does the marketing network (more precisely: a trading network) function? Do they result in the exploitation of extractors? Does the network change over time?

Product	Market structure & function
Cocoa	The commercialisation of cocoa at community level is controlled by intermediaries who dictate price and work in a barter system.
Rubber	Latex commercialisation is characterised by defined stages along the chain with pricing fixed by alternative synthetic sources. Processed rubber producers have good levels of control over the entire chain, but are unable to influence the falling prices and shrinking market.
Incense / copal	Incense – community level “bulker-upper” & a city level “bulker upper” – exploitative
Jipi japa	Jipi japa communities who are associated with “Rural Crafts” receive good social benefits, but generally low prices when time inverted is taken into consideration. The commercialisation chain used by the community Carmen Surutú (outwith the association) is characterised by each link in the chain taking profit, but not at a supernormal level.
Soyate palm	Some networks were established over 100 years ago and appear to be more stable than newer ones. The chain is exploitative.
Mezcal	The commercialisation chain for mezcal is a complex market network, with many people and many stages
Mushrooms	Mushrooms: the <i>matsutake</i> chain is dominated by an intermediary and the local fresh mushrooms are commercialised by a simple chain which is essentially controlled by one or two community level traders
Pita	Pita – when market demand surged in the early 1990’s there was a move for intermediaries to pay collectors the daily wage rate, which was akin to exploitation. The commercialisation chain has become more vertically horizontal by the formation of an association of producers, which now cuts out the intermediaries and deals directly with craftsmen instead.
Camedora palm	Monopsony: controlled by an individual buyer who operates as a wholesaler and distributor
Tepejilote	Tepejilote – a short value chain with only a few stages

6.6 *Are there actually a variety of trading networks for different NTFPs?*

Generally, across the case studies, the answer is no. This varies between mostly one and two options, with some products having two known sale outlets. Often there is only one commercialisation route with perhaps two, three or four identified intermediaries operating within it. This seemingly frequently results from obstacles such as distance to markets and the prohibitively high costs of transporting goods, and perishability issues in the case of mushrooms and tepejilote.

Often trade routes are established on the back of more than one product, as is the case of cocoa being traded because the intermediary initially visited the community to buy fish. Therefore it is fair to say that both traders and communities glean marketing experience from not just marketing other NTFPs, but in fact from trading other agricultural products in general. This experience, in some of the case studies, appears to contribute to successful commercialisation *per se*. The exception to this appears to be soyate palm and mezcal case studies, which report a variety of commercialisation chains for different NTFPs, which to have little to do with each other: some are long and complicated and others simple and short, and exhibit different levels of equitability, sustainability, etc.

6.7 *Is there monopolization (e.g. of transport, information) at various NTFP stages and how does this affect success at previous stages?*

Yes, in some of the case studies there is monopolisation, by a market intermediary or association. With camedora palm, incense / copal, and *matsutake* mushroom, trade is undertaken as a "monopsony", controlled by a single market trader and information is also only directly available via this one route. In the case of Jipi japa from Candelaria and Potrero San Rafael, trade is controlled by a single organisation. It is quite common for a few individuals to monopolise the commercialisation as in the case of cocoa, latex rubber from Tomachi and this is strictly speaking an oligopoly.

See table 1 for summary data.

6.8 *Is there a lack of access to credit, transportation or information on price fluctuations, storage facilities?*

Yes, in general across all the cases there is a distinct lack of access to credit and to information. The exceptions to this are with access to credit by the pita community Arroyo Blanco and also by the women who weave jipi japa in association with Country Art, who have a central credit fund. The mushroom (and fruit) drying factory in Oaxaca owned and run by the union of communities called "Mancomunados" is able to supply internal loans and has capital to negotiate additional credit with the government. Credit is provided by Japanese brokers, to the Mexican intermediary in the *matsutake* trade in order to purchase mushrooms. It is of importance to note that the Methodus Consultora was able to oversee credit applications made by the mushroom and pita communities, and support the establishment of the drying plant. There is also some limited informal access to credit for producer/processors of soyate palm, between friends or local "lenders", but interest rates are high. It is reported that government support is beginning for mezcal producers, and informal lending may occur at the production end of the value chain.

There is as yet no credit provision whatsoever for communities trading cocoa, rubber, incense / copal, jipi japa (outwith Country Art), camedora, or tepejilote. In the case of

cocoa there is no formal provision of information or credit in either community. Carmen del Emero realise the value in purchasing an outboard motor in order that they could connect themselves to Rurrenabaque and reduce reliance on visiting intermediaries, who withhold information and besides, transparency and negotiating ability are lost in a barter economy. Sadly, income generation opportunities are currently insufficient to do so.

Market information for rubber trade is collected by the same producers / processors themselves, when visiting centres of trade.

Harvesters of incense / copal, need to have a horse, donkey or mule to collect the product. If you own a donkey and use your own labour, the process is profitable, but not if you have to hire the donkey or hire labour. People rarely hire donkeys for incense, but do rent donkeys for transporting rice. Only two people own donkeys (but not specifically for collecting incense) so the other 15 borrow one or barter for it, but rarely hire it for money.

6.9 *To what extent do prices fluctuate (at local and international level, over the last 5 years) and to what extent does this represent a risk to producers and traders?*

This largely depends on the product. There appears little relationship between price variation and local, regional or export trade, nor whether the demand for a product is on the increase, decline, or remaining stable. Many case studies illustrate reduced prices, either as a result of price fixing, so that the price paid in "real terms" reduces with time and inflation, and in some cases there is evidence even demanding markets for product quality, unaccompanied by price increases.

The price of rubber is on a downward trend, and in danger of resulting in the disappearance of the activity. In Bolivianos the price has maintained more stability, but in dollars prices have reduced drastically. Whilst the market for soyate palm has remained buoyant, the price has changed little over the last decade, and in real terms is declining as it doesn't even respond to inflation. The pricing of incense / copal has also been practically fixed since the 1970s, and does not seem to vary with seasonality of availability nor increased demand. In earlier years prices paid in the mushroom trade varied somewhat when there was a level of buyer competition, however with one buyer now the prices is effectively fixed. The prices paid for pita have fluctuated greatly, price stayed same but costs (because of higher quality demanded) went up so the overall profit margin went down so people were put off doing this activity. However, as this is a traditional craft activity, it is not expected to disappear completely.

The price of mezcal has increased on a yearly basis. The supply is not sufficient to meet the growing demand in spite of attempts at management. Enrichment planting has occurred through locally wild sourced plants, but by planting only one species there will be a resulting loss of regional biodiversity.

Camedora palm had large fluctuations in price up to 1999 and since then it has been quite stable (because of the monopsony situation).

6.10 *Do state (or non-state) institutions play a role in marketing?*

Yes, from our case studies (principally non-state) institutions clearly do play an important role. Intervention of a project, or government, can be very important to help

things get started and to increase the likelihood of an initiative being sustained: e.g. our NGO partners Methodus Consultora with mushrooms and pita, Grupo de Estudio Ambientales (GEA) for Maguey and soyate palm in Mexico, and CARE in Bolivia. In addition, German bilateral aid projects initially helped establish the cocoa trade, by supporting the regional factory "El Ceibo" where the cocoa is still graded and processed ready for export to Europe. The trade in camedora palm was also initiated with private help and jipi japa has undoubtedly benefited from the association of weavers instigated by "Country Art", who, in addition to providing a market, have also provided training and workshops where carving, weaving, painting and sewing can take place.

CARE Bolivia has provided capacity building, technical innovation and information for the communities where they work. In the case of cocoa, both market and technical information, pertaining to improving product quality, consistency, yield and appearance has been supplied. CARE has encouraged both producer communities to organise themselves in order to improve their processing by fermenting the cocoa paste to command a higher price, They have also provided technical assistance in pollinating and cross fertilizing different hybrid trees, to obtain higher yields. In the case of rubber production, CARE has provided technical assistance in processing to help overcome perishability issues when rubber comes into contact with gasoline, and also exploring alternatives to ammonia. They have also initiated a work plan towards domestication of incense but this has unfortunately been halted due to lack of funding.

The NGO GEA, has supported the establishment of a community based group which has tried to make soyate palm trade more equitable for the producers, but to date only controls about 5% of stock movement on the market. The same group is also helping establish a community based bottling plant for the production of mezcal.

Another partner NGO Methodus Consultora has played a key role in promoting innovation and facilitating marketing. They were instrumental in accessing funds from the Mexican Secretary of Environment (SEMARNAT) to undertake an environmental impact assessment (EIA) required for a harvesting permit. In addition, they also facilitated the access of donor funds to establish the drying factory for the mushroom processing community, and liaised between the association of pita producers and *artisans* who work with the woven thread in the North of the country. With an office base they were able to provide a contact point for managing orders and receiving the thread from the community and posting it on to the *artisans*, for a modest fee.

All communities studied by the very nature of their selection have had contact with extension organisations, which have provided various and differing types of support, including technical management and information about processing and marketing, and also in some cases provided logistical support.

References:

Rushton, J., L. Perez and C. Viscarra (2004), *Marketing chains for a range of non-timber forest products in Bolivia and Mexico*. Internal project report, R7925.

Te Velde, D W. (2005). *Successful NTFP commercialisation: A quantitative analysis based on household and trader level data*. Internal project report, R7925.

Appendix 1: COMMUNITY REPORT – PROPOSED TABLE OF CONTENTS

[Note: throughout it would be useful to include relevant maps, diagrams and photos, and to make reference to further literature (e.g. secondary data) that exists as appropriate]

Section heading:	To include information on:	Possible sources:
1. Summary of findings		
2. Introduction and context		
2.1 Geography	<ul style="list-style-type: none"> • Location (longitude, latitude, altitude) • Natural resource base • Administrative district • Changes in time (e.g. boundary changes) 	Published maps, participatory maps, key informants
2.2 History [Note: try to identify reference dates for use in other discussions]	<ul style="list-style-type: none"> • Ethnic group(s) within community and neighbouring areas • History of settlement (community and/or barrio), impact of major national/state events • Current population (census) 	Historical timeline, census, key informants,
2.3 Infrastructure	<ul style="list-style-type: none"> • Road, water, school, church, meeting house, health services, mill, other – all with approx dates of establishment • Access (distance, means of transport, time, cost) to all markets used by the community 	Participatory map, key informants
2.4 Social structure	<ul style="list-style-type: none"> • Well-being indicators with a description of each • List of households in different well-being categories • General education levels • General health of the community 	Key informants, household survey; Teacher, health worker, school enrolment figures,
2.5 Support services	<ul style="list-style-type: none"> • Community organisations, self-help groups, women's groups, youth groups, church groups; age of organisation; level of participation in each • Government extension services • NGOs • Private sector • Other 	Key informants, focus groups, Venn diagrams, govt reports, NGO staff and reports, company reports
3. Land use		

3.1 Tree and land tenure	<ul style="list-style-type: none"> • Different types of land tenure (and tree tenure/access) • Variation by ethnic group, gender, age • Changes over time 	Participatory maps of different tenure types;
3.2 Main land use types	<ul style="list-style-type: none"> • Different land use types (main crops, cropping patterns) and location in the community • Access to, and tenure of, each land use type (who takes decisions about them?) • Changes over time 	Participatory maps, historical bar charts, participatory transect
3.3 Access to all NTFP resources (with specific focus on selected NTFP)	<ul style="list-style-type: none"> • Where are the NTFP resources located? • Does quality of the selected NTFP differ between locations? • Who has access (tenure) to different NTFPs? Do different groups of people have different patterns of access? • Impact of national regulations on community norms • Changes over time 	Participatory maps and transects, focus group (of collectors or 'landowners')
3.4 Management/cultivation of all NTFP resources (with specific focus on selected NTFP) [Note: management includes thinning natural regeneration, weeding, mulching, planting, pruning, etc]	<ul style="list-style-type: none"> • How are the different NTFP resources managed? Is there any cultivation of NTFPs? If so, what kind and since when? • Where are the resources managed/cultivated? • Who by? What proportion of the selected NTFP is collected/cultivated (by different groups of people, e.g. women/men, rich/poor)? • Changes over time 	Participant observation, focus groups (of resource managers)
4. Income and expenditure		
4.1 Main income-generating activities	<ul style="list-style-type: none"> • List of main income-generating activities for different groups of people (gender, wealth group, ethnic group, age) • Seasonal variation (are there any periods when there is no or little income?) • Where do NTFP activities fit in? Is there any variability from year to year (e.g. relative proportions consumed/sold)? • Changes over time 	Key informants, calendars, matrices, bar-charts,
4.2 Main items of expenditure	<ul style="list-style-type: none"> • List of main items of expenditure (e.g. agricultural inputs, food, entertainment, education, health, transport, household goods and building materials, etc) for different groups of people (gender, wealth group, ethnic group, age) 	Key informants, calendars, matrices, bar-charts,

	<ul style="list-style-type: none"> • Seasonal variation (is there a period when expenditure exceeds income?) • Changes over time 	
5. Labour		
5.1 Overview of activities within the community	<ul style="list-style-type: none"> • List of main activities in the community • Who (gender, well-being groups, ethnic groups) is involved in which activities? • How are labour-allocation decisions taken in the household? 	
5.1 Seasonality of employment	<ul style="list-style-type: none"> • Labour use by different groups of people over the year • Are there labour shortages at any time of year (e.g. due to too many activities or emigration of workforce)? If so, how are they resolved? • Where do NTFP activities (from collection to sale) fit in? Is there any variability from year to year? 	Key informants, calendars, matrices, bar-charts,
5.2 Availability of hired labour	<ul style="list-style-type: none"> • Is hired labour used? What for? • Opportunity cost of time (average local daily wage) 	Key informants, calendars,
6. Selected NTFP		
6.1 Range of NTFPs used	<ul style="list-style-type: none"> • List of all NTFPs collected by the community • Preferences and their relative importance (e.g. market and/or consumption value, medicinal value, availability of resource, reliability of production, ease of harvesting/processing) for different NTFPs by gender, well-being, ethnic group, etc 	
6.2 Characteristics of selected NTFP	<ul style="list-style-type: none"> • Advantages/disadvantages relative to other NTFP and non-NTFP activities (in terms of income, labour use, etc) • History of use including types of people involved • Variability in quality of the selected NTFP 	Key informants, matrices, income and labour calendars
6.3 Management of selected NTFP resource [If not already covered in 3.3 and 3.4]	<ul style="list-style-type: none"> • Location of resource • Does quality of the selected NTFP differ between locations? • Who has access (tenure) to the selected NTFP? Do different groups of people have different patterns of access? • Impact of national regulations on community norms • Is there any management or cultivation of the selected NTFP? If so, what kind and since when? Where? Who by? • What proportion of the selected NTFP is collected/cultivated (by 	Participant observation, focus group of resource managers

	<p>different groups of people, e.g. women/men, rich/poor)?</p> <ul style="list-style-type: none"> • Changes over time 	
6.4 Harvesting the selected NTFP	<ul style="list-style-type: none"> • Proportion harvested from the wild and from farmland if partially domesticated • Cost-benefit analysis of each step (labour, permits, information, material inputs, transport, etc) for different groups of people • Changes over time 	Participant observation, focus group of resource harvesters
6.5 Processing the selected NTFP	<ul style="list-style-type: none"> • Different forms of processing (by different people, and for different final products) • Cost-benefit analysis of each step (labour, permits, information, material inputs, transport, etc) for different groups of people • Changes over time 	Participant observation, focus group of NTFP processors
6.6 Storage of the selected NTFP/processed product	<ul style="list-style-type: none"> • Different forms of storage • Cost-benefit analysis of each step (labour, permits, information, material inputs, transport, etc) for different groups of people • Changes over time 	Participant observation, focus group of processors/traders
6.7 Sources of information	<ul style="list-style-type: none"> • Where do different community members obtain information on resource management, harvesting, processing, product specifications, (for all products and specifically for selected NTFP)? 	Key informants, focus groups, flow diagrams
7. Trade		
7.1 Available marketing avenues for different products	<ul style="list-style-type: none"> • By what route does the community market its produce (including agricultural and processed products)? • Characteristics of nearby markets (e.g. numbers of sellers, buyers, intermediaries; types of product (locally produced and/or imports); cost of access (incl. taxes)) • Changes over time 	Key informants, focus groups, flow diagrams
7.2 Sources of support (information, credit, other)	<ul style="list-style-type: none"> • Where do different community members obtain information on processing, marketing, product specifications, market prices, (for all products and specifically for the selected NTFP)? • Quantity and quality (timing, accuracy, etc) of information • Sources of credit for NTFP commercialisation • Sources of other support, e.g logistics • Are there any NTFP marketing organisations (internal and external to the community)? If yes, how effective are they (Who is involved in 	Key informants, focus groups, Venn diagrams

	<p>decision-making? Who benefits?)</p> <ul style="list-style-type: none"> • Changes over time 	
7.3 Specific marketing of selected NTFP	<ul style="list-style-type: none"> • What different marketing routes exist for the NTFP? (advantages or disadvantages of each) • What does the market chain look like? • Contact between producer and consumer? • Impact of market prices of the NTFP and substitutes on income obtained • Cost-benefit analysis (costs of access, permits, rent, accommodation, etc; benefits such as income, contacts with other traders and consumers, etc) for different actors • Key constraints • Changes over time (within and between years) 	Key informants, focus groups, flow diagrams
7.4 Policy/legal context	<ul style="list-style-type: none"> • Local understanding of national/state policies and legislation; degree to which they are actual constraints or opportunities; • Degree to which national/state system supports/contradicts traditional practice 	Key informants, focus groups, govt agents, NGO and private sector staff
8. Impact of changes in commercialisation		
8.1 Concepts of success	<ul style="list-style-type: none"> • How do different community members define 'successful' commercialisation? (list different definitions and locally-defined indicators) 	Community meeting, focus groups, key informants
8.2 Social impact	<ul style="list-style-type: none"> • Impact of commercialisation on different community members (e.g. status of women, poor, old) and on community organisation • Impact on labour use • Changes over time 	Focus groups, key informants, Venn diagrams
8.3 Gender impact	<ul style="list-style-type: none"> • Impact on women (e.g. economic and social status, empowerment) • Impact on men • Changes over time 	Focus groups, key informants
8.4 Environmental impact	<ul style="list-style-type: none"> • Impact on natural resource base • Community (or individual) initiatives to monitor impact of harvesting • Moves to domesticate (i.e. intensify management) 	Participatory maps, key informants, focus group with harvesters
9. References	List of all secondary data available	

Appendix 1: Record of community consultation meeting	<ul style="list-style-type: none"> • Countersigned minutes of meeting between NGO and community representatives listing the community's research needs related to NTFP commercialisation 	
Appendix 2: Detailed description of all research methods used	<p>For each research activity:</p> <ul style="list-style-type: none"> • Date • Researchers and community members involved • Methods • Analysis of effectiveness of the method (with a view to inclusion of the method in the final manual) 	
Appendix 3: Proposed household questionnaire	<p>Based on the analysis of the community-level data, make proposals for additional specific questions to be incorporated into the household questionnaire outlined in Section G of the 'Methodological guidelines for socio-economic fieldwork at community and household level)</p>	

Appendix 2: TABLE OF RESEARCH HYPOTHESES, SUBQUESTIONS AND PROPOSED FORMS OF DATA ANALYSIS

1 Changes in commercialisation in NTFPs have a greater impact on the poorest producers, processors and traders.	2 Data source [MR= market report CR=Community reports Q= hhd questionnaire]	3 Form of analysis
		4 General comments – household analysis Key variables (source household questions) We aim to include significance levels and where possible disaggregate the analysis by stage/community/product
1.1 What changes in commercialisation have occurred in the last 10 years?	MR2; CR9	Text analysis
1.2 Are the same individuals involved in production (wild collection and cultivation), processing and trade?	Q 1.1; CR7.5, 7.6	Regression against success; Tabulation by products and communities
1.3 What is the level of poverty of those involved in NTFP extraction – is it true that it is the poorest that are most involved, and what share of income do they derive from NTFP trade?	CR 2.4 Q1.3 and 6.1 on income Q6.2 on share of income from NTFP	Text analysis; Relating income (and wealth ranks) to NTFP involvement (using tabulations) including stage of involvement. May also be possible to do Chi-Square.
1.4 Do people engage in NTFP extraction because they are poor or are they poor because they are dependent on extraction for their livelihoods?	Q6.9 - 6.11 on exit from NTFP trade	Extremely difficult: leave for ultimate consideration – ref to MA & discuss chicken & egg scenario) <ul style="list-style-type: none"> • Model decision to be involved in NTFP (logit regression); need to include control group (non-NTFP trades may have different characteristics from NTFP traders) and determine explanatory variables – this needs to be explained • Determine what type of households want to move out of NTFP trade

<p>1.5 Do NTFP extraction activities primarily make up shortfalls in income or do they provide a path to socio-economic advancement? In other words, are they alleviating poverty or just providing a means of survival?</p>	<p>CR7.2; 5.1 Exit questions in Q6</p>	<p>Text analysis Identify products with a Shortfall scenario (i.e. only engage when situation economically bad) and those that are Alleviating poverty (look at whether NTFPs help people to move onto better things)</p>
<p>1.6 Does reliance on NTFPs perpetuate poverty, e.g. by increasing debt?</p>	<p>MR3 & 4 Q3.1, 5.1 CR 8.2</p>	<p>Text analysis, Also tabulation of forms of payment: proportion of credit vs cash</p>

<p>2. Changes in commercialisation of NTFPs have a greater impact on women's livelihoods.</p>	<p>5 Data source [MR= market report CR=Community reports Q= hhd questionnaire]</p>	<p>6 Form of analysis</p>
		<p>7 General comments – household analysis Key variables (source hhd ques) We aim to include significance levels and where possible disaggregate the analysis by stage/community/product</p>
<p>2.1 To what extent are women involved in harvesting, processing, transport and marketing the NTFP? (Use table below as a checklist)</p>	<p>CR3.4 and 7.3-7.7 Q1.1 (by gender)</p>	<p>Text analysis Relate income (and wealth ranks) to NTFP involvement by men and women separately (using tabulations). We can distinguish between female only, male only and joint households, and we could examine joint households more closely to see whether females dominate certain stages. Tabulate percentage (type of activity and gender)</p>
<p>2.2 To what extent do women have control of the income derived from NTFPs, and therefore, to what extent do they benefit from their sale?</p>	<p>CR7.7</p>	<p>Text analysis</p>
<p>2.3 Are women displaced by men when new technologies for NTFP processing are introduced?</p>	<p>CR7.5 and CR 9.4</p>	<p>Text analysis</p>
<p>2.4 Is women's social, political and economic status being</p>	<p>CR 9.4</p>	<p>Text analysis.</p>

helped or harmed by NTFP commercialisation?	Q6.2, 6.3, 6.4 and 6.7 and link to Q1.1	Economic status: Tabulate the percentage of women for whom NTFPs make a contribution to their livelihoods – see also Ho 2.1
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STAGE	Who undertakes the activity ?		Who takes decisions pertaining to the activity?	
	Woman	Man	Woman	Man
Wild Harvest				
Production				
Processing				
Transport				
etc				

3. Increase in the volume of NTFP commercialisation leads to (i) forest overexploitation, (ii) domestication and/or (iii) management strategies for the wild resource.	8 Data source [MR= market report CR=Community reports Q= hhd questionnaire]	9 Form of analysis (Note: Undertake an analysis for each product separately)
3.1 Is there any evidence of an increase in the volume of NTFP trade in the last 10 years: overall & for the community? And if so, why?	MR4; CR9.1	Text analysis
3.2 Is there evidence of resource depletion? What are social, economic or biological causes of any depletion observed?	CR9.5 Q1.3, 2.3 and 2.4	Text analysis Tabulation of transport times
3.3 Is there evidence of harvesting moving to different areas in response to depletion?	CR 7.3	Text analysis Tabulation of transport times
3.4 Is there any relationship between property regimes / institutional conditions and forest overexploitation, domestication or development of management strategies for the wild resource?	CR7.3; (3.3 & 3.4); 4.1	Text analysis
3.5 Is there a relationship between biological characteristics of the NTFP and whether increased NTFP trade leads to domestication?	CR7.4, 9.5	Text analysis Use product variable as explanatory variable in regression analysis for success: note that little can be said as there is little product variation (few products). Need to score domesticability at community level (e.g. 0-4); Table (perish, repro

		(mat), yield, regeneration, impact on individuals (kills, damage, neutral) & pop (Regression, Correlation) [investigate use of CIFOR-type indicators]
3.6 Are there biological / ecological constraints to successful commercialisation? E.g. low or variable productivity? etc.	CR 7.3 Q3.4	Text analysis
3.7 Is there a relationship between poverty and domestication, and poverty and distance to resource?	Q2.4, 2.5 and 2.9	Tabulation. Link individual variable on distance to individual variable of success in regression analysis. Individual variable of success VS proportion of product obtained from wild / cultivated source

4. Changes in the volume of NTFP commercialisation lead to reduced rights/access to the resource for the poorest producers.	10 Data source [MR= market report CR=Community reports Q= hhd questionnaire]	11 Form of analysis 12
Note: refer to Ho 3.1 for any evidence of an increase in the volume of NTFP trade in the last 10 years: overall & for the community		
4.1 Has the change in commercialisation had an impact on rights/access to the resource?	CR 3.1 & 3.3; 9.5; 7.3 (& 3.3, 3.4)	Text analysis
4.2 Does the type of access to, or ownership regime of resource constrain successful commercialisation?	CR 7.3 Q3.4	Text analysis

5. The successful commercialisation of an NTFP depends critically on: the existence of an accessible market; potential demand; the absence of substitutes; capacity to innovate; access by producers, processors and traders to market information; technical management capacity; organisation; high value / unit wt; trader characteristics (age, experience, education, etc.)	13 Data source [MR= market report CR=Community reports Q= hhd questionnaire]	14 Form of analysis
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<p>5.1 Does the successful commercialisation of an NTFP depend critically on the existence of an accessible market? (levels of access, physical market or access via an intermediary]</p>	<p>15 CR 2.3, MR2 Q5.5, Q5.6</p>	<p>16 Text. 17 Regression. Accessible markets: individual variable based on categorisation of answers to Q5.5 and 5.6 on distance to markets.</p>
<p>5.2 Does the successful commercialisation of an NTFP depend critically on potential demand?</p>	<p>Q6.8, MR4</p>	<p>Regression and Text</p>
<p>5.3 Does the successful commercialisation of an NTFP depend critically on the absence of substitutes?</p>	<p>MR 4</p>	<p>Text</p>
<p>5.4 Does the successful commercialisation of an NTFP depend on the capacity to innovate?</p>	<p>MR CR</p>	<p>Text</p>
<p>5.5 Does the successful commercialisation of an NTFP depend critically on access by producers, processors and traders to market information?</p>	<p>CR 7.8, 8.2, MR 9 Q5.6 and Q3.4</p>	<p>Text. Regression on access to information: individual variables based on classification of Q5.6; or member of association, Q3.4</p>
<p>5.6 Does the successful commercialisation of an NTFP depend critically on technical management capacity?</p>	<p>CR 3.4, 7.8</p>	<p>Text</p>
<p>5.7 Does the successful commercialisation of an NTFP depend critically on organisation (concerted action)?</p>	<p>CR 8.2, 9.3, 4.1, 4.2</p>	<p>Text</p>
<p>5.8 Does the successful commercialisation of an NTFP depend critically on high value / unit wt?</p>	<p>MR 1</p>	<p>Text</p>
<p>5.9 Does the successful commercialisation of an NTFP depend critically on trader characteristics (age, experience, negotiating skills, market contacts, education, gender, etc)?</p>	<p>CR8.3, 9.3 Q1.1</p>	<p>Text Regression of Trader characteristics: individual variables from Q1.1</p>

6. The success of poor producers, collectors, processors and traders in NTFP commercialisation depends critically on the number of suppliers and demanders (market structure); capacity to exert market power; barriers to entry; degree of vertical and horizontal integration.	18 Data source [MR= market report CR=Community reports Q= hhd questionnaire]	19 Form of analysis
6.1 What is the equitability of profit distribution along the market chain?	MR 7, & 8 All transaction cost questions, eg Q2.?, 3.3, 4.2, 5.3,	Text. Determine profit based on Q3, 4 and 5 and examine average across different stages: output in table. TCA, profit flows, CBA, barriers and hhd income analysis: Compare average profit margins at different stages
6.2 Who gains and how is sales revenue controlled and distributed?	CR 7.7 Q3, Q4, Q5	Text. See 6.1 above: TCA, profit flows, CBA, barriers and hhd income analysis This requires 'more precise quantification of incomes and more elaboration of dynamics within households, villages and trade networks'
6.3 Are markets for NTFPs perfect (e.g. are prices closely linked to the cost of production?)	MR 5, CR 8.3	Text.
6.4 What is the demand, and are the demand curves inelastic? What is the likely trend in future demand? Is there a link between price and resource depletion as Homma suggests?	MR	Need to know about overall trends in consumption /production, but may only be possible for a few products with good secondary data. (also in relation to increases in income) Link to Q6.8 (expectation of demand) and to demand variables in MR.
6.5 How does the marketing network (more precisely: a trading network) function? Do they result in the exploitation of extractors? Does the network change over time?	MR 2	Text.
6.6 Are there actually a variety of trading networks for different NTFPs?	MR 2, CR 8.1	Text.
6.7 Is there monopolization (eg of transport, information) at various NTFP stages and how does this affect success at previous stages?	MR 9	Text. Regression analysis: determine the marginal effect of <i>The number of traders in successive</i>

		<i>stages</i> on success.
6.8 Is there a lack of access to credit, transportation, information on price fluctuations, storage facilities?	CR 8.2 Q1.4, 5.5, 5.6	Text. This will be picked up as explanatory variables in regression analyses determining success, e.g. Q1.4 (access to credit, and what type) and 5.5 and 5.6 (information from where), see also hypothesis 5 above
6.9 To what extent do prices fluctuate (at local and international level, over the last 5 years) and to what extent does this represent a risk to producers and traders?	MR 5, CR 8.3	Text.
6.10 Do state (or non-state) institutions play a role in marketing?	MR 10, CR 4, 8.2, 8.4 Q4.3, 5.4	Text. This will be picked up as explanatory variables in regression analyses determining success, Q4.3 and 5.4 (membership of association)

