Final Draft

Participatory Action Research on Chiuri Tree:

A Cornerstone for Understanding Community Forestry

through Management of Non-Timber Forest Products in Central Nepal

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Terms and Acronyms Used[1]

AHI	Alternative Herbal Industries Pvt. Limited, part of SEACOW's NTFP enterprise support system
Body Shop	The Body Shop International the fair trade chain-shop
CAED	Centre for Agro-Ecology and Development, an NGO under which SEACOW functions
CFUG	Community Forest User Groups
ChFDP	Churia Forest Development Project of GTZ
Chepangs	An indigenous group living in the steep terrain of the lower hills of central Nepal
Chisa Kruskaisa	An adopted adult education system of REFLECT to Chepang reality
Chiuri	Tree or fruit of the Indian butter tree (*Diploknema butyracea*)
DCS	Development Consulting Services of the United Mission to Nepal
DDC	District Development Committee, the district government; Nepal has 75 districts
DEC	Dalit Empowerment Committee, a federation of VDC level five Dalit organisations emerged due to the intervention of SLP
DFO	District Forest Officer/ Office
EN	EcoNepal vzw, the support group in Belgium
Helvetas	Swiss Association for International Co-operation
GTZ	German Technical Co-operation
Holistic	Idea and approach of development work that believes and functions in the understanding of interconnected components
INGO	International Non-Governmental Organization
ITDG	Intermediate Technology Development Group, Nepal Chapter of the Britain based INGO
KCC	Kandrang Chepang Community, a Chepang NGO that emerged as part of SEACOW's process of work
Khoriya	Slashed-and-burnt shifting cultivation patches
LLINK	Linking Local Initiatives to New Know-How, a programme of Helvetas Nepal
MA&SD	Market Analysis and System Development, an experimental approach to NTFP marketing, an adoption of Market Analysis and Development (MA&D) process developed by RECOFTC
NCA	Nepal Chepang Association
NTFP	Non-timber forest products or 'minor forest products' as sometimes called
Original area	Lothar VDC - the area of work where SEACOW worked for 5 years before one of its activities - NTFP enterprise was expanded to other 4 adjoining VDCs
Oxfam-Belgium	Belgium Chapter of the Oxfam International, a Britain based INGO
Oxfam-UK	UK chapter of Oxfam International, a Britain based INGO
Pandeys	Traditional Chepang healers
Pathi	Traditional Nepali measure of volume (1 *Pathi* dried ***Chiuri*** seeds = 2.3 kg)
PBPEP	Participatory Bio-mass based Soil Enrichment Programme, a complementary programme of SLP.
PCL	*Praja* Cooperatives Limited, an NTFP management mechanism that emerged as a process of NTFP action research
PNARP	Praja NTFP Action Research Programme, an extension of NTFP and Value

[1] Throughout the text Nepali names are given in italic, whereas Chepang names are given in bold.

	addition initiatives to four other adjoining VDCs applying and elaborating the lessons learnt in SEACOW.
Praja	Official Nepali name given to the Chepang by the King to denote that they too are his subjects
REFLECT	Regenerated Freirian Literacy through Empowering Community Techniques. A self-reflective analytical approach to adult learning
Rights-based	Development approach that believes that freedom and dignified life is everybody's right
SEACOW	School of Ecology, Agriculture and Community Works, a programme of CAED that initiated this research
SACCP	Southern Achham Comprehensive Contraceptives Programme, a complementary programme of SLP.
SEN	Stichting Ecoschool in Nepal, a support group in the Netherlands
SLP	Sustainable Livelihood Programme, an undertaking of CAED in the far western development region of Nepal
SNV	The Netherlands Development Organization in Nepal (Praja Community Development Programme)
VDC	Village Development Committee, smallest form of local government and the area covered by it
WATCH	Women Acting Together for Change, an NGO
Yo	Chepang name for ***Chiuri***
Yosati	Oil or ghee from ***Chiuri*** seed
Yoshi	***Chiuri*** tree

Chapter I

Background

People and the Area

Officially also called *Praja*, this area is primarily inhabited by Chepangs, one of the 61 indigenous groups recognized by the government. The group, accounting for some 0.25% of the total population, is scattered in the rugged terrain of the Mahabharat hills of central Nepal in the frontiers of Makwanpur, Dhading, Chitwan and Gorkha districts. The area under this study, mostly inaccessible by motorized transportation, covers the upper catchment of Lothar River in the Lothar Village Development Committee (VDC) of Chitwan. Later on, the programme was scaled up to 4 VDCs adjoining Lothar.

Considered as one of the most marginalized groups of people in Nepal, they are believed to have lived by hunting-gathering until the last 100-150 years, which means that their dependence on agriculture is a recent phenomenon. Their general anthropological descriptions are widely found in the literature. Current agricultural activities include slash-and-burn practices and shifting cultivation accounting for about one fifth of their arable land. Most of the people have produce from their land adequate for 6 to 8 months a year. For the rest of the year, *i.e.* between February and June, they have to resort either to the forest for gathering wild edibles or to the village money lenders for borrowing. Few people go out in search for work. Sale of non-timber forest products (NTFP) is an important source of cash. Extreme poverty makes them victims of village money lenders and road head merchants. It is estimated that over 50% of the people are in debt. In 1999, the average annual cash income was found to be under US$130 per family in Lothar.

Forests and the Chepangs

Any forest belonging to either communities, families or individuals was nationalized in 1957. The first land entitlement survey was taken in 1963 and took several years to cover the whole nation. Any land without trees and with sufficient proof of use (e.g. receipt for revenue payment) would be considered as private land. By law, untitled land is considered as forest whether with or without trees. This is considered to be one of the primary reasons for deforestation in Nepal – a kick back of a narrowly thought policy. According to Chepang people, fear of high revenue and lack of understanding of the state mechanisms led to much land in the Chepang area remaining unentitled. This means that most of the Chepangs are practising slash-and-burn agriculture in official forests. Their extreme disadvantaged position and remoteness of their settlements have, however, created a leverage to continue the same practice.

Almost every household has its own forest patch. The ownership of forest patches is determined by the ownership of ***Chiuri*** tree and **khoriya**, the slashed-and-burnt shifting cultivation patches. Usually, forest patches without ***Chiuri*** trees (for example Sal (*Shorea robusta*) or Pine (*Pinus roxburghii*) forest) do not belong to any household and are considered as common forest. Chepangs normally use the forests in their vicinity except for a few valuable products and species. According to their tradition, they can privatize bee and hornet hives and ***Chiuri*** trees. Boundaries for grazing are naturally determined by the movement of the animals. They are not so keen on animals as they have not yet mastered the skill of animal husbandry and integrating the cattle into their agricultural system. Even if they wanted, they would not be able to keep large cattle because the land is too steep. They still depend to a lesser extent on hunting for meat in the dwindling forests. Generally, burning forests for cultivation does not meet any opposition until one encroaches quite far into someone's land. People live simple lives and much timber is not needed. The trees left on rocky uncultivable slopes are sufficient for their use so far.

A ***Chiuri*** tree is owned by the person who spots it for the first time in the jungle and continues to take care of it. The person will carve the tree at breast height to indicate that the whole tree is already claimed. Even after somebody clears the forests for cultivation, the tree will belong to the same individual and the tree is inherited over generations as an immovable property. It is taken as parental property inherited from father to son (and daughter). There is equal distribution of *Chiuri* among family members when a family splits.

Of course, the owner has rights over hunting bats or birds foraging or perching on their trees. Forest ***Chiuri***, known as **Ban Yoshi**, is first considered as an individual then as a collective property. Right of the owner to harvest fruits and seeds is reserved up to **Saun masanta** (mid July) after which it becomes a common property and everyone can harvest. Arrangements among households are made for sharing these fruits. Although ***Chiuri*** in a crop field, known as **Rang Yoshi**, is considered domesticated, the owner of the tree is not necessarily the owner or user of the field. ***Chiuri*** trees can be exchanged, sold or acquired independently of the land on which they grow. A legend survives that a ***Chiuri*** tree used to be given as a dowry to daughters for their wedding.

People do not worship ***Chiuri*** trees. No parts of ***Chiuri*** are needed for **Pande** and worship. However, ***Chiuri*** trees receive treatments like human beings from **pandeys**.

Sales of NTFPs is an important source of income. Chepangs collect parts of medicinal plants and sell them. In the absence of options and information, they have been selling them significantly under-priced. Because demand is externally instigated, there is a risk that, depending on the market, some of the plant populations will become depleted. Chepangs depend so much on forests for their survival, and hence it is not surprising that they possess a significant body of knowledge on different species. Yet they did not seem to be concerned collectively about the protection of forests, until recently. Nonetheless, their insights on different species and how they interact give valuable information for managing larger pieces of forests.

Further down in the Chitwan valley, propelled by external aid, the government clear-felled the forests and triggered the resettlement of people from the hills. These people have been entitled their land whereas Chepang people practising shifting cultivation have been denied their traditional rights. Current provisions of community forestry give room for managing parts of the forests collectively, but still do not recognize the ownership of the land. Under these circumstances, management of NTFPs seems an important option with which people can supplement their income, yet issues of access have become increasingly important when talking about sustainable management.

> When I see *tal* (flatland) then and now and our situation now, I am shocked as if I am coming out of a dream.
>
> *Man Bahadur Praja, Wasbang*

Chiuri Tree and its Uses

Called **yoshi** in Chepang language, ***Chiuri*** (*Diploknema butyracea* Roxburgh) is a member of the Sapotaceae family. This large deciduous tree is known in English as the Indian butter tree for its rich oily seeds. A multipurpose tree, it is commonly found within the sub-Himalayan belt from Uttar Pradesh in India and further eastwards into Nepal through North Bengal, Sikkim and Bhutan at altitudes of 700 to 1500m.

The ripe fruit has sweet edible pulp and the flowers and fruits can be used to make jaggery. The leaves are used as fodder. The timber can be used in construction and for furniture. Its fruit make a dietary supplement for Chepang people during the critical period of food shortage. A full description of its use can be found in Appendix A.

The major economic use of this multi-use species, however, is **yosati**, the edible oil expelled from the seeds. After removing the pulp, the seeds are cleaned and then sun-dried and steamed. The oil is manually extracted by pounding and macerating between two wooden planks, yielding up to 25-30% of oil. It is white in colour and has a pleasant taste and odour. It remains solid up to 48°C and does not deteriorate in hot weather. It is used for cooking and is reportedly an ingredient for manufacturing margarine and chocolate in India. Most production is confined to small-scale village or household activities. Small-scale commercial trade has developed in Nepal.

Chiuri evolved from a buffalo

Long time ago, a buffalo escaped from her shed at night and grazed on millet farm until she was full. Since it was dark the buffalo could not find the way and fell off a dangerous precipice and was hung half way through. Nobody could pull the buffalo up. So, it died rotten. And at that very place the Chiuri grew.

Hence, Chiuri fruit has white juice, which is the milk of buffalo, and the oil obtained from seeds is buffalo butter. The small black grains found inside the fruit are the millet eaten by the buffalo at that night. Chepangs still say "Chiuri is like a milking buffalo for us"

A Chepang folk-tale

Objective of the Case Study

The ***Chiuri*** tree is little studied by the scientific community. Chepang people have an immense body of knowledge about it. The purposes of this case study are to document the understanding of ***Chiuri***, and elucidate how recognition of their knowledge, accumulated through their age-old experiments of trial and error, resulted in the initiation of an equitable and sustainable NTFP enterprise.

This case study presents an overview of action research evolving out of an applied ethnobotanic study on ***Chiuri***. Illustrating the depth and width of people's knowledge on this tree and its usage, it explains how making this knowledge visible gave the confidence and encouragement to consolidate an NTFP enterprise to local Chepangs and the institutions supporting them alike. Focusing on the approach used, this study shows how it subsequently led to the establishment of a market-oriented NTFP support system and operationalization of other action research activities on NTFPs in adjoining areas.

This case study covers the work during a period of some 7 years roughly beginning from 1994. Earlier work focused more on agro-forestry.

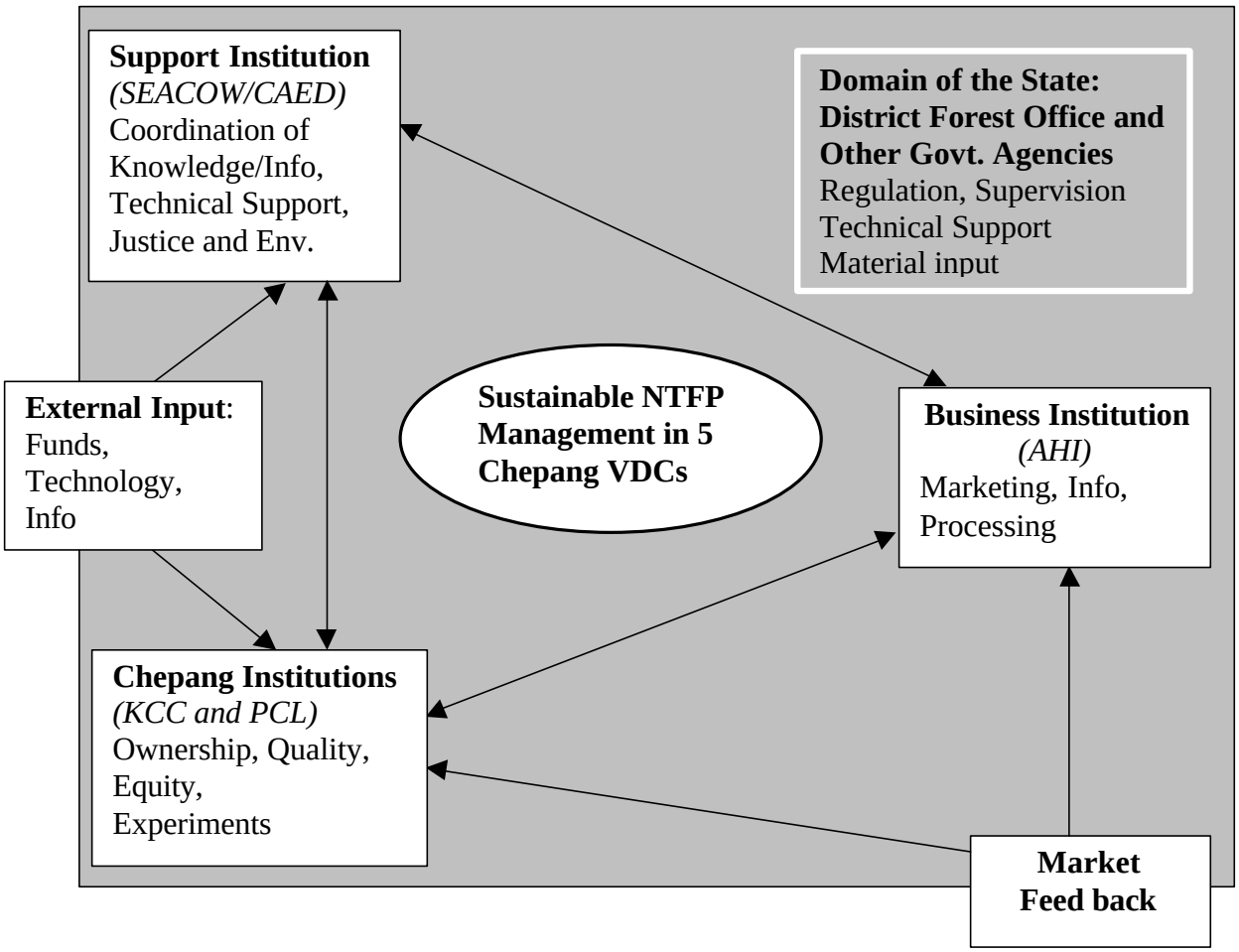
Chapter II

Institutional Profiles

Institutions

There are four interlinked and independent institutions that are directly involved in this action research. Chepang people are the major actors of this roll-on action research in terms of their input and participation. They are represented in the organized form through their institutions. Two such institutions, the NGO Kandrang Chepang Community (KCC) and the *Praja* Cooperatives Limited (PCL), evolved as an outcome of the participatory experimental activities. The School of Ecology, Agriculture and Community Works (SEACOW) is a programme of the facilitating NGO, the Centre for Agro-Ecology and Development (CAED). Alternative Herbal Industries (AHI) is part of the NTFP support initiative of SEACOW. Government bodies and funding agencies have been involved indirectly.

Knowledge Generation and Roles of Stakeholders on the Management of NTFP



Centre for Agro-Ecology and Development (CAED)

Research on the ***Chiuri*** was part of a resource enhancement programme begun around 1993 by the School of Ecology, Agriculture and Community Works (SEACOW), and was the first undertaking of CAED, which was registered as an NGO with the District Administration Office in Kathmandu

in 1992. Now, CAED is better known by the name of this first programme – SEACOW. It was named 'School' because of its approach of learning by doing.

CAED/SEACOW's broad mission is to strive for a sustainable, self-sufficient and just society with minimum pain. Its holistic approach is rights-based and driven by location-specific realities, building on people's strengths through an appreciative perspective. Focused on natural resources, it seeks to adapt cultural forms of knowledge and communication systems in its striving for self-reliance. SEACOW works at the community and household level starting with the worse-off section of a community. Apart from its work on Chepang and NTFP, it operates a Sustainable Livelihood Programme (SLP) in 5 VDCs in the far western hills of Nepal with oppressed groups of people (since 1998) and the Rights-based Community Forestry Programme (FRP) in the 3 districts of Chure range with the aim of supporting some 300 Community Forest User Groups (CFUG) through local NGOs (for about a year). CAED's Organogram with timeline is annexed as Appendix B.

Kandrang Chepang Community (KCC)

Based on its experience that groups have to be established based on the shared desire of its individual members, discussions about SEACOW's programme were initially held with the pioneering farmers. Some of these also happened to be local facilitators of **Chisa Kruskaisa**, a locally adopted adult education system (discussed in the next chapter). Detailed information can be found in Bhattarai *et al.* (1998). Through this process a loose group was developed and SEACOW started consulting them on most matters. Gradually, the group realized the need for becoming organized as an NGO and was registered as Kandrang Chepang Community (KCC) at the District Administration Office in Chitwan.

SEACOW has now withdrawn its intensive presence in the original area and KCC has taken over most of the activities. KCC's main objective is to gain self-reliance by making good use of forest resources and by organizing people to make claims on their rights. It is now working with the NGO Intermediate Technology Development Group (ITDG) on improving techniques such as plucking and drying to improve processing of ***Chiuri*** and other NTFPs. It also manages NTFPs in its working area. SEACOW has started working in the adjoining VDCs building on the lessons learnt in Lothar.

Praja Co-operative Ltd (PCL)

Activities in Lothar drew the attention of SNV (the Netherlands Development Organization), and SEACOW was invited to work on extending the action research to four adjoining VDCs. Although heavily steered and sectoralized, its experience on working with NTFPs encouraged people to become organized for the marketing and sustainable management of NTFPs. While activities continued in Lothar VDC, it also worked as a point of reference. It was agreed that the business organization for the implementation of the business plan should be a co-operative and named *Praja* Co-operative Ltd (PCL). Its main function is the sustainable and equitable management of NTFP in the area. It is registered as a co-operative with the District Co-operative Office in Chitwan.

Alternative Herbal Industries (AHI)

As the natural resource-based enterprise gained in importance, it became increasingly difficult to for SEACOW to function as both a professional and commercial establishment. Therefore, Alternative Herbal Industries (AHI) was formed as a private initiative of SEACOW's business wing in 1998. The entrepreneurial support system needed to be self-sustaining. Its job is to undertake value-based business so that the commercial activity does not outweigh fairness and environmental sustainability. AHI seeks to add value by maintaining quality, and undertaking primary processing such as grinding and packing. It develops new products and markets for both these and other existing products. In the period of 4 years since, it has purchased NTFPs worth $10,000 from the Chepang community, primarily through PCL and KCC. SEACOW ensures this

commitment by securing its majority share and by appointing an appropriate manager. PCL is also a shareholder of AHI so that it is represented on AHI's board. AHI purchases products from PCL, feeds them with market information and assists in organizing supplies and controlling quality.

District Forest Office (DFO)

In Lothar, the relationship with the forest office was not formal as the scale was too small. However, the development of the NTFP support system required working with the DFO. Work on NTFP prompted people further towards the issue of security, and increased their willingness to work on community forestry in some areas. As the highest authority on the matters of forest in the district, DFO registers the community forest user groups (CFUG), delineates the boundary of community forests and certifies products originating from community forests.

Funds

Most of the initial activities were funded by EcoNepal vzw of Belgium and Stichting Ecoschool Nepal of the Netherlands. Some activities were also funded by Oxfam-UK for some time. From 1998-2000, scaling-up of the action research was funded by the SNV under their *Praja* Community Development Programme (PCDP). Due to some theoretical differences, the funding relationship with SNV could not be extended.

Part of KCC is still funded through SEACOW, although they have begun to secure funds from other sources. Some funds for PCL continue to be received from SNV.

AHI is a joint initiative of some individuals involved in NTFP business and SEACOW, all shareholders. Another NGO, Women Acting Together for Change (WATCH) has also contributed through shares.

With the termination of Dutch funds, efforts are being undertaken to make the NTFP enterprise a self-supporting activity. SEACOW, AHI and PCL together are supplying some of the herbs to fair traders such as the Body Shop and Oxfam-Belgium. The commitment of such clients to social justice and environmental sustainability has been a way of sustaining a part of such activities.

Visit http://www.alternatives.org.np for details on this work and their network.

Chapter III

Characterstics of Knowledge Generation System

Approach

SEACOW's programme includes agroforestry, community health, education, training and enterprise development. During the initial phase, emphasis was laid on getting to know the people, their places and interactions. It established a training centre attached to a demonstration farm with some 5 hectares of cultivated land and private forest in the working area. Staff went to the different clusters of villages and lived with them. Literacy centres were run by SEACOW through local village facilitators. Depending on the daily schedule, sector-specific staff, who were oriented to the holistic process, would set aside a theme for discussion in these literacy classes for one or two days. They followed-up on the discussions by talking to the people who were not present during the meeting.

The classes later transformed into more indigenous and cultural discussion forums named by the people as **Chisa Kruskaisa**, indicating a short meeting to learn. It was an adaptation of REFLECT, a self-reflective adult learning process in combination with SEACOW's existing practice of building on people's strengths. Merging problem-centred approaches with appreciative approaches has become increasingly important. **Chisa Kruskaisa** deals with issues of people's concern using adult learning approaches. When the discussions were oriented on subjects or issues they knew, participants easily took over. People easily pointed out who was most knowledgeable on a particular theme. This itself was felt a big change as few technicians or development workers ever made the effort to listen to them. Outsiders are quick to point to what people do not have and mostly prescribe what people need to do. People are thus conditioned to believe that what they have and do is bad and inferior. SEACOW made an attempt to start with what people have and to restore pride for it.

REFLECT-THE RENEWED DEFINITION

REFLECT is a structured participatory learning process which facilitates people's critical analysis of their environment, placing empowerment at the heart of sustainable and equitable development. Through the creation of democratic spaces and the construction and interpretation of locally-generated texts, people build their own multi- dimentional analysis of local and global reality, challenging dominant development paradigms and redefining power relationships in both public and private spheres. Based on ongoing processes of reflection and action, people empower themselves to work for a more just and equitable society (Phnuyal *et al.*, 1998).

Apart from the incredibly efficient organization of people during hunting, labour exchange systems, and buying of a buffalo for meet consumption, Chepangs are not strongly organized into units with political power. **Chisa Kruskaisa** is in this sense not a form of traditional organization but a system to create an environment for people to reflect on the realities of their own lives. Forms of traditional modes of communication such as songs and drama are adopted as means of communication.

Initiating Chiuri Research

Chiuri appeared to be one of the most interesting and important resources in the area. Devendra Adhikary, a volunteer forester with a sociological orientation was put in the village of Tapang where ***Chiuri*** occurred widely, in order to work with the villagers (as part of his enrolment process in the institution). He was occasionally supported by a Belgian voluntary agroforester, Bernard De

le Court, who brought different perspective into the dialogue with the villagers and devised new areas for experiments and information.

As an observer participant, Devendra spent all of his time with the villagers observing their interaction with the forests focusing on ***Chiuri***. People told him what they tried to do in the past: what worked well and what did not. When he asked if they would be interested in experimenting on some thing they would counter with giving him the results. For example, when he proposed experimenting on making **raksi** (alcohol) out of ***Chiuri*** pulp, the people replied that it would cause pest attack on immature ***Chiuri*** fruits of that tree the next year. This was a widespread belief. Some people in the area who had tried to make **raksi** recently confirmed that pest attack was felt to be its consequence.

As he discovered that their observations and experiments had been recorded in songs, he learnt the language and songs. He went through the complete cycle of ***Chiuri*** flowering to harvesting and processing. For many days, he had ***Chiuri*** once a day as his only meal in some houses. He did not take anything with him except his notebook and basic clothing. He shared his ideas, his findings, and a few bugs with colleagues in the monthly staff meetings.

After this intense period of one month in Tapang, he visited other surrounding villages. Other sectoral staff kept on feeding him with information from people of the other villages. People's detailed knowledge about the plants and animals was overwhelmingly impressive. The main task seemed to be to make that knowledge visible and recognized. Villagers had observed and tried every conceivable possibility within their means. They have more than 15 words for describing a ***Chiuri*** tree based on the characters of its parts, from trunk to flowers (see the table below). They know how to process certain products within their manual limits, their uses and the market (in a non-technical sense). In the past, people carried ***Chiuri*** butter on their backs to sell in Kathmandu. Although they knew how to expel good oil, they also talked of using it to adulter butter. In fact, ***Chiuri*** butter itself probably has its origins in adultering ghee – or the evaporated dairy butter one can find in Nepali and Indian markets. Some reported that people in Syadul, north of Lothar, added ***Chiuri*** butter when boiling the milk so that the fat content of the milk does not reduce even if water is added.

Dialogue continued with the villagers. An idea would be shared with the villagers and they accepted or rejected the proposal. This helped identify critical points. Despite fruiting problems and people's poor perceptions, ***Chiuri*** seemed to be an important resource in the area. However, villagers would not consider it planting because it grows very slowly. Another constraint was that fruit ripens all at the same time and people cannot manage to consume it all. Also, it was found that the nectar of ***Chiuri*** remained under utilized. All the aspects of people's knowledge on ***Chiuri*** and the opportunities this offered for community development were presented in a workshop with representatives of the Chepang community and people concerned with them for various reasons.

> Don't you have anything to talk about Chepangs other than Chiuri? Chiuri, Chiuri, Chiuri - don't you people have any other jobs?
>
> *Mr Jhyapuram Praja, VDC chairperson in 1993 and later regional DDC member*

Bases for Categorization of *Chiuri* and their Characters	
Basis	**Varieties and characters**
Flowering time	**Tomyo, Wayo, Langhyo, Jayo/Crokiyo** (See the next table below)
Fruit and seed colour	**Futiyo** (whitish fruit and seed), **Malbayo** (yellow in ripening), **Meringyo** (smokey fruit and seed)
Leaf colour	**Hpatyo** (yellowish)
Colour of trunk/branches	**Galiyo** (dark trunk, branches and leaf)
Shape of fruit and seed	**Bhantyo** (round like tomato), **Newayo** (elongated - pointed), **Bopyo** (flattened), **Rithayo** (like Ritha (*Sapindus mukorossi*) fruit - flattened horned top)
Shape of tree and branches	**Lagangyo** (branches like vines), **Lauranyo** (big handsome round canopied), **Nachangyo** (bi-forked trunks), **Jhapalayo** (Looking like a bush), **Clamyo** (panicle - horizontally spread branches), **Shrungkayo** (like corymb - upwardly branched)
Size of the fruit	**Pechiriyo** (smaller fruits and seeds), **Godoryo** (big fruits like b*aldangra* fruits)
Texture of fruit	**Smayo** (velvety)
Taste and smell	**Hykayo** (bitter), **Khatayo** (tasting like nut meg), **Mattiteltiyo** (smelling like kerosene)
Productivity	**Marchamani** (growing like yeast), **Raniyo** (giving most fruits - the queen), **Tharayo** (not giving fruits)
Location of the tree	**Dhabliyo** (grown in low even land), **Bangyo** (grown in cliffs)
	(NB: **yo**=*Chiuri*)

***Chiuri* Varieties based-on Flowering Time, and their Properties**						
	Flowering Time	**Ripening Time**	**Defoliation Start**	**Juice Taste**	**Oil Yield**	**Remarks**
Tomyo	mid Aug – mid Nov	April – mid June	beginning June	sweeter than other varieties	low yield but good quality butter	
Wayo	mid Oct – End Nov	June – end July	beginning Sept	less sweet than Tomyo	more yield than Tomyo	
Langhyo	mid Nov – mid Jan	mid Jul – end Aug	mid Aug	less sweet than Wayo	more yield than Tomyo	
Jayo/ Crokiyo	mid Jan – end Feb	mid Sept – mid Oct	end Oct	less sweet than Langyo	more yield than Langyo	no successful ripening

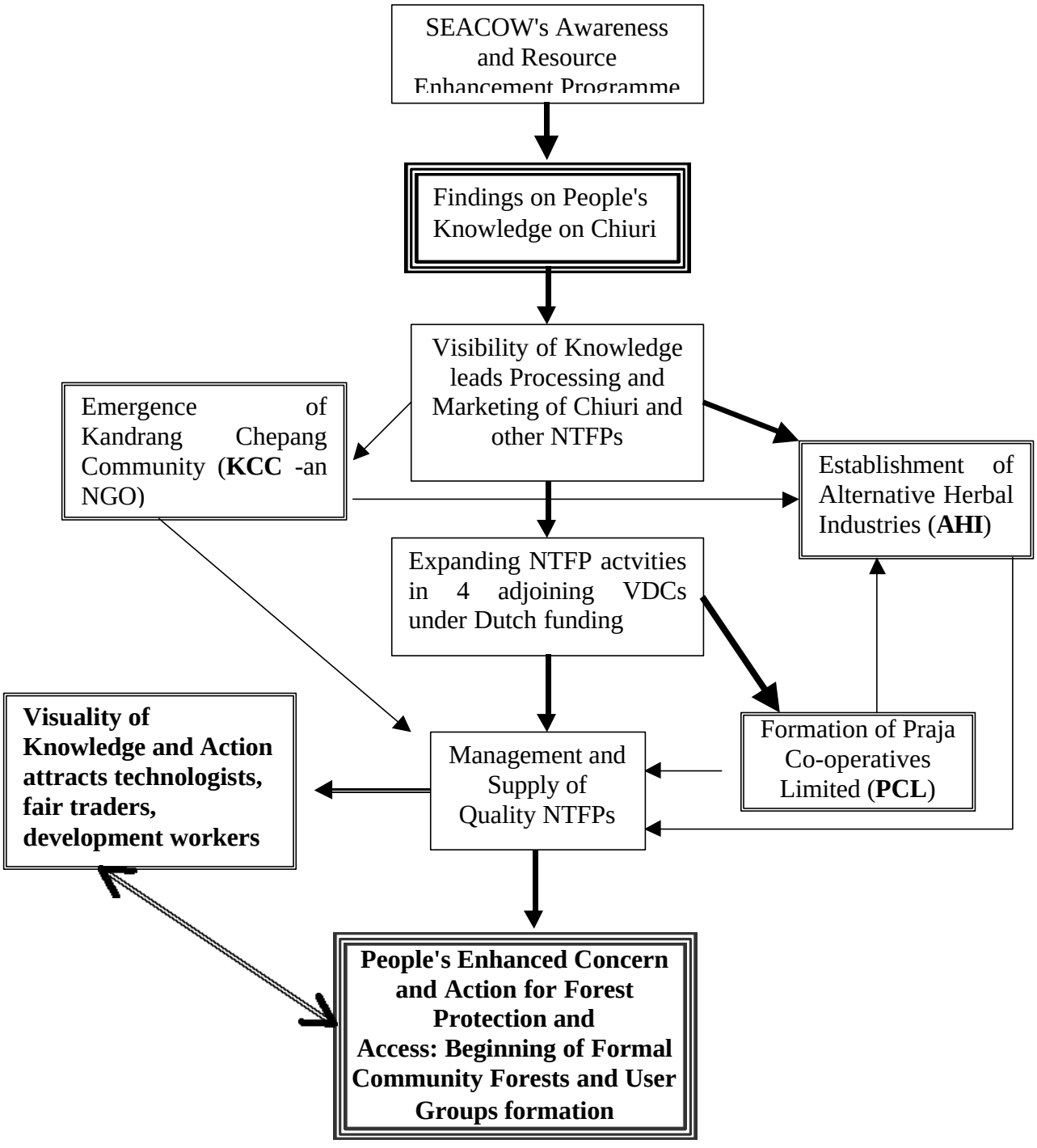
Processing Trials

By this time, people's knowledge on ***Chiuri*** and other observations had proven the worth of working on ***Chiuri***. By the next flowering season, Pramod Dahal, a food processing technologist, joined to work with the social forester and the villagers. Different potential uses were explored together with the villagers. Techniques were developed and evaluated in the villages. Villagers joined in making equipment to squeeze juice out of the pulp. A wood/metal, portable pulp press was developed in the village itself (with thread and nuts brought from outside). Villagers explored what was the best period to squeeze out the pulp and they advised which ***Chiuri*** variety gave the best pulp. Two enthusiast villagers, Bhim B Chepang and Nar B Chepang, took responsibility for moving the squeezer to different parts of the villages and recording how much pulp each of the villagers brought in. They put the juice in jerry cans and exported it to a motorable road for bottling. They were assisted when technically desirable. Later on they became SEACOW staff and collaborators in this case study. The Belgian agroforester was also looking at many possibilities outside the area. Trials were undertaken on the collection of nectar and its storage, and on making better use of butter, including efficient oil extraction. Details of other value addition trials are discussed in Chapter 4.

The failure of a modern, efficient oil extraction technique is an interesting example where peoples' knowledge clearly stood the test of time. The traditional method looked very inefficient and labour demanding. In an effort to increase the efficiency of expelling oil, seeds were sent to the Development Consulting Services (DCS) who were designing different oil-expellers appropriate for different kinds of seeds in Nepal. They succeeded in expelling higher volumes of oil, but it turned out to be more bitter and not smell as good as the oil obtained in the traditional way. Actually, people already knew that this modern technique was not suitable for their seeds. A similar expeller had been introduced in the neighbouring village of Silinge some 15 years before, but nobody has used it since. They knew that oil expelled by this machine gave them stomach ache. The experiment in DCS confirmed that by over-pressing, more saponin – a toxin in the seed – is released to the oil.

By now, feelings of low esteem associated with ***Chiuri*** were gradually fading. The village leader, for example, was proud to introduce ***Chiuri*** squash in one of the District Development Committee (DDC) meetings followed by an appreciative presentation from SEACOW staff about ***Chiuri*** and Chepang. Later he said that this was the first time in the district that Chepang people had been referred to in normal (non-dominating) language. Such incidences not only gave confidence to the people, but also to SEACOW with their knowledge.

Case Flow Chart: Knowledge Generation Leading to Value Addition and Security



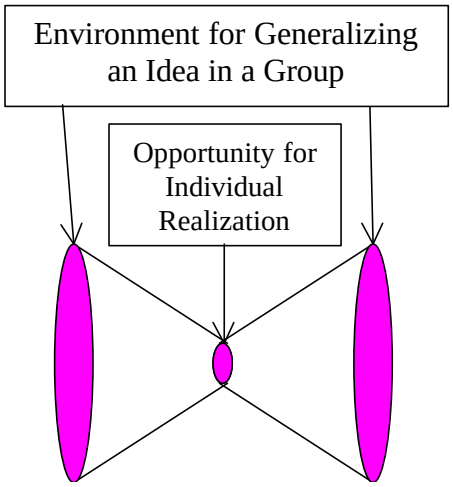
Acting-Reflecting Together

It became clear that the central key to knowledge generation and research is working together with people. Interaction with people was based on intense dialogue, keeping people up to date with exisiting information and knowledge obtained from elsewhere on the topics and experiments suggested for trying in their village. Action research was agreed upon, undertaken, and reflected on together with the people. Learning was an important output of every action.

This process of action and reflection was enhanced through study tours. It was strengthened by looking at interconnections through a multidisciplinary and holistic approach. The participatory action research was supported by an array of specialities drawn together, and by SEACOW having an appropriate, extensive national and international network for seeking help. Certainly our work broke with the conventional forest-technician led trial, which is often focused on growing or protecting trees. It has been an effort of blending outsiders' with insiders' knowledge beyond the forestry discipline. Its thrust was/is looking outside from the inside rather than looking inside from the outside, although both are necessary. There was little distance between the facilitator and the people participating in the research. Residential meetings were held in the training centre and facilitators paid residential visits to the villages.

Empowering was the key to knowledge generation. Efforts were made to demystify the knowledge from both sides. Knowing what has been done elsewhere about a particular activity was considered as people's right to become informed. It shows that the process of knowledge generation is a gross expression of people's skills and values. It is difficult to fit it in disciplinary boundaries. Both facilitators and people are taken as sources of knowledge, who together create new knowledge - undiscovered otherwise so far.

Although non-formal individual and family-based dialogue is very effective, some level of group environment is felt necessary for generating and consolidating the generated knowledge. For example, Diplal did not show much enthusiasm when the possibility of distilling alcohol was discussed and demonstrated in the group. Speaking to him individually in non-coaxing and non-threatening terms, he was convinced that it is good to distil alcohol out of the fruits, yet did not start making alcohol. When he sat amongst convinced individuals in the group during a discussion and after learning what all the group members knew about it, then he got the confidence to start distillation. A series of participatory training events were used for this purpose and facilitators' visits were useful in bringing in the knowledge individuals have in the group. The Group-Individual-Group set of action is felt very useful in carrying the knowledge forward. Normally, the middle process that is so common in the formal education process is often missing in the world of extension.



Zooming out-in-out: Group-Individual-Group-opportunity ensures better application of knowledge

Methods Used

Methods and techniques congruent to the approach bring out the best results. It has already been demonstrated that action research based on dialogue itself was the method of learning. Methods that involve people both as planners and actors were used.

Initially, in Lothar, drama was staged addressing the issues related to forests, such as the protection of forests from fire, the indiscriminate clearing of forests, and the underpriced selling of NTFPs. People expressed their ideas in the meetings through action and songs. Effort was made to record and understand the songs. These songs would then open up the information on a particular tree. A song said **Wayo** has already blossomed. A simple question on it would unravel the varieties of ***Chiuri*** categorized by the Chepang people based on the flowering time. Interactions were informal and continuous. The facilitator had to be alert to note down when people mentioned relevant information and ask for clarity or deepen the issue by asking further questions. People felt recognized when they found their words being noted. Respected people told what they knew about

the discussed topic in greater detail, illustrating the importance of mobilizing indigenous credibility.

Of course, study tours were important aspects of knowledge generation and great sensitizers of self-trials. No significant trials were conducted on ***Chiuri*** itself, because people already knew quite a lot about it. However, people tried several ***Chiuri*** processing methods and maintenance of quality was immediately applied. Study tours both within and outside the community were organized as people pick up different things from different settings. A visit to the house of a person who tried a new technique was itself a motivating factor. Culturally, people brew beer and distil alcohol. In an effort to save grain from brewing and distilling, and also as in effort to make use of perishable fruit, distillation trials were suggested. Costs would be covered by SEACOW if they involved more than the labour of the person. Obviously, some interested villagers tried it. It did not taste quite as good as that brewed from grain, but was acceptable because fruit was in abundance. People need alcohol in large quantities when visiting their parents-in-law. They did not use ***Chiuri*** alcohol for fear of losing face until they found someone else using it. Initially, distillation of ***Chiuri*** fruit pulp failed for two reasons: firstly, it did not taste good, and secondly, people believed that if fruit were fermented, fruit the following season would rotten. The trial was undertaken with the ***Chiuri*** in SEACOW's demonstration farm, because ***Chiuri*** was too valuable for people to risk the loss. However, people tried and adopted the method of distilling alcohol from guava which has no cash-value. Perhaps the belief is a cultural measure for preventing ***Chiuri*** fruit from being fermented and transformed into alcohol. Later, when a few tried, it picked up again.

Of course, modern methods such as posters and slides were used too. Slides were used as an attempt to inform people about their own knowledge. Even being worth a photograph was already important. At later stages, a series of flipcharts were used to make participatory functional decisions, such as drawing up the criteria as a basis for selecting a NTFP product for business. People used songs, drama or two-dimensional representations widely used in PRA.

Participatory trainings and workshops were the most widely used methods of communication. Most of SEACOW's input was on organizing such gatherings. Normally each action was preceded by training and was wrapped up with reflective workshops. Orientation and reflection were found to be the boosters of the outcomes of study tours.

Critical Factors for Attitude Change

It is the overall approach that leads to attitude change among participants ranging, from the role of the facilitators to the benefits participants can foresee. Some specific points found to be critical in this case are:

1. People need to feel that their views, opinions and perspectives are valued. This opportunity needs to be created by working together. Openness breeds openness and avoids one-sided insistence. This is very important in building on the knowledge people possess. People with better educational and economic opportunities need to learn with patience while working in rural disadvantaged communities. SEACOW's patience to learn about ***Chiuri*** opened new vistas.
2. This works the other way too: participants need to know what the facilitator is up to. The facilitator should be able to share the end vision of the research. Use of concentrated juice of other fruits in the juice-making training was an important example. People had a fresh orange, then had a glass of juice made from orange. In other words, participants need to understand the use of the results thoroughly. This demystifies an experiment and invites candidates for action with commitment. Maintenance of quality proved much easier when the producers had the opportunity to meet the end users and see samples of produce, and when attention was drawn to the need for accuracy (as in a press visit of Body Shop's team, used as an opportunity for demystification.)

3. Learning is an individual as well as a group process. Bouncing back and forth between individualized and group orientated processes is very important. This is important to avoid certain participating individuals feeling left behind, just for the sake of participation and group performance. Therefore people should be asked to try out certain things at home and report their experience back to the group at the next meeting. The group process is particularly important to generalize knowledge generated at individual level in collective works. Certain community decisions, such as the optimal fruit harvesting level or time, are not applied unless they go through a process of consensus building. However, for successful adoption every member has to know what all the others know about this issue, and to be individually convinced of what needs to be done. As people do not always dare to speak out in a group if they disagree, it is good to build the trust through individual interactions for changing attitudes. The facilitator should be sensitive to these issues.
4. Any research that is not in conflict with cultural beliefs has higher chances of successful adoption. People distilling guavas rather than ***Chiuri*** fruits is but one example. However, the initial adoption by a few is critical in changing peoples' attitudes. There is always someone who is adventurous enough to break the wall of conventional practices and work differently in the community. Such people certainly need to be the focus for intra-community study tours. Jit Bahadur of Puchgum and Santa Bahadur of Chyoding are examples of such people, constantly experimenting on agroforestry and processing technologies.
5. Of course, economic returns help to change attitudes, but are not always the most important factors. Pride and ego are no less important. It is felt that people at the margin have stronger egos than the better-off. For instance, whereas richer people attend training sessions even without being asked, the poorest people are too proud to attend unless officially invited. Despite the fact that the poorest are relatively easily motivated by economic returns, these benefits become more effective in changing agents when they come in a package with increased pride, as demonstrated by the change of attitude about ***Chiuri*** among the Chepang people. People at the margin can also be motivated to carry out research for the importance it bestows on the individual for making such an attempt.
6. A trial is most effective when kept small at the beginning. This reduces the distance between the facilitator and the participants, and minimizes risks for both of them. It creates the conditions for the participants to lead the research. However, opportunities to scale up the trials are an important avenue for inviting people for further trials and further refinement. The opportunity for KCC to expand into surrounding areas is such an example. Knowledge cannot survive when it is not furthered.

Access to Knowledge

Most people knew the different varieties and their fruiting season, the occurrence of trees and the system of ownership. However, some information was known only rarely and might not be known by any of the neighbours. Obviously, younger people has less knowledge of forests and on particular species. Initially, knowledge of subjects such as ***Chiuri*** was associated with lowly feelings and backwardness to some extent. Until their knowledge on ***Chiuri*** was made visible and at least recognized by us, people wanted to talk on anything but ***Chiuri***. From then onwards, though, people happily shared their knowledge and their ideas for ***Chiuri*** and other plants including medicinal plants.

Who Possesses Knowledge on Chiuri?

(In order of the amount possessed)

Faith Healer

Elderly People

Village Leaders

Ordinary People

Uneducated Youth

(Unmigrated)

Educated Youth

Faith healers, called **pandeys**, possessed most knowledge about ***Chiuri*** and other trees. Because they believe they will lose their power by coming into contact with outsiders, they were reluctant to attend meetings or have any input into the experiments. The old generation of faith healers is not being replaced by the young generation. In many cases, the medicinal plants sold outside are not necessarily the medicinal plants that Chepangs use. Knowledge on the medicines used by Chepangs are mostly confined to the **pandeys** and to a certain extent to some leaders and rich people. People seem to have the medicine for abortion but nobody spoken to knew about it. Some people said, it is just the drumming that "puts womens' womb inside out", some said both. They said only an experienced old **pandey** knew about it.

Unsurprisingly, rich people knew more about the use of plants sold outside than those who are marginalized. Ram B Praja, former village head and a rich person in Tapang, could tell confidently that the end use of ***Chiuri*** ghee was for making soap. His father used to sell ***Chiuri*** ghee some 75 years ago in the markets of Kathmandu, the capital city of Nepal. As he is rich, he has time to go outside to the markets, establish a good relationship with middlemen and road head traders, and attend workshops organized by government and non-government organizations. All these have helped him to have increased access to information.

The use of a particular plant within the community was more or less the same. Women knew more about the domestic/local use of plants. Men knew more about the uses of plants and their parts sold outside. They (men) also knew the local/domestic use of plants.

A point to note is that the possession of formal knowledge is more or less the opposite to this of traditional knowlegde. It shows how the formal, external, state and science-based knowledge replaces the indigenous knowledge of the people. A careful and middle path seems necessary, bearing in mind the politics of knowledge.

In particular, views differed in the use and application of certain techniques. There were many households in the village that did not know about the use and application of techniques their neighbours had been using/applying for many years. For example, people used ***Chiuri*** cake in different ways. Some households sold it in the markets, some applied it in their farm as manure with pesticidal property and still others considered it as waste and threw it away. Asked why they did not sell ***Chiuri*** cake like their neighbours, the reply was that they did not know about their neighbours selling it.

Perhaps people were too much engrossed in the struggle for survival. They said that "they have no need to go to their neighbours". People seem to gather knowledge directly from nature more than from their fellows. On the other hand, it is very interesting to see how news can spread so quickly through informal ways, for instance when people set up near a water source to distil alcohol so that they did not have to carry water. There are also a good number of people who keep the brewer company as it is customary to give a small quantity for free trial. Normally, such samplers are also the clients.

Traditionally, groups of people exchanged information mainly during labour exchange days. Attendance of meetings and classes led by the facilitators and meeting farmers from different villages were also very important. This prompted SEACOW to respond with intra-community tours. With disappearing folklore and an increased feeling of inferiority amongst the people, knowledge on their forests is decreasing. Songs and inherited practices are perhaps the most important means of recording traditional knowledge. It was interesting to note that even the small children had significant knowledge about plants and animals. However, once they have attended school and been exposed to formal education, the inferiority associated with such indigenous and non-formalized knowledge becomes entrenched, and people do not maintain an interest in specifying and expanding their knowledge of forests, ***Chiuri*** or any other specific plants.

At an earlier stage, activities were run with men, in the expectation that women would join in subsequently. It was felt that SEACOW was widening the gap between men and women by

providing opportunities for men in this relatively egalitarian community. Whom facilitators' talked to most in a house was equally important to which house they paid a visit. Now the tendency is to begin activities with women (as one starts with the marginalized) and create special as well as general opportunities for women. For example, most kinds of training or meetings are held solely for women, followed by mixed training or meetings. It is important to bear the hierarchical structure in mind within the house.

Who Sets the Agenda?

SEACOW was interested in getting to know more about what people have and what it could do to enhance this. People were conditioned to the belief that only outside knowledge could solve their problems and open up their opportunities magically. People had to believe that what SEACOW was trying to achieve in their work was not merely to fulfil the conditions of their job. SEACOW operated a dispensary and our intention was not to stop people using the herbal medicines they knew. SEACOW staff used to ask them what medicine they use for a particular disease. After some time, you would overhear someone saying "do not mention any herbs to them, they will tell the same thing in the dispensary instead of giving medicines"!

A working strategy of SEACOW towards claim making was to help people to become connected with the indigenous rights movement of the country. An activity started as a meeting point of Chepang people living in Kathmandu led to the spontaneous formation of the Nepal Chepang Association (NCA). It worked closely with SEACOW as an advocacy organization to take the issues of Chepang people further. NCA became a member of the Nepal Federation of Nationalities and became exposed to the ideas of ethnic identity, intellectual property and intellectual property rights. As such, knowledge on ***Chiuri*** was positively linked to national and international ethnic renaissance. NCA demanded special cultural rights on the individual ownership of ***Chiuri*** and special rights on the use of their traditional lands. People who felt lowly for being called Chepangs and used the king-granted term of Praja (meaning king's subjects), started to call themselves Chepang again. The previously lowly-perceived ***Chiuri*** and knowledge about it began to become popular – even fashionable. Certainly, people's morale was boosted when Ms Anita Roddick, founder of the nature-based cosmetic producing multinational the Body Shop chose the Chepang community in her introductory press meeting on a range of Ayurvedic products under their fair trade movement.

Setting the agenda was influenced by local beliefs. For certain apects or diseases that were related to their belief, the faith was strong. For the fruiting cycle of ***Chiuri***, they said "it is because of the time and the time cannot be the same all the time" – meaning that it has something to do with the god. You would have a hard time if you tried to argue that premature fruit drop was because of the fruit flies that year. Chepangs hold a strong belief that the **pandeys** can treat a ***Chiuri*** tree and make it bear/hold more fruits. Chepangs say that the **pandeys** in the past were very powerful and had a lot of knowledge about treating the trees. They could also call numerous birds and bats in the area to eat the pests. These days, they think **pandeys** are not knowledgeable enough to do many of these things, as they lost power through not observing strict rules. So, in people's view, the ***Chiuri*** trees have remained untreated and this explains the increased problems with premature fruit drop.

What is it that keeps a buffalo, drinks milk, throws yogurt, produces butter and excretes dung?

Chiuri (buffalo = the tree, milk = fruit juice, yogurt = squeezed pulp residue (it causes stomachache if you eat pulp roughage), butter = the Chiuri fat and dung = oilcakes.)

Different groups of people developed interest in different research agendas. ***Chiuri*** ripens during the period of food shortage. Poor people who face the problem of food shortage consume ***Chiuri*** fruit as food. For them, it was important to preserve the fruit for as long as possible so that they

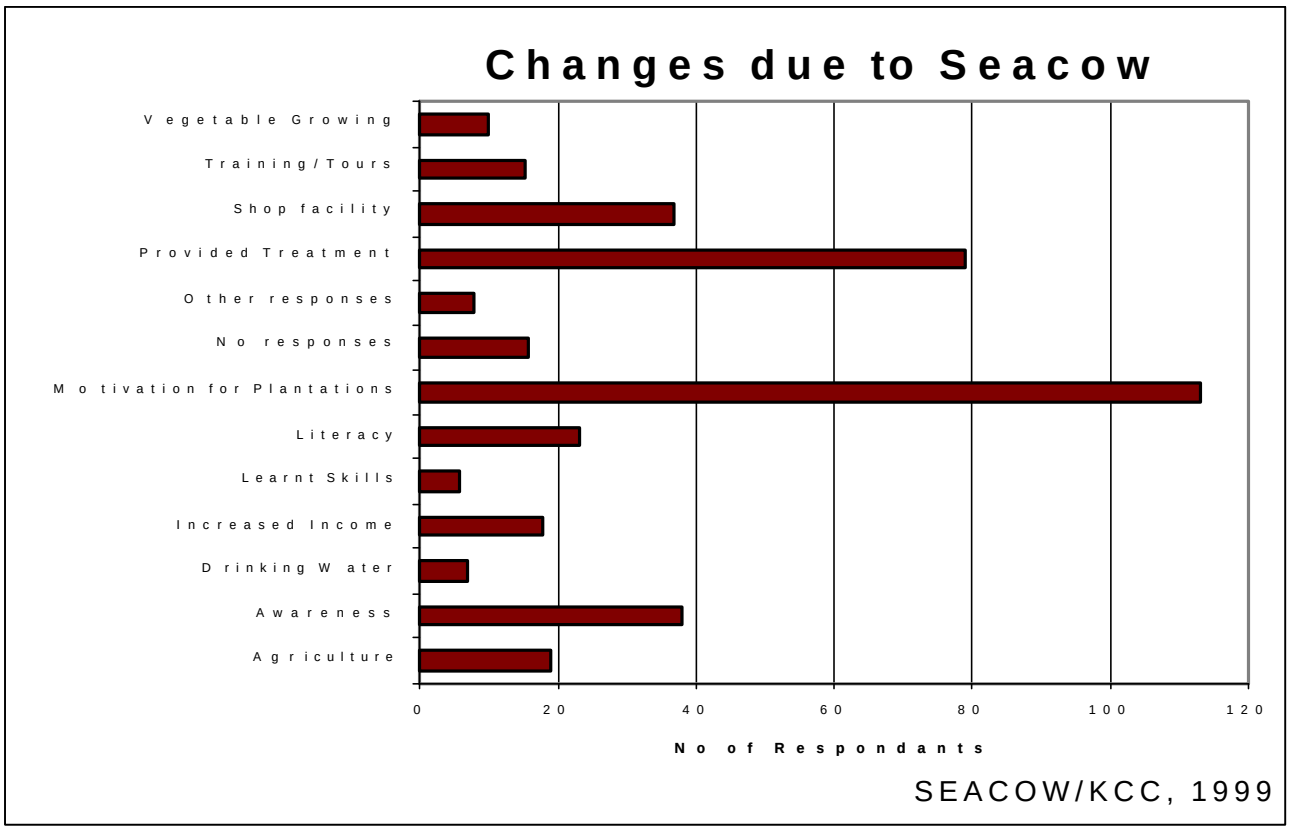
could consume it for many days. Although those who did not possess a ***Chiuri*** tree could get ***Chiuri*** fruit (they have to return the seeds) from their neighbours, they were not in favour of making any products from ***Chiuri*** pulp to sell in the markets. However, such poor people were interested in adding value to nectar and selling it in the market, as they were also allowed to collect nectar from the ***Chiuri*** of their neighbours.

Effectiveness of Knowledge Generation Systems

Living together with the people for considerable length of time as an observer participant is very effective. Traditional ways of storing local knowledge, such as the songs and stories, became important sources of information once an intense rapport with the community had been built. This was facilitated during, for instance, the annual cultural festival where traditional Chepang songs and puzzles were part of the programme.

Study tours were the most effective means of triggering spontaneous trials. A study tour to a relevant place was like choosing from a menu. When study tours included couples in an effort to encourage women to join the tours, it brought better results than when they went separately.

No specific independent perspective on the knowledge generation process could be obtained from people. KCC people preferred **chisa kruskaisa** over normal literacy methods. The following graph gives people's feeling on SEACOW's input and gives some indication of important criteria for knowledge generation. This was based on open and mutually inexclusive questions.



People were asked as what changes they think is due to SEACOW. Their responses were clustered. Most of them said they were motivated to plant fruit, fodder trees and grass due to SEACOW. The second most important was that they were supported through processing facilities. They also valued other aspects of knowledge generation such as developing awareness, skills, study tours, as well as the shop facility which was the initial enterpreneural acitivity before focusing on NTFPs.

Step-by-step blending of outside with inside knowledge was effective. A piece of information indicating that the forest they were using belonged to the government by law was a kind of shock. In this case, motivation of people to go and lobby politicians for the entitlement of the **khoriya** was high. People were also willing to make efforts to get the area registered as community forest, even if this prevented the cultivation of annual crops and ***Chiuri*** ownership at the individual level under its provision.

Provision of information and jointly conducting processing trials interested people in trying to use their products in new ways.

At times, acquisition of knowledge itself was a satisfactory reason for getting them involved. People were interested in experimenting even if they knew that it did not have much economic significance, for instance some were very keen to try out grafting citrus onto mango just out of human curiosity. Propagation of other trees through cuttings also triggered cutting trials of ***Chiuri***. People thought if ***Chiuri*** could be quickly grown from cuttings, that would be very beneficial.

Trials undertaken in the village together with the people have invited enthusiasm and other spontaneous trials. When they were involved in the extraction of essential oils from lemon grass, they thought that the essential oil from other aromatic plants could also be extracted. Deep Lal, a farmer, attempted to extract essential oil of the flower of frangipani (*Plumeria rubra*), cud weed (*Gnaphalium polycaulon*), leaves of Nepalese pepper (*Zanthoxylum armatum*), leaves of Indian curry leaf tree (*Murraya koenigii*) and mug-wort (*Artemisia indica*), amongst others that possessed no possibility of economic significance.

Management of Facilitators

This part reflects SEACOW's experience of working with facilitators, some of whom are contributors to this case study.

Work starts in the minds of the facilitators before they actually begin. A positive attitude that people without formal education living in isolated villages away from modern means of communication *do* have knowledge on their surroundings, as well as having unconditional respect for them are important prerequisites. SEACOW claims to have a cadre of such facilitators.

Some facilitators were interested in collecting the information and getting it publicized. Our feeling is that there should be room for the fulfilment of an individual agenda in the knowledge generation process. At the beginning of their careers, facilitators prove their worth by demonstrating their ability to make a difference. From the point of view of an institution, the management of facilitators starts before they are hired. It has to be seen as how the given work fits in the incumbent's personal agenda. It is better if the research itself is chosen by the individual with the institution only providing the framework.

If the facilitators are independent to design further responses based on their findings, they will take it as a challenge in a positive sense. Normally, in the ***Chiuri***-NTFP action research, the objectives, tentative direction and budget were discussed in the staff meetings and the facilitators were free to operate within these limits. Facilitators were encouraged to conduct experiments and were provided by SEACOW with new relevant information whenever needed. Technicians and senior staff paid visits to the field from time to time to discuss the progress and make suggestions.

Counselling is necessary in understanding facilitators' limitations. It is our experience that value-driven people need more counselling than those driven by the perks. Such people can easily burn themselves out without being able to accomplish their job. Of course, there is magic in both characters and this goes for both the managers of the facilitators and the facilitators themselves. Bare foresters need much orientation to become facilitators. It is already exemplified that knowledge is circular and holistic. So are people in the communities. Too much focus on one

subject burns out people quickly. SEACOW's multi-disciplinary approach has avoided these types of situation, as the issues of NTFPs were approached from many different angles.

People from a rural background are not necessarily good at facilitating the knowledge generation process. Of course, they have a relative advantage in understanding, but they are also inclined to want to escape from their village as and when possible. SEACOW lost two brilliant Chepang staff who were involved in the knowledge generation process and ***Chiuri***. Both loathed the village life and their fellow-villagers, whereas people from better conditions and better education took it as an experiential challenge. This was felt even more strongly by those with higher formal education. Because SEACOW staff were required to stay at the house of the marginalized to internalize the issues of the marginalized, educated people with proper orientation were found to be more committed than 'half-educated' people, *i.e.* those with a formal education but without any social commitment. Technicians with sociological orientation performed better than generalists. The key is to get a multi-disciplinarian who knows how to manage himself or herself and whose personal agenda matches with that of the research.

With regard to females, orientation in self-protection and reproductive consequences is needed. SEACOW lost a number of female staff in one go because they did not have the experience to handle this. Another point to note is that having a facilitator who is a female does not ensure the inclusion of females in group activities is not ensured purely by virtue of. Anybody, male or female with the perspective of social justice and politics of knowledge, can build the female perspective in the knowledge generation process.

I became so knowledgeable by working on Chiuri. I can do similar new jobs wherever in my community.

Nar B Chepang, Tapang

I feel, we have gone to quite deep in the issues of the village. I wish I could do a PhD on Chiuri itself.

Bhim B Chepang, Syamrang

(The Chepang duo who worked as facilitators in PNARP)

Chapter IV

Value Addition and Security Assurances to the Forest through Research

Context of Value Edition

Chepangs primarily sell parts of plants with medicinal value such as chebulic myrobalan (*Terminalia chebula*), belleric myrobalan (*Terminalia bellirica*), emblic myrobalan (*Phyllanthus emblica*), asparagus (*Asparagus racemosus*), *Gurjo* (*Tinospora cordifolia*), Nepalese jasmine (*Jasminum officinale*), Nepalese chestnut (*Castanopsis indica*), greater yam (*Dioscorea alata*), cinnamon leaf (*Cinnamomum tamala*), and *Chiuri* (*Diploknema butyracea*) amongst others. Most of these need primary processing and all require drying. Preparation of emblic myrobalan berries and asparagus roots, for example, involves boiling and then drying. Some need to be crushed for easier drying, such as ***Gurjo***. Some of the ***Chiuri*** products sold are solidified oil, referred to as butter, and residue (cake), which is bartered to some extent for rice down in the valley.

People were primarily concerned with the price of ***Chiuri*** butter. They were used to selling it to road head merchants and had no control over the price. Since the producers did not have any means of finding alternative buyers, they had no choice but to sell their products to the road head merchants, from whom most had bought essential domestic supplies such as salt and kerosene even in the previous season. Even if people knew of other places to take their butter, it did not make any sense to take the little amount they had to sell elsewhere. Few would take the risk of selling their butter to someone else even if they could get a higher price, for they depended on the road head merchants for their basic supplies. Normally, the road head traders make an alliance, a micro-level oligopoly, so that they did not interfere with one another's clientele. Since research was focused on ***Chiuri***, initial discussions revolved around ***Chiuri*** butter. Initial work focused on making this situation visible to the people and discussing the best way to solve it. In addition, the ***Chiuri*** butter they sold was followed up the chain to see all the possible end uses, so they could get a clear picture of the whole marketing chain and its requirements.

This was the first phase of building knowledge on NTFP marketing: villagers told us that before there was a road, they used to go up to Kathmandu to sell the butter. After the road was constructed, carrying had become rather redundant. Facilitators provided external information, and new ways of marketing were devised. This is one of the areas where knowledge obtained through external facilitators was useful in understanding the broader picture. It was another step closer to getting themselves organized so they could break the vicious circle. On the one hand, it would not have been effective without people gaining enough confidence and the assurance of obtaining alternative outlets for their products. On the other hand, the market demanded better quality and timely supplies.

> When I saw them (SEACOW people) collecting Chiuri nectar with village folks, I took it like child's play until I got money from the collection of nectar. We easily know how and when to collect it.
>
> *Kajiram Praja, Hasunde, Lothar*

An equally important issue was that if the demand for an NTFP soared in a particular year, the supply of the source species could become be exhausted. People did not have a sense of being in control to manage harvesting levels. They knew it mattered, but this did not materialize in the absence of organization and concretization of their knowledge.

Value Addition Trials

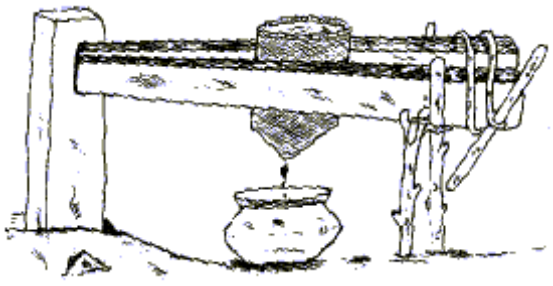
Both relatively well-off as well as poor households became interested in ***Chiuri*** exploitation. The ownership of ***Chiuri*** trees itself was an indicator of prosperity in the area – the greater number of ***Chiuri*** trees you have, the richer you are! Over 50% of the households in Lothar VDC have less than 5 ***Chiuri*** trees, whereas around 10% have over 30 trees. SEACOW's successful experimentation in making ***Chiuri*** drinks, both soft and alcoholic, attracted a lot of attention, as the thus-far unknown and under-utilized ***Chiuri*** juice fetched cash. People with a higher number of trees directly benefited, while those who did not own any ***Chiuri*** trees also got better wage employment in their own locality. Some earned up to 200 Rupees (Nepali Currency: US$ = 75 Rupees) a day, which was almost a windfall gain for poor people in the area. This led to a greater recognition of ***Chiuri*** among both locals and the outsiders.

> People liked Chiuri raksi like Urvasi, why we people did not make it before?
> (**raksi** = alcohol to drink, **Urvasi** = a popular commercial brand of vodka)
>
> *Durga Maya Praja, Lothar*

The good thing about ***Chiuri*** is that it gives richly sweet fruit at a time when new crops have not been harvested yet most people's stored harvest has already run out. Nonetheless, major problems were identified in that the fruits do not keep long enough. They have to be harvested just before they start dropping naturally due to ripening. Many of them are wasted and the ripened fruits also invite a number of foraging insects. Further, it is the peak season for relay-cropping millet with maturing maize and hence labour is scarce for other activities. The rain makes climbing the trees risky at this time of the year. In fact, risk of falling from the trees had until now been one of the primary reasons for not collecting fruits. Had these fruit been ripe in the dry season, its importance would be manifold. Thus, a proposal to try squeezing the fruit pulp was of some interest and was developed together with the villagers.

Two local people worked in SEACOW's workshop in the village and prepared a 'Basket Press' – a device to squeeze the fruit pulp. Some parts were made of metal bought outside. Other parts were wooden and made locally. The first trial of this device was undertaken in the village. Many people came to see the trial, but most returned home before the trial was completed. Their comment was that they would not be able to repair such a machine by themselves if it broke down. They compared it with their traditional, local device, **Chepuwa** used to expel ***Chiuri*** oil, which could be made and/or repaired by themselves in their own village. They proposed to squeeze the fruit pulp also by the **Chepuwa**. A trial gave good results and hence later it was also used to squeeze the fruit pulp.

It was decided to make concentrated ***Chiuri*** juice (squash) out of the fruit pulp. (Several other products – jam, jelly, dried fruits, etc. – were tried before deciding to make squash.) Concentrated juice was produced in a trial, but to compete at the small-scale production level was difficult. Further more, the collection time coincided with millet transplantation. Transport to the road head was difficult due to slippery trails and swollen rivers. Adding solidifying chemicals would be self-defeating, because it had to be promoted as an organic substance. It is unfortunate that environmentalism and social concern do not always go hand in hand.



The Indigenous Oil Extractor, Chepuwa

Discussions also started around other ***Chiuri*** products such as nectar, seed and butter. ***Chiuri*** produces so much nectar in its flowers that it can be collected in a container. People used to lick up the nectar that had fallen on the ***Chiuri*** leaves. Trials were conducted to prepare syrup of nectar by boiling out its water so that it could be preserved for several months and sold in the market. Creatively, people decided to name it Chyrup. The Chyrup possessed a unique, good taste with a soothing effect and was assessed to have potential to compete with maple syrup and honey, in terms of both nutritional value and organoleptic qualities. A spoon-like device made of bamboo and aluminium sheet was developed with the villagers to simplify nectar collection. People were also concerned with finding less risky techniques for climbing ***Chiuri*** trees. Many people, including the elders, showed interest in developing nectar for marketing. Chyrup still awaits marketing.

Different raw and processed products of Chiuri.

Another product taken for value addition was the butter, or solid oil expelled from the seeds. Trials were undertaken to develop a totally natural, home processed and minimally packaged cold cream. ***Chiuri*** butter possesses Ayurvedic medicinal properties and is traditionally used for mud defects, chapped skin, rheumatism, etc. The value addition effort attempted to tap these properties of ***Chiuri*** butter and prepare a user-friendly cold cream (named ChiuCream). After several trials, ChiuCream with a shelf-life of about 3 months was developed. However, the formation of fat grains in the body of the cold cream remains a major problem that requires more technical tests.

A literature review showed that the traditional **Chepuwa** technology for ***Chiuri*** oil extraction is not efficient enough to expel all the oil of the ***Chiuri*** seeds. This was discussed in the village. In the mean time, SEACOW learnt that Development Consulting Services (DCS) was working to develop a multipurpose power expeller that could be useful for expelling oil from ***Chiuri*** seeds. SEACOW supplied some ***Chiuri*** seeds for trial expelling on the machine. Some people from the village also joined in a visit to DCS. The people did not like the butter it produced for household consumption as it had a blackish yellow colour and tasted more bitter than when expelled by the **Chepuwa**. An underlying reason behind this was that the people are subsistence farmers and they do not want to rely on the market or DCS to get oil if they can make it themselves at home. They suggested that the ghee could be useful for other purposes, maybe to make soap. It is possible that machine-expelled butter contains more saponin.

The involvement of the Chepang people in the whole process had many spin-offs. People could visualize the journey of a product from the source to the ready-packaged item. They internalized the competition and the need for maintaining quality of not just ***Chiuri***, but of any products they sold. People could see the loss that would be incurred for paying insufficient attention. A kind of inferiority complex associated with ***Chiuri*** was removed, and as such psychological value was added. The people acquired a sense of pride for having a unique resource together with comprehensive knowledge about it. Information on issues such as bio-prospecting and intellectual property rights was flowing to the people. This deepened their interest in carrying on with enterprising activities using other forest-based products.

T-shirts bearing the ***Chiuri*** tree with its multiple uses were printed and sold both in and outside the country. Their sales were partly used as a fund-raising mechanism.

Enterprise Support System

After a couple of thousand bottles of concentrated ***Chiuri*** juice were produced and people saw the complete process, they were asking themselves many questions about different plants they have and those they were selling. Where does this particular raw material end up? Don't we have anything else that we can process? Or can something be done with that particular plant? SEACOW orientated its programme to their queries.

SEACOW had already established a community shop at one of the nearest road heads, Charaundi, where people could deliver their non-timber forest and agroforest products (NTAFP) to be sold, and buy basic household supplies such as salt, clothes, and so on. All these initiatives had already laid the groundwork to start addressing the wide-ranged queries of the people.

SEACOW established a separate commercial entity named Alternative Herbal Industries (AHI). Together with the support of its social partner, SEACOW, this began its work with a couple of totally natural, traditional recipe-based, hand-processed and minimally packaged herbal teas. So far, it has developed a variety of herbal teas together with the Chepang people for both national and international markets. Together with Chepang organizations, it has supplied products to costumers such as The Body Shop International and Oxfam-Wereldwinkels, Belgium. Nationally, it has supplied semi-processed herbs to Singha Darbar Baidhyakhana and Gorkha Ayurvedic Company, amongst others. Exposure visits have been organized for the people to different buyers of NTFPs and the processing centre of AHI to provide an on-site update on the whole process of value addition to their raw materials.

AHI is supported by its social partner to ensure that the steps it is taking are compensating primary producers fairly enough, and that harvesting does not cause overexploitation of the resources. The primary producers, as well as their organizations such as PCL that supply raw materials, are also the shareholders of AHI. AHI aims to promote community-based ethical business. It respects communities' rights to control their resources and lives. On top of the fair payment, 50% of the profit goes back to AHI's social partner to enable it to undertake social activities aimed at creating a self-sufficient, sustainable, conscious and just society.

The situation is changing quickly now, but NTFP did not used to be a priority area for obtaining external support. This was one of the reasons for the relationship with Oxfam-UK ending. SEACOW was trying out different options and this was not a priority for Oxfam-UK. SEACOW faced questions such as 'would you do so if it was money from your pocket?'. SEACOW people felt that Oxfam was not adequately orientated to natural resources and the specific situation of the indigenous people. Supporting an enterprise with the mindset to work on NTFP seemed to be very difficult, as typified by this incident: despite several discussions, one old man at his forties in his tattered clothes, walking up and down hills with a load of some 30kg, for a good half a day, soaked in sweat, got to the road head collection point with a bad supply of emblic myrobalan. It was soggy and smelt bad. As it was not possible for the SEACOW worker to turn him down, this was the beginning of the arrival of bad supplies. Such situations have improved considerably following fact-finding tours to the buyers of NTFPs.

Scaling-up: Products and Area

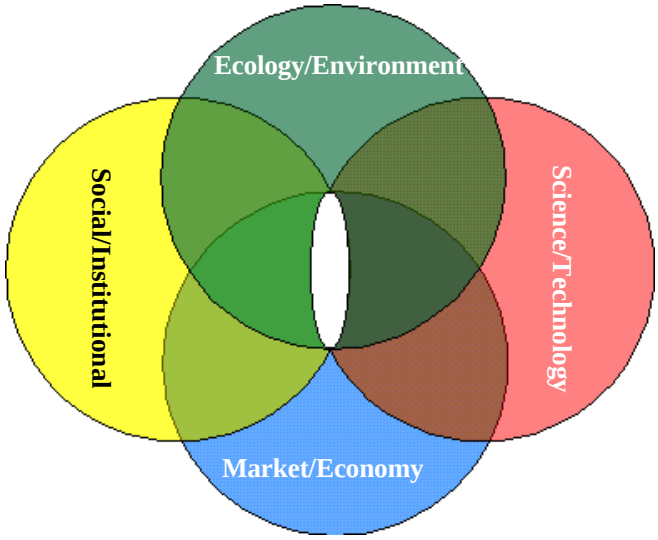
The non-timber forest products and value addition programme (named PNARP) was extended to four adjoining VDCs under SNV funding, applying and elaborating on the lessons learnt. More specific work on NTFPs was undertaken. Experience on ***Chiuri*** gave confidence and direction to work on other NTFPs on which Chepang people have a relative advantage from their knowledge of plants and processing methods.

PNARP was a situation-responsive system of experiments and knowledge generation on value and security addition to ***Chiuri*** and other NTFPs. It followed a Market Analysis and System Development (MA&SD) process to help organize and nurture entrepreneurship among Chepangs.

A team comprised of PCDP/SNV NRM Specialist Carol Gribnau, SNV's NTFP Specialist Kenneth Nicholson and SEACOW/PNARP monitored the activities. Details of this work can be found in FAO (2000). It continuously monitored and evaluated progress through a step-by-step process of gathering knowledge on opportunities and constraints, reflecting on the significance of findings and proposing hypotheses to develop NTFP for marketing. PNARP went through the four following phases:

Phase I: Assess the existing situation
Phase II: Identify potential products, markets and means of marketing
Phase III: Formulate a sustainable business plan and a business organization
Phase IV: Implement the enterprise, monitor the progress and deal with change

Selection Criteria Used for the Selection of NTFPs for Marketing



In the first two phases, drama was staged in different clusters in order to introduce the programme. A broad inventory of NTFPs available in the area was obtained, the 5 most promising NTFPs (*Chiuri*, chebulic myrobalan, belleric myrobalan, emblic myrobalan and *gurjo*) were selected and information was gathered to draw up a business plan for these products through several village level workshops. Then a community survey, a fact-finding tour and a trial on marketing of ***Chiuri*** seeds were undertaken. For the selection of potential products and collection of information, four sets of criteria were used related to market/economy, resource management/environment, social/institutional factors and science/technology. Every decision, ranging from the estimation of harvest levels to the equitable distribution of benefits, was made in group meetings and decided by the group.

In the third phase, several village-level discussions and workshops were held and forest users supported to formulate a sustainable business plan. The business plan included the vision, mission, goals, objectives, and the resource management, organizational, operational, quality, marketing, community development and financial plans. It was agreed that the business organization for the implementation of the business plan should to be a co-operative and was named 'Praja Co-operative Ltd (PCL)'. During the course, forest users shaped their co-op institutional structures such as the general assembly, and executive and accounts committees. They also received trainings on co-op institutional strengthening, accounts keeping and NTFP promotion/cultivation, harvesting, processing and marketing. Provisions were made for the poor to buy shares in the co-op by providing them with NTFPs.

Criteria for determining the harvest time and harvest levels of the selected products were clearly laid down in the business plan. It was agreed that these criteria should be assessable by visual means. Criteria for determining the harvest time, for example, are skin colour, persistence or drying of parts of the plant, the appearance of stems and the condition of fruit flesh/nut. To determine the harvest level of fruits, the total amount of fruits available on the tree were estimated, as well as the level of regeneration and age of the trees.

Implementation of the business plan was done in the fourth phase. PCL successfully undertook the first trial marketing of selected products with the support of AHI. It paid over 150 producers prices nearly twice as high as those offered by the road head merchants. It saved around 24,000 rupees

($320) in the first year. Thereafter, the co-op, in collaboration with AHI, has been successfully marketing and exporting the semi-finished products from the Chepang area.

Harvest time criteria (Maturity indices)	Emblic myrobalan	Chebulic myrobalan	Belliric myrobalan
Skin colour	Pre-mature fruits are dark green. When mature they become greenish-yellow or light yellow. Some are also partially tinged with brick-red colour.	Pre-mature fruits are green. In course of maturing, the fruits are tinged with black. When mature the skin colour is yellow or orange-brown.	Pre-mature fruits are grey. When they mature the skin becomes light grey.
Persistence or drying of parts of the plant	When fruits are matured, leaves of the plant are light yellow. They dry up considerably. The plant starts losing its leaves.	When fruits are matured, leaves of the plant are light yellow. They dry up considerably.	When fruits are matured, leaves of the plant are light yellow. They dry up considerably. The plant starts losing its leaves.
Sensory quality	Pre-mature fruits are sour, bitter and astringent. When mature, they are sweetish and less sour and astringent.	-	-
Fruit flesh	If the mature fruit is put (apical-end to pedicle-end) and pressed between the jaws, cracks appear at the joints of the lobes. If further pressed, the fruit splits along the joints of the lobes. Immature fruits are very difficult to split up and no cracks appear at the joints of the lobes.	Colour of the matured fruit-flesh is light yellow. Such colour is visible during the later stages of drying (after about 60% of water content of the fruit flesh is removed).	Colour of the matured fruit-flesh is light yellow. Such colour is visible during the later stages of drying (after about 60% of water content of the fruit flesh is removed).
Fruit nut/seed		In mature fruits, the seed-sheath inside the nut is fully developed. Colour of seed-sheath and seed-flesh is light yellow. In such fruits, seeds are loosely held inside the nut and these can easily be taken out after breaking the nuts apart.	In mature fruits, the seed-sheath inside the nut will be fully developed. Colour of seed-sheath and seed-flesh is light yellow. In such fruits, seeds are loosely held inside the nut and these can easily be taken out after breaking the nuts apart.

Issues of Access and Control

As the people became organized and developed a system for collective selling, they wanted more information on rules and regulations concerning the forests. When they started meeting the needs for higher quality, their attention was naturally directed to the issue of access and control. Both local people and SEACOW were orientated to take advantage of the existing provisions of community forestry. By the time this case study took place, the district forest office had approved three applications for registering parts of forests as community forests. While the community forestry provision is a revolutionary provision in empowering people to manage forests, it still has to be flexible enough to accommodate the indigenous forms of forestry practices based on traditional knowledge. For example, the ***Chiuri*** tree is individually owned irrespective of the ownership of the land. It belongs to the person who first saw it and cared for it. Community forestry, albeit quite flexible, is still dominated by the uni-dimensional industrial form of forest management.

As value addition efforts are useless if rights of access to and control over the resources of the Chepangs are not ensured, SEACOW is promoting community forestry initiatives in the area. The following steps are taken in the community forest handover process:

Step 1: Identification of community forest user groups (CFUG) and boundary of the forest
Step 2: Formulation of the constitution
Step 3: Registration of CFUG in the District Forest Office (DFO)
Step 4: Development of operational plan
Step 5: Approval of operational plan and handover of the forest to the CFUG
Step 6: Sustainable management and use of community forest

SEACOW is providing support for 14 forest user groups in the area to acquire their forests as community forests. Several groups are at different stages in the handover process. Currently, three CFUGs are registered in the DFO.

Achievements to Date

Value Addition

In the year 2000, AHI purchased over 10,000 kg of NTFPs from Chepang institutions and provided nearly $2,700 to the producers at the time of delivery as the first payment. It supplied these products to different customers in the form of semi-finished and finished products (herbal teas) and provided again nearly $3,000 as the second payment. This trade benefited over 500 Chepang households in the area. Last year, AHI had sales of about $26,000 and made a net profit of some $4,400. It is now in a position to provide nearly $2,260 to SEACOW and $660 to Chepang institutions as share dividends to help undertake social activities towards creating a self-sufficient, sustainable, conscious and just society.

Value addition experiments and trials on different products of ***Chiuri*** and other NTFPs are still on-going. AHI is about to send a sample of ***Chiuri*** butter to the University of Ghent in Belgium for more technical tests (analysis of fatty acid composition) to investigate reasons for fat-grain formation in ChiuCream. It is also involved in adding value to some other under utilized NTFPs such as ginseng and sword fern (*Nephrolepis cordifolia*) amongst others. Its major contribution is to create or look for alternative markets for the Chepang medicinal plants that have suffered from a fall-off in demand in recent years, such as ***Gurjo***.

Currently, KCC members are collecting nectar to experiment on making nectar candy. The idea is to boil the nectar further to a semi-solid mass, put it in a mould of desired shape and allow it to cool down to a solid mass to sell as candy. Members want to mould the candy in the shape of ***Chiuri*** fruit and /or seed. KCC is also promoting ***Chiuri*** and other NTFPs in the area. Nar B Praja of

Tapang village has planted nearly 250 saplings of ***Chiuri*** this year. Last year, KCC supplied AHI with NTFPs worth about 114,000 rupees ($1,520).

Last year, PCL collected NTFPs worth about 325,000 rupees ($4,330). PCL extracted sorted-and-graded ***Chiuri*** seeds with **Chepuwa**, produced good quality butter and sold it for a better price (60 rupees/kg) in the market of Kathmandu where the Chepangs used to sell ***Chiuri*** butter some 50 years ago. The road head price of ***Chiuri*** butter was only 35-40 rupees/kg. They also experimented

> (To Mahendra, Chairperson of PCL) I had also purchased some Chiuri seeds. Would you please also sell them while you sell the co-op's stock of Chiuri seeds? All traders, I had contact with, told me that they do not buy Chiuri seeds this year.
>
> *Tara Mahila, the road head merchant, Shaktikhor bazaar, Shaktikhor*

to extract the cake (by-product) further in a power expeller, which gave encouraging results. This year, PCL is installing the power expeller developed by DCS. They want to expel the seeds first in the **Chepuwa** and only extract the cake and low quality seeds by the power expeller. They are planning to sell the low quality butter produced by the power expeller to soap making factories.

Security

As an outcome of the value addition trials, combined with the group meetings and discussions, people have started planting some of the medicinal plants such as ***Gurjo*** and Emblica myrobalan and other aromatic plants such as lemon grass. Forest fires have been significantly reduced in the Lothar area and indiscriminate felling of trees has been reduced, although this may also be for fear of the authorities. As mentioned above, SEACOW is currently providing support to 14 forest user groups in the area to acquire their forests as community forests.

> When the jasmine flower becomes useful this way, people will surely stop setting fire to the forests.
>
> *Nirmaya Praja, Lothar*

However, even these provisions would not benefit people who have to worry about finding their next meal. The co-operative collected everyone's products, but paid only later. The poorest, though, could not wait for the money to arrive. They needed ready-cash or they would not be able to invest their time in collection. Therefore, people are currently being partly paid on delivery of their products. The issue of gender equity was worked out by making a provision that half of the money from sales of the herbs is paid to the spouse of the household head; i.e. if a man delivers the products, the woman gets the second payment and vice versa. It was felt that the issue of equitability is relatively easier with an indigenous group of people, because they have many equitable practices. During discussions, this was brought to their attention and emphasized as a matter of pride for what they already have.

Spin-off Activities

The work on forest-based resources started with ***Chiuri*** as this was one of the important resources people had in the area. This intense action research revealed the body of knowledge the people have on the biology of a particular plant species. They have developed their own nomenclature. They know the condition of the land where ***Chiuri*** grows, the uses of its parts, and the birds and insects it hosts (see Appendix A). In fact, hunting of fruit bats feeding on ***Chiuri*** nectar is an important part of people's diet and pastime. People know what kind of bird perches on what kind of branch at flowering and fruiting seasons (and they put out glue-traps). People have their

mechanisms to harvest and process the seeds. They know both ***Chiuri***'s medicinal value and the side effects of over consumption. People have their own process of ownership and transfer systems.

By making their knowledge and resources visible, by expressing concern and respect as well as

> These berries have rolled me on, flown me off !
>
> *Kusum B Praja, Kolar, Shaktikhor*

pointing to the potential opportunities, people were given confidence. It also gave outsiders faith in the people's knowledge and their observation capabilities, and created confidence for working with other plants, and discussing issues related to quality assurance, sustainable forest use and equitable distribution. It generated faith on people's capacity to manage forest resources. Since this knowledge was transferred from generation to generation, everybody felt great about having it. Chepang's knowledge on ***Chiuri*** became a symbol of their pride and gave a foundation for people to become organized. The interest extended beyond the immediate area, with a number of people from outside attracted to try to work on ***Chiuri***. It motivated people to help find their own solutions to different problems, reaching well into community health. The groups were recognized by the local government and were given credibility.

Chapter V

Factors for Effective/Autonomous Knowledge Generation

Building of Hope

Hope has to be seen in a deeper perspective. When people feel defeated, losers and ill-fated, knowledge is hard to generate. They first have to be made hopeful. Chepangs changed their attitude towards ***Chiuri*** after they realized that what they possess is something valuable: both the resource and the knowledge about it. Discussions pointed to the fact that ***Chiuri*** could bring considerable economic benefits. The trials helped to concretize such hopes for ***Chiuri*** by promoting sales of products like nectar and pulp, and by looking at the products sold in the market outlets.

Forest users certainly become active if they can build hope on the subject under research or investigation. Starting with opportunities rather than with problems is the key to effective research. Stimulating people who are doing something right in relation to the research is very important. Diagnostic research can follow later.

Overcoming Fear of Success

Somewhat related to hope is the psycho-social state of people's minds. In feudalistic social situations, it is hard for a person to try out new ideas that the feudal person himself or herself has not tried. An ordinary villager is afraid of success because he or she cannot protect it when he or she has it. In such situations, people do not want to succeed. Santa Singh Praja (locally known as Danda Ghare Shahu) of Tapang is akin to the king of Tapang: he has a lot of fertile land, possesses a lot of livestock and has nearly $3,000 in the bank. Nevertheless, he presents himself as a poor man and behaves like other poor people of the village. Until people have overcome the psychological barriers, they cannot come forward for experiments, or if they do, they do not make adequate efforts.

When people stop practising an innovation after a project is phased out, it is often thought that the practice was not appropriate. However, in some cases we realized that people would take the project as a counter-foil to the feudal power and get courage to try things out. When the project is phased out without being able to solidify the confidence of the people, the new practice is abandoned.

Visuality

The term visuality is used to denote a number of other similar terms: visibility, transparency, demystification. They mean both ideas and techniques. This is an important perspective to knowledge generation.

Visibility is used in the sense of making knowledge, whether new or existing, visible. Making existing knowledge visible is often a precondition for generating new knowledge. As soon as the new knowledge is generated, it has to be documented so that it can be made visible as and when necessary. When the body of knowledge is self-generated, it gratifies and inspires action, which in turn generates more knowledge. This action requires documentation, compilation and bringing to the notice of relevant people – that is the role of the facilitator. This case well exemplifies this point.

Transparency is another key factor for effective knowledge generation because it involves relationships. Transparency in the attitude and behaviour of the facilitator gives people the confidence to speak out and put their ideas forward. If people know a lot about the finances of the facilitating institution, or unit, ownership of the research is increased. Participants know why they wish to get involved.

Ideas, technology and tools can be mystified by not explaining the whole process and the intent of a particular activity. This has power dimensions. People ritualize ideas and tools and techniques so that they continue to gain power from the mystery. This is disempowering. Disempowerment does not lead to knowledge generation.

Combined with the training centre, SEACOW's demonstration farm was able to provide people with the opportunity to see and do things. An exposure visit to the old markets of ***Chiuri*** ghee was organized and helped participants understand the whole story behind the quality (the ghee supplied in the market was of low quality – mixed with water, mixed with yam – and fetched little money) and marketing (no timely supply) of ***Chiuri*** ghee. This demystified why the demand for ***Chiuri*** ghee had decreased over the past years. The buyers of ***Chiuri*** ghee said that they would buy it again if the ghee was of good quality and supplied to them in time. It was also discussed and demonstrated how the quality of ghee can be maintained at a level that satisfies the quality requirements of the market.

SEACOW has taken the graphics of participatory rural appraisal (PRA, unfortunately reduced to techniques) as a way of making reality visible and thus comprehensible. A huge number of pictures have been used to hold dialogue with the people so that words do not become barriers in discussing issues of NTFPs with illiterate people. Words are subject to interpretation. This subjectivity is only reduced by making things visible (subjectivity made visible). Making things visible, however, does not mean that everybody will understand it. The beauty of PRA graphics is that it is not subject to interpretation, because people know what they have drawn. It was also realized that not all people necessarily internalize through the same medium. In the case of Chepangs, much of the knowledge is inherited through songs and stories.

Chiuri blossomed!

Tomyo blossomed, Langhyo blossomed,
Youth blossomed,
Time through Chiuri blossomed!
Top flowers belong to Kailan,
Lower flowers to Hiklan.
I eat Tomyo fruit if I am hungry,
I drink Langhyo juice if I am thirsty.
What shall I do when no fruit or juice ?
What shall I sing when no tune ?

- A Chepang song from Kandrang
(**Kailan** and **hiklan** are the birds that feed on Chiuri fruit and flower)

Facilitator is Central

The importance of certain qualities in the facilitator has been described elsewhere. An important aspect noted here is that people should have faith in the facilitator as much as the facilitator must have faith in people's knowledge and creativity. Research with a facilitator whom people think of as someone interested in the improvement of peoples' lives brings good results. Obviously, people do not expect the facilitator to be someone who is just well intended, but also a person with patience to listen and who is knowledgeable about his or her business. People like to work with a dedicated person with a reasonable competence. People can tell who is a genuine forester without having to look at degrees or diplomas. The facilitator needs to have a strong sense that it does not matter if he or she cannot complete a job so long as people's inspirations are met. A programme should be such that it allows the facilitator to be led by the situation. A guideline often used in SEACOW for evaluating work is to ask oneself, 'Have I made the best of my knowledge and efforts?' The answer 'yes' rarely produces bad results.

Shared Ownership

Participation in the whole process, from designing the research project to its implementation, gives the participants ownership of the research/knowledge generation activities. This triggers spontaneous involvement leading to an increased sense of ownership of the research. One of the ways to achieve this is to make the whole process as transparent as possible - from setting the

objectives to where funds are from and how much you have got. Being able to visualize the benefits of any particular research topic is very important.

One has to start working from where people are. Outsiders should not be doing any research or experiments that people already know. Outsiders should, though, provide support when people want to conduct off-shoot experiments alongside the main research or knowledge generation process.

Starting with the Deprived

The socio-economic situation of the users is very important. Participants with pressing economic needs cannot afford much time to think, discuss, and become involved in the knowledge generation process. The same goes for people with a low social status, be it owing to origin or gender. It does not mean that they are not knowledgeable or willing, but that greater effort has to be made to create conditions for their participation. It is a real challenge to avoid contributing to the existing knowledge gap, with the rich becoming more knowledgeable, owing to a faulty facilitation process. Experience has shown that work should begin with the most deprived people, rather than with the better-off and expecting that the poor will join in later thus making the process inclusive. The latter approach creates and widens the gap, whereas the first ensures automatic dissemination. An important question to ask is: Who is the process of knowledge generation to benefit?

Rewarding System vs Fun

Rewarding the self-starter or best performer is the classical approach to motivating people. But in situations where competition is not a part of the culture, this can become a process of exclusion. It does not ensure popular autonomous participation with people such as the Chepangs who live in a nature-nurtured mindset rather than an industrial or even agrarian mindset. Elements of inducing fun or pleasure of discovery are necessary. SEACOW, for instance, has built on the local tradition of organizing a village party after community labour exchange days. Staff not only injected new ideas when participating in the village exchange days, but occasionally such festivities were also arranged when group learning activities were undertaken during labour exchange days on the demonstration farm. When staff joined for the first time, this invoked the reaction: ‘See, SEACOW has run out of money, as they come to our labour exchange days’.

Knowledge Support Networks

Inspired by their knowledge on ***Chiuri*** and its importance in the community, SEACOW was interested in adding value to this resource with the knowledge existing outside. These ideas included the attempts to increase efficiency of oil extraction, the use of ***Chiuri*** butter for medication, marketing possibilities for nectar, and so on. People were kept informed of all the explorations being made. It added to their pride and identity, which partly helped them out of the internalized inferiority trap.

As SEACOW staff already had some international formal and informal contacts, this further helped establish the network of people and institutions interested in medicinal plants and other herbs. With this capital of people’s pride and confidence generated by making use of their knowledge and subsequent trials, and SEACOW’s capital of contacts and information, the NTFP enterprise programme was expanded within SEACOW. The establishment of Alternative Herbal Industries (AHI) was part of this initiative. It was clear that in the current conditions people would require much support in operationalizing the NTFP business. The primary objective was to create the beginnings of a self-supportive support system if a sustained marketing service was to be put in place.

Chapter VI

Limitations, Constraints and Required Environment

Finding an Appropriate Facilitator

A facilitator is both a big opportunity as well as a big constraint. Facilitators normally come from urban areas, and are educated in the paradigm of modern statehood and the science-based, fundamentally market-orientated, knowledge system. Pure foresters have learned to view the forests as timber mines with little regard to the cultural importance and other minor uses of forests. With extreme faith in science as the only and rational way to approach matters, they generally tend to consider villagers as ignorant folks. Different ways of living are not respected and their ideology is imposed. This attitude is one of the main constraints to facilitating autonomous knowledge generation.

> You cannot tell them (SEACOW workers) a lie; they know ins-and-outs of Chepangs for living 6-7 years in Lothar.
>
> *Kusum B Praja*

Joint action cannot take place meaningfully until there is a reasonable sense of mutual respect between the facilitator and the forest users taking part in the knowledge generation process. With intense orientation, such an attitude among SEACOW's facilitators was changed to the extent of conscious actions. Respect to the users is the single most important precondition for facilitating people-based action. It is not possible to bring autonomous research as a catalyst without changing the attitude of the facilitator.

Facilitators must be prepared to take risks, to take the people's side, and be open to any kind of results. They should also be able to sacrifice their curiosity and make people's curiosity as their own and vice versa.

The people and the facilitators may perceive the research issues differently. It is normal for people to have high expectations from trials. In his or her efforts to make the trial or experiment successful, the facilitator tends to raise expectations further. Sometimes, forest users seek modern solutions to problems as a consequence of technicians or developmentalists having over-emphasized the need for mechanization in the past. Now, even when facilitators realize that mechanical solutions are not always in the people's interest (because they would not be able to control the technology and it is expensive, etc), villagers still go for such solutions. A critical assessment, together with the people, of the options is required.

Finding an appropriate facilitator is the single biggest challenge after securing funding. There are few people who are orientated towards farmers' knowledge and have the patience to be led by them. Building rapport with the forest users takes time and competent people are often absorbed by town-based high-paid jobs. People who are able and willing to do this kind of work automatically fall at the bottom of the bureaucratic hierarchy with corresponding levels of wages.

As already mentioned in Chapter 3, facilitators need greater flexibility to act in extending the work of research and knowledge generation further. If people discover something new and wish to implement it, there should be a provision for them to implement it. Facilitators need to have a place or a contact person where they can obtain necessary information when required. For example, the facilitator should be able to get information on what are the likely causes of premature fruit drop, or what is the royalty for a kilogram of ***Chiuri*** butter. Later on, people could have direct access to such information resources themselves.

In order to work with people, building trust is important. Trust is founded on a people-to-people basis, however famous and credible an institution may be. A regular change of facilitators prevents building this environment of trust. It even gets boring when the new facilitator wishes to initiate some of the activities that have already been undertaken. The bigger the institution, the higher the chances of turn-over of individuals. Unless affected by megalomania, NGOs are relatively better, because they can support an individual as long as the individual's interests remain high enough. Most NGOs are yet to have forest technicians. People should not be confused into thinking that technicians are not necessary, but the emphasis should be on competent technicians with social commitment.

Security Assurance

Although possibilities for value addition are important, it took some time for the facilitators to realize that there was little point in talking about sustainability if access to and control over the resources were not ensured. However, the value addition aspect is important to start the dialogue and bring an appreciation of forests to the conscious level, but it soon needs to be bridged by issues of security. After all, people's immediate interest is not in increasing the forest area coverage or helping to prevent global warming, it is to ensure that they have these resources available whenever they want to use them, and under the conditions set by themselves.

Forests have rarely been depleted to meet local people's needs, but owing to the vested interests of other people who wanted to make money out of forests. Forest users with a sense of belonging to the forests have noticed the depletion situation and are taking initiatives to implement corrective measures. Public forestry policy has to be liberal enough to allow local harvests from the forests.

Documentation and Dissemination

In the context of Nepal, it is important to document existing information, compile it categorically and put it in a user-friendly form. Even the case of ***Chiuri*** has not been documented from the community forestry point of view. One of the most economic ways of disseminating existing knowledge is to make information available to forest technicians. This has yet to be done comprehensively. With proper orientation, community foresters can share this information with the forest users. However, often only the information generated through formal expensive research is regarded as community forestry information. Traditional indigenous practices are often not directed into formal channels. Bits and pieces of information gained through trial-and-error get lost. There seems to be an undeclared fear among officials that by accepting cases from areas where there is no formal community forestry, it may mean that they are supporting the practice. It is our belief that without integrating the results of both formal and informal research within a single distribution system, research is repetitive, chaotic and expensive.

The best way of extending the better practices and ideas is user-to-user. However, it is still a far-fetched idea for the Chepangs to be able to arrange their own travel. External agencies have to support this, which has been increasingly the case in recent years. Many intelligent villagers may not have competent language skills, but have a feeling and an aptitude for change. During NTFP study tours, most participants remained as attentive listeners, speaking out very little. However, it was found that they picked up matters of interest to them that were discussed during the visit. In one of the exposure tours for women, they visited a small-scale soap factory. When they got back, they were interested to make soap in their own village from ***Chiuri*** ghee. Later, soap-making training was organized and the participants of the tour joined in actively.

People also have tendency to take study tours as an opportunity to travel. This is fair enough from the point of view of the people who have had no such opportunity before. There are several ways to improve the efficiency of study visits while reducing costs. Firstly, costs can be reduced by arranging visits to nearby areas where there is a high likelihood of learning. Furthermore, study

tours should be managed from the point of view of knowledge generation. Before the tour, people need to be told what the organizer feels is important about their destination. The tour should be followed by a concluding reflection to see whether or not the participants' expectations have been met, what they have learned, and what trials they wish to make both individually and collectively.

Forest User Organizations and Finances

User-to-user exchange is a mammoth task as forest user groups continue to increase. When there is a reasonable amount of categorical information accumulated and compiled, a gathering of forest users of an area (district or zone), for example, can be effective. Such gatherings should include both formal and informal community forest users. As their financial situation improves, the CFUGs themselves can organize such gatherings with support of governmental or non-governmental agencies. In Nepal, this process has recently started with newly established forms of civil societies putting increased pressure at the policy level.

Perhaps, setting aside a certain percentage of their funds to be allocated to participatory knowledge generation and knowledge management activities may be desirable. Capable CFUGs could contribute to a research fund. The key point is that CFUGs should be able to manage the forest profitably while taking equity and socio-cultural aspects into account.

Relevance to Main Survival Strategy

In situations where supporting livelihoods is extremely difficult, a pre-condition for people to invest in research and take interest in knowledge generation is that prospective activities should fall at the centre of their survival strategy. For example, poor people would be interested if a particular species supplemented food at a time of seasonal food shortage, rather than generating some cash in a season when food is abundant, whereas slightly better-off people would be interested in work during the off-season for generating some off-farm income.

Multiple Perspectives

It is simplistic to view community forestry and participatory knowledge generation in isolation. It is as much governed by the larger socio-political and cultural context as much as it is by the micro social environment. For some, belonging to a group of people like the Chepangs may mean possessing little knowledge, while to others such an indigenous group of people possess a large body of knowledge. Therefore, a team with multiple perspectives is very important. For example, Chepangs would love the section on the importance of knowledge generation explained in songs – preferably duet: they ask in song and the response is expected in a song. It may look absurd to someone who only analyses the chemical properties of ***Chiuri*** butter in the lab. But a field worker has to know about the existence of saponin in ***Chiuri***, so that he or she can design a strategy to communicate to the people. It demands a highly multi-disciplinary team to back up participatory research. The situation needs to be addressed holistically. This study, to reach its current level, has drawn heavily on the knowledge and skills of the following diverse people:

- Collectors/Producers
- Botanists/Foresters/Sociologists
- Food Technologists/Chemists
- Business people/Entrepreneurs
- Environmentalists/Rights Activists
- NTFP specialists
- Institutional Development Specialists
- Managers
- Bilinguals/Facilitators

And all of these qualities were inherent in most villagers. The leader of these activities needed to be aware of these intricate relations and take the process of knowledge building as a web rather than as linear or compartmentalized specialities.

Long Way to Go

Knowledge generation through participatory action research implies two things: research should have an applied nature whenever there is an opportunity to work together with people, and all activities should have built-in learning elements. Both require orientation, commitment and additional resources.

Participatory action research creates more opportunities to generate knowledge from people, because there is very little understood about a range of NTFP, their biology, phenology and a wide range of uses. Action research seems to be the best way to make use of existing knowledge and blend it with new knowledge to create new opportunities that lead to value addition and subsequent protection of these resources.

Although this case has taken a shape, it has not matured yet as an established enterprise. There is hesitation from the donors to fund such initiatives as part of a knowledge generation process. NTFP is a new area of business and as such requires research in developing new products. This will involve both making use of indigenous knowledge and lab research. Having to produce on a small-scale makes production costs high. It will also take time for customers to appreciate the value of natural products, and ways to reach the potential market need to be developed.

A few cases need to emerge as success stories so that they can become examples for debating on policy changes. The formal sector has yet to recognize the informal knowledge of the people and allow them to manage their forests based on their own knowledge and system. The state is responsible for the Chepang people being unaware of the past and present official regulations. In order to generate respect for peoples' knowledge about forests and forest resources, which have been accumulated over generations by trial and error, wider communication needs to be publicly visible. But one cannot wait for things to change themselves. Assertion by the people is needed to change the attitude of government officials and high-flying technicians. We need to understand why community forest users stumble over paper work, whereas wood smugglers seem able to cope.

Products like Chiuri already have a number of potential uses, and more may emerge as more knowledge unfolds. Local people have to understand the state mechanisms for securing access and control over the resources. The state has to be an enabling entity rather than a controller. For this, NGOs and forest users both have to prove worthy of trust.

People in a knowledge generation process have to be careful that the knowledge people generate is not used for undue advantage. Generation of knowledge has to be viewed in the rights-based paradigm. The founders of the system under this study take the self-sustenance of the system itself as an indicator of the success for the knowledge generated so far. A mechanism should be in place for case studies like this to be followed up after an appropriate period of time.

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Appendix A. Description of Chepangs' Knowledge on Different Aspects of Chiuri

Conditions for growth

Chiuri does not require good soil to grow. It occurs on limestone as well as many other types of soil. ***Chiuri*** grows well on poor rocky ridges where the roots go deep into the clefts. It lives longer on poor soil rather than on good soil. It grows better on southwest-facing slopes. On south-facing slopes, ***Chiuri*** occurs up to the highlands. It does not occur up to such high altitude on north-facing slopes.

Seed germination

Chiuri seeds from ripe fruits germinate within 2 weeks. Seeds from the fruits eaten by jackals, bats, wolves, etc. also germinate well. ***Chiuri*** seedlings grow best in shaded sites.

Companions or antagonists

Artillary plant (*Pilea symmena*), Currant (*Ribes takare*), Mug-wort (*Artemisia indica*) occur around ***Chiuri*** trees. ***Chiuri*** cannot grow normally if vines such as Emetic nut (*Xeromphis spinosa*), Berali and Ketruk wind around it.

Chiuri wood

Chiuri is a soft wood. The wood in external use lasts for 2-3 years. Termites attack ***Chiuri*** wood and the wood decomposes soon. It is best for fuel wood. ***Chiuri*** wood does not extinguish quickly, owing to resin in the wood. It does not produce much smoke and the smoke does not irritate eyes like the smoke from other fuel wood. ***Chiuri*** is not a good timber but it can be used to make furniture.

Resin

Resin of ***Chiuri*** tree mixed with resin of other trees- Tallow tree (*Sapium insigne*), Monkey jack (*Artocarpus lakoocha*) – makes good glue. It is used to trap birds and also house flies.

Leaves

Milking cows and buffalos fed on ***Chiuri*** leaves (as fodder) give more milk. It is available in dry months (March, April) and so buffalos, cattle and goats prefer it very much. In these months, they eat even the bark of the branch but do not eat new shoots. In other months, they do not prefer ***Chiuri*** fodder as other green grasses/fodders are available.

Chiuri leaves are used as plates to serve foods. ***Chiuri*** leaf-plates are soft and the inner surface smooth and glossy. Anything including hot meal, drinks, etc., can be served in ***Chiuri*** leaf-plates.

Flowers

Chiuri growing on poor, infertile soil bears small bunches of flowers whereas that growing on good, fertile soil bears large bunches of flowers. ***Chiuri*** flowers possess large amounts of nectar. People relish ***Chiuri*** nectar. They collect nectar using locally made spoon-shaped device and make sweet syrup. They mix the syrup with tobacco and use in Hooka (hubble-bubble). ***Chiuri*** nectar attracts birds, bees and bats. Birds – the king-crow, eagle, dove, pheasant and owl – suck ***Chiuri*** nectar. Bees cannot take nectar directly from the flower as they tend to get stuck on the nectar. Bats like ***Chiuri*** nectar very much. They eat nectar by hanging on the bunch of flowers. Five types of bats – black, brownish grey (the largest one), grey, small black (meat does not taste good) and Dhangkacha (does not eat nectar but eats flies) – forage on ***Chiuri*** trees. Goats, dogs eat flowers that have fallen on the ground. Wild animals such as jackals also eat the fallen flowers.

Fruits

Few ***Chiuri*** fruits ripen on the tree; fruit flies attack them and the fruits fall to the ground. Birds also eat the ripe fruits and cause them to fall to the ground. When people see a couple of such fruits

on the ground they know that the fruits are matured. They confirm whether the fruits are matured or not by breaking the seeds.

People harvest fruits on sunny days. They do not harvest on rainy days because the fruits do not ripen properly and also the tree becomes slippery due to rainwater. Before climbing up the tree people pray to the god that the tree would not make them fall down onto the ground. They do so because they believe that the ***Chiuri*** tree has its own self. Fruits are hand plucked using a long hook, a long rope and a bamboo basket, or by bashing fruits off the branch depending on the intended use: is it for oil alone or for both the oil and the pulp. Branches in the lower part of the tree bear more fruits with good taste and a high yield of oil than those in the upper part of the tree.

Nowadays, there is decreased production of fruits in the area and this is closely related to an excessive dropping of immature fruits. It seems that ***Chiuri*** is suffering from an environmental change. The visible changing factors are: increased winter drought, soil erosion (less nutrients), and pest attack. Pests belong to 3 groups: fruit flies, stem borers and defoliators. Many Chepangs view it in a different way. They believe that the problem is due to the unknowledgeable **Pandeys** of the new generation who have been unable to treat ***Chiuri*** trees and make them bear fruits.

Fruit pulp

Chiuri fruits ripen when there is food scarcity. The pulp supplements and sometimes substitutes staple food. ***Chiuri*** fruits are ripened by covering with a straw mat, leaves of Camel's foot climber (*Bauhinia vahlii*) or currant (*Ribes takare*) and placed out of the wind for about a week. The fruits are given no special treatment before they are eaten. Consumers need to know how to press the fruit in the mouth so that only the juice but not the *Ladi* (fibrous and gummy part of the fruit flesh) is swallowed. Precautions are taken not to swallow the *Ladi* because it may cause stomach-ache.

Chiuri juice is considered to make the body warm. It also possesses intoxicating properties. Consumption of large amounts of ***Chiuri*** juice makes people feel sleepy and also causes diarrhoea. People do not drink juice if they suffer from diarrhoea and coughing. Many Chepangs believe that if a pregnant woman drinks ***Chiuri*** juice, a white substance will cover the baby and make it difficult to give birth.

Pigs and goats like *Chhokra* (fruit residue) very much. Pigs fed on *Chhokra* become fat.

Seeds

Seeds collected from the forest ground or obtained during consumption of fruits are firmly hand washed with water in order to remove the inner part of the mesocarp, which is closely wrapped around the seed. Drying the seed is done by hanging a two-storey bamboo basket called *Bhar* 3-5 feet above the fireplace. The fresh seeds are dried first in the lower storey (4-5 days) and then in the upper storey (1 month) before being kept in a bamboo basket or jute bag. Seeds should be sound (not germinated and rotten) and dried properly to produce good quality butter.

Oil extraction

The dried ***Chiuri*** seeds are crushed to flour by using local rice huller (*Dhiki*). The flour is kept in an earthen pot with holes at the bottom (locally known as *Fungsi*) and steamed until the steam comes out of the flour. It takes nearly 20 minutes to steam the flour. This steamed flour is poured immediately into a bamboo basket (locally known as *Pyar*), placed as soon as possible in between the two wooden planks of the expeller (locally known as *Chepuwa*) and the basked is pressed between them with the help of a leather-rope (locally known as *Nara*) that fastens the wooden planks together. Pressing is done several times, working from the top to the bottom of the basket, until oil stops flowing out. The oil is collected in a container. The cake from the first extraction is again pressed a second time following the same procedure as above – crushing, steaming and pressing. The oil is put in a wooden container or bamboo basket lined with the leaves of Camel's foot climber to solidify. The butter is stored in the same container used for the solidification of oil.

Locally, ***Chiuri*** butter is used as cooking oil. The oil can also be used as an illuminant as it burns with a bright light without smoke or smell. The oil is used in traditional medicines to treat rheumatism, wounds, mud defects and chapped skin. Surplus butter is sold at the nearest road head (for 30-40 rupees per kg). The road head merchants supply the butter to soap manufacturers.

Chiuri cake

The cake is kept away from rain and moisture. If it gets wet then it becomes sticky and unusable. The cake is crushed to flour in a local rice huller (**Dhiki**). It is then ready for use as a fish poison and as manure with pesticidal property.

Cake is used as a fish poison to catch fish in streams. Cake put into a stream at 10:00 am can affect/kill fish until 3:00 pm. Its poisonous effect in the stream lasts for 8-10 hours. It does not affect the other creatures living in the water so much. Cake is also used as a manure with pesticidal property. It can be applied in paddy fields, paddy nurseries, millet farms, and so on. It adds nutrients to the soil and kills many insects and pests such as crickets, leaf roller, *patero* (insect pest), etc. It is traded at the rate of 1 pathi of cake for 1 pathi of paddy.

Appendix B. Description of CAED's Major Managerial Milestones

Year	CAED's Major Managerial Milestones
1992	CAED Established
	SEACOW started in Lothar, Support from Flemish Individuals in Belgium
	Establishment of EcoNepal in Belgium
1993	Establishment of EcoSchool Nepal, The Netherlands
	EN and ENS jointly support SEACOW
1994	Oxfam UK/I supports part of SEACOW activities
1995	Formation of KCC in Lothar
1996	Conversion of SEACOW's Enterprise wing to AHI
1997	Termination of Oxfam UK/I funding
	Establishment of AHI
1998	PNARP in 5 adjoining VDCs of Lothar under SNV/PCDP funding
	Emergence of PCL through PNARP
	(Beginning of SLP in the 5 VDCs in the farwest of Nepal under LLINK/Helvetas funding)
2000	Merger of PNARP components and Lothar programme as
	Chepang Interest Support Programme, EN, ESN support continues
	Termination of SEACOW SNV/PCDP relationship
	(Incorporation of PSEP in SLP)
	(Beginning of FRP in 3 districts in Churia range to support CFUGs under
	ChFDP/GTZ)
	(Beginning of SACCP programme in SLP area)

(Italicised parenthesis indicates that these events are not part of this case study)