Honey Subsector

Value Chain Study

Ministry of Industry

जर्मन सहयोग
DEUTSCHE ZUSAMMENARBEIT

implemented by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

The Inclusive Development of the Economy (INCLUDE) Programme is a joint Nepali-German initiative under the guidance of the Nepal Ministry of Industry and with Technical Assistance by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, acting on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Published by
Inclusive Development of the Economy Programme (INCLUDE)

Narayani Complex, Pulchowk, Lalitpur
PO Box 1457, Kathmandu, Nepal
T: +977-1-5555289
F: +977-1-15521712
E: include@giz.org.np
I: www.includenepal.org

Commissioned by

BMZ Federal Ministry for Economic Cooperation and Development

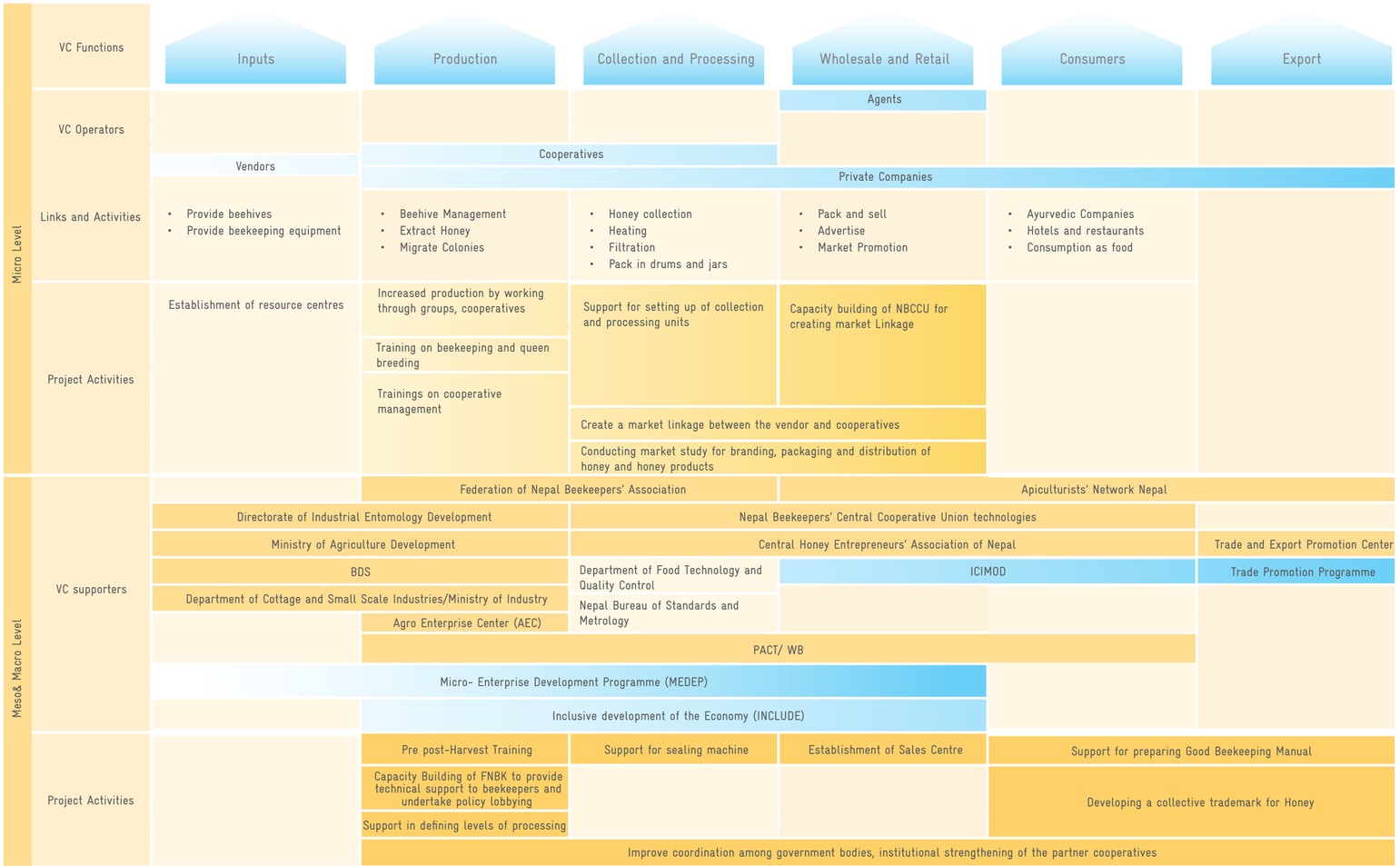
Compiled by:
Human Resource Development Centre (HURDEC) Pvt.Ltd

Editor:
Jackie Taylor; INCLUDE

Photographs:
INCLUDE

Design
Kazi Studios

4. Areas of Interventions



Contents

Acronyms

AEC	Agro Enterprise Centre
APSO	Area Programme Support Office
BDS	Beekeeping Development Section
BETRESP	Beekeeping Training and Extension Support Project
CTEVT	Council for Technical Education and Vocational Training
DADO	District Agriculture Development Office
DCCI	District Chamber of Commerce and Industries
DFTQC	Department of Food and Technology and Quality Control
DOCSI	District Office of Cottage and Small Industry
DOIED	Directorate of Industrial Entomology Development
FNBK	Federationof Nepal Beekeepers
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
gms	Grams
GOs	Government Organisations
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HURDEC	Human Resource Development Centre
ICIMOD	International Centre for Integrated Mountain Development
INCLUDE	Inclusive Development of the Economy
INGO	International Non-Governmental Organisation
ITC	International Trade Centre
MAPs	Medicinal and Aromatics Plants
MEDEP	Micro Enterprise Development Programme
MoAD	Ministry of Agriculture Development
MoI	Ministry of Industry
MT	Metric Ton
NBCCU	Nepal Beekeepers Central Cooperation Union
NBSM	Nepal Bureau of Standards and Metrology
NGOs	Non-Governmental Organisations
NTIS	Nepal Trade Integration Strategy
PSP	Private Sector Development
SNV	Netherland Development Organization
TEPC	Trade and Export Promotion Centre
UNDP	United Nation Development Programme
VDC	Village Development Committee

Executive Summary

The Inclusive Development of the Economy (INCLUDE) Programme, is a joint Nepali-German initiative under the guidance of the Nepal Ministry of Industry (MoI) and with Technical Assistance by the Deutsche Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, acting on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).The programme aims to contribute to an environment that is particularly conducive to socially balanced economic development. Following a partner-oriented and systemic approach, INCLUDE strengthens the institutional capacities at government, private sector and cooperative levels and supports their interaction. The economic stake-holding of selected target groups is promoted specifically via value chain approaches. INCLUDE's objective is therefore: selected actors from the public, private and cooperative sector increasingly perform their roles in promoting socially balanced economic development.

The overall purpose of this analysis is to set the basis for identifying appropriate interventions for the promotion of the honey subsector value chain in the programme districts (Banke, Dang, Kailali, Pyuthan, Surkhet) and beyond. The value chain analysis was based on the GIZ Value Links approach.

Methodology

A set of questionnaires was designed by the study team to be administered among the value chain operators and supporters. These research instruments were further fine-tuned and finalised in consultations with INCLUDE officials in Kathmandu. The scope of this assignment did not justify a statistically sound evaluation of information. The sample size of

respondents in group of interviewees was too small to apply any statistical evaluation methodology. Within the given timeframe as many stakeholders as possible were interviewed in order to receive a broad picture. However, this still remained a qualitative assessment.

National context

Most of the honey produced in Nepal is multifloral, that include chiuri, rudilo, sunflower, buckwheat and mustard, to mention a few. The honey in the Terai region is of *Apismellifera* while in the hills is of *Apiscerana*. The honey produced in Nepal can be broadly divided into five categories: plant specific, honey bee specific, location specific, commercial honey and honeydew honey.

The Government of Nepal took first initiative in 1970 to provide training on beekeeping through its Department of Cottage Industry and Remote Area Development Committee. In 1985/ 86a separate unit, the Beekeeping Development Section (BDS) was established to provide training and extension support services in beekeeping. *Apismellifera* was introduced in the country in 1990. The government and the non-government agencies have put a lot of effort into promoting this bee species in order to increase honey production.

The districts which are leading in honey production are: Chitwan, Nawalparashi, Rupendehi, Dang, Sarlahi, Kapilvastu, Bardia, Kailali, Pyuthan and Surkhet. According to the Norwegian Mission Report of 2003, Nepal has the potential to produce over 10,000 MT of honey annually with a capacity to hold 1 million beehives. Although Nepal is endowed with a wide variety of flora and good climatic conditions, Nepalese honey has not been able to establish its presence in the world market. The amount of Nepalese honey is only 0.25% of the honey produced in the two neighbouring countries of China and India. In the world Nepalese honey accounts for only 0.05%. Honey is still considered as a medicinal product in Nepal with seasonal consumption.

The estimate of honey production in Nepal varies according to source. A conservative estimate shows around 1,000 – 1,500 MT. In 2012/13, there was sharp fall of over 98.8% in comparison to the export in 2011/12 of NRs. 1.8million. The main reason for the fall in export is lack of proper quality certification. Over the years, there has been sharp increase in importation of honey from the neighbouring countries like China and India.

Nepal has the potential to produce over 10,000 MT of honey annually with capacity to hold 1 million bee hives.

Status of honey value chain in four districts

The major functions in the honey value chain include inputs supply, beekeeping, collection and processing, wholesale/retail and the final consumption. There is no strict compartmentalisation of functions carried out by the value chain operators (actors). The common practice is that an operator performs several functions starting from input supply, beekeeping, collection, processing and wholesaling/retailing. This practice is more common among the bigger and established operators in the chain compared to the small operators who are confined to a single function of beekeeping and the production of honey. As a result, the bigger organised operators are governing the entire value chain. An environment promoting collaboration between the large and the small value chain operators is at infancy stage and in most cases does not exist. The growth prospect for beekeeping in four selected districts (Dang, Kailali, Pyuthan, Surkhet) is quite promising. It is estimated that there are over 20,000 hives and the potential is around 120,000 beehives.

Among the four districts selected, Dang is the major producer of honey. The district's contribution to the national production is about 14%. Kailali is another district where production is gradually increasing, although the current production pockets in the districts are limited, all the Village Development Committees (VDCs) in the district have good potential for beekeeping. There is heavy concentration of *Apismellifera* in districts like Kailali and Dang.

Considering the size and the scale of operations of the beekeepers, it is quite natural that the small producers tend to sell the honey in the local market as the prices offered are much higher. The problem starts when the production volume increases like in Dang and Chitwan where the beekeepers are facing difficulties in selling their honey since the huge quantity of production cannot be absorbed in the local market.

The cooperatives in the districts with low honey production and newly established processing units are not able to purchase honey from their own members as the prices offered at the local market are higher.

The farm gate price of honey varies in districts. In Dang, as the volume of production is quite high, the beekeepers sell their honey to collectors at between NRs. 130 – NRs. 150 per kg; whereas in other districts the beekeepers are receiving up to NRs. 500 as they directly sell to the retail outlets or individuals in the market.

Most of the beekeepers have limited awareness of the quality and legislative requirements of honey within the domestic market. One of the major challenges among beekeepers is lack of adequate technical and business skills to run commercial beekeeping. They usually have basic skills in beekeeping, acquired through one time technical training (3-7 days duration). There is lack of adequate follow-up and technical back-up services to these beekeepers. In addition, awareness on development and protection of bee pastures is often missing.

The honey collection is more prevalent in Dang compared to other districts, as the volume of production is high. Commercial beekeeping has already started in Dang; whereas in the other three districts producers with more than 50 beehives are rare. The other factor is that honey produced in Kailali, Surkhet and Pyuthan are supplied to the local market. The honey consumers can be broadly classified into the tourism sector (hotels, restaurants and trekking agencies), ayurvedic medicine producers and individuals (nationals and foreigners).

The organised corporate sector like Dabur Nepal and two to three private sector processors follow a standard process which ensures a constant and high quality of honey. In districts where the processing units are run by cooperatives and individuals this processing practice is often lacking, as they do not have the required facilities and resources

Even though the supply and production of honey in Nepal is limited there are several organisations and associations established to promote the honey subsector. There are certain critical issues raised by the chain operators that are hindering the growth of the value chain. These include policies and regulation, access to finance, infrastructure facilities, enterprise management culture and risk taking capacity on the part of the value chain actors to invest. The quality of Nepalese honey has not been ascertained, as testing and laboratory facilities are not sufficient.

The linkage between the various operators in the chain is not very healthy as one perceives the other with a sense of distrust. There is tendency to look for a short-term immediate gain in order to survive. The supporting actors (associations and federations) have limited resources and means to work for the upgrading of the value chain. Instead of collaborating with each other the associations and federations perceive each other as competitors. In addition, there is a conflict of interest among certain promoters of these associations as they also run their private enterprises in the honey subsector.

One of the major challenges among beekeepers is lack of adequate technical and business skills to run commercial beekeeping.

There have been limited efforts made so far in enhancing the productivity of the beekeepers by expansion of beehives and promotion of good beekeeping practices. The extension services at the district level are inadequate. The supporting actors are too confined with small activity within the value chain like working with a handful of beekeeping cooperatives, individual beekeepers, or with one or two processing units. The support activities have been compartmentalised to large extent and the entire value chain has been overlooked. The focus is still on production instead of market; however, some efforts have been made for market promotion. Product diversification (through training on honey recipe preparation, wax processing, comb foundation making), packaging with different sizes as per the interest of consumers, participation in trade fairs with these products, and facilitating linkage and networking with buyers, both at local and national level, have been initiated. There is still a strong presence of a welfare approach, even among the operators and the supporters of the value chain. Other agriculture sectors such as orthodox tea, ginger, and coffee have gradually moved away from this welfare approach to market driven approach, which is necessary in the honey value chain too.

Proposed key interventions

Developing cluster areas for commercialisation of beekeeping

The current level of production and productivity in the districts is not reaching the economy of scale. If the commercial production of honey is to be attained, the number of beehives should increase two to three times among the beekeepers. Considering the economic conditions of the beekeepers in the district it may not be possible for single beekeepers to drastically increase the number of hives. Instead, it is proposed to develop a beekeeping cluster in various districts with a radius of 10 km where there can be 15-20 small beekeepers, each having at least 10 hives.

The concept of a cluster approach can prove effective in many ways, ranging from effective delivery of extension service; technical back-up; collective bargaining of beekeepers with other operators of the value chain; reduction in the operational costs (transportation for migrating bees, bulk purchase of supplementary feeding); new product development; and developing long-term relationships between the beekeepers and honey processors. The possibility of using local agro-vets as agencies for the supply of inputs should be explored by the current input suppliers in these cluster areas. These agro-vets can also be equipped with basic training on the technical aspect of beekeeping and affiliated to the Federation of Nepal Beekeepers (FNBK) and they can serve as local technical resources at the local level.

Regular provision of standardised training and technical services

The commercialisation of agriculture activities requires continuous education and follow up right from the beginning. Currently, there are several training modules and packages designed and tested for beekeepers. It is important that these training materials should be standardised, in terms of duration and content, based on the region and location.

Developing sustainable linkages between the producers and buyers

The market has become a major issue especially for those districts where the volume of production has increased over the years. The beekeepers are unable to sell their products easily. On the other hand, in case of bulk demand, such as for the export market, the producers are unable to supply. This is primarily due to the fact that production of honey is yet to be commercialised. The problem is not severe in districts like Kailali, Surkhet and Pyuthan, as compared to districts like Dang, Chitwan and Nawalparashi. Over a period of time, if preparation does not start now, it is most likely that the above districts will also face the same market problem.

The current practice in the market is based on short-term relationships between the beekeepers and other operators of the value chain. There is a low degree of trust between these two parties, each blaming the other for the fact the value chain is not functioning well. The review of the contractual agreement between FNBK and major honey operators in Nepal can be a good starting point to identify the factors that created a major hindrance in the successful completion of contracts. Based on this review, the possibility of new negotiations should be explored as it is the only organised corporate sector involved in the processing of honey in Nepal. Similarly, avenues to involve other private sector players in the honey value chain should be identified.

Market analysis for determining consumers' needs and domestic market trends

Until now, interventions have been very much focused on production aspects without considering the real demand within the domestic market. As a result, the market is forced to take on what producers and processors supply rather than producing, processing and packaging according to market trend and demand. The supply driven approach has left the market saturated with similar types of products.

Awareness creation among customers

The consumption of honey is still regarded as a luxury for the majority of the population. Furthermore, honey consumption is seasonal. This has a direct (negative) impact upon the sales volume of honey. As such, marketing should not be confined to supporting periodic trade fairs and exhibitions as it serves only a small part of sales promotion activities. Furthermore, these exhibitions are held between certain time periods whereas there is an acute need to increase the demand of honey all year round. An extensive mass awareness campaign strategy should be developed in collaboration with private sector operators as well as associations.

Institutional marketing

A potential big domestic consumer market for honey could be agencies such as security forces like army, police and other public organisations. They can consume almost all the honey production, if included in their food ration. Support to organisations like the Directorate of Industrial Entomology Development (DOIED), the Federation of Nepal Beekeepers (FNBK), the Nepal Beekeepers Central Cooperation Union (NBCCU) and others, could be offered in developing strategies for lobbying and advocating at the policy level for including honey in the food ration of public organisations.

The ´SuddhaSakakariMaha´ jars can be seen at some retail stores and hotels in district headquarters and regional centres like Nepalgunj and Dhangadi, but the brand presence is not strongly visible. The processing units are struggling to obtain raw honey as the members of the cooperatives are not selling honey to them but directly to the retail market. The cooperatives have limited qualified human resources to run and manage these processing units. The newly established cooperatives require immediate attention if they are supposed to run as an enterprise.

Joint marketing strategies of the cooperatives

In the initial years it may prove difficult for a single cooperative to have adequate resources to launch an aggressive marketing campaign. Development of a joint marketing strategy and promotional measures is necessary where each cooperative can pool resources. Such a strategy should provide for market segmentation in terms of geographical coverage. It should also be based on plant species of honey, such as mustard honey from Dang and chiuri based honey from Surkhet or Pyuthan, for example.

Exploring the potentials for product diversification

Honey is the major product at present, although in many other countries where commercial beekeeping is underway honey is not the only the end-product. The focus until now is on the production of honey and even the beekeepers and other value chain operators are not fully aware of primary and value added products. An exploratory research can be carried out to assess the viability of additional honey based products in collaboration with private sector operators.

Preparation of business plans

As all processing units have done trial productions and also introduced their products in the market, it is important to carry out a review of the trial production and ask for feedback from the market. The findings of the market research on branding, packaging and other aspects commissioned by the INCLUDE Programme can provide valuable information. This review exercise should be carried out with the executive members of the cooperatives and even involve the existing and potential buyers (retail stores and others). Based on the review, the business plan (which has been already developed by cooperatives) needs to be reviewed with major focus on five elements – market and marketing; collection of raw materials; costing and pricing of products; management of the processing unit, and review of production targets.

Hiring of a qualified manager to run the processing unit

A mechanism needs to be developed within the cooperative to ensure that the business plan is executed, for which the cooperative needs to appoint a qualified manager to run the processing unit. The manager should be preferably from the private sector and hiring should be based on a performance based incentive system. In situations where a qualified manager is not available temporary arrangements can be made where the concept of a management contract with a private sector operator may be a viable solution. In this case, the cooperative receives a mutually agreed fixed amount per year from the profit generated by the processing unit. This kind of arrangement should be for a fixed time period, during which required human resources are developed within the cooperative. These newly developed human resources should be in a position to run the operation after the fixed term contract ends with the private sector.

Formation of district level task force

There are several actors at the district level working for the promotion of the honey subsector. These include government agencies; district chapters of FNBK; cooperatives affiliated to NBCCU; development partners, and district cooperative unions, to mention a few. The major issue is that each actor is working on its own with limited activities and resources. As a result, these interventions have limited contribution in the promotion of the honey subsector. There is a need for a committed actor in the driving seat at the district level who can coordinate with various agencies.

A district level task force should be the link to the value chain operators and the concerned agencies and support actors at the district level. Its role should be clearly worked out with the main objective to facilitate the development of an enabling environment for the promotion of the honey subsector in the district. It can be established as a common platform where the private actors, public and development agencies involved in the honey subsector meet regularly and chart out the way forward.

1. Introduction

1.1 Background and Context

The Inclusive Development of the Economy (INCLUDE) Programme, is a joint Nepali-German initiative under the guidance of the Nepal Ministry of Industry (MoI) and with Technical Assistance by the Deutsche Deutsche Gesellschaft für Internationale Zusammenarbeit(GIZ) GmbH, acting on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). The programme aims to contribute to an environment that is particularly conducive to socially balanced economic development. Following a partner-oriented and systemic approach, INCLUDE strengthens the institutional capacities at government, private sector and cooperative levels and supports their interaction. The economic stake-holding of selected target groups is promoted specifically via value chain approaches. INCLUDE's objective is therefore: selected actors from the public, private and cooperative sector increasingly perform their roles in promoting socially balanced economic development.

Target groups are the poor and ultra-poor inhabitants of Nepal who are, or could be, economically active, as well as women, marginalised castes and ethnic/religious groups, conflict affected people, and people with disabilities. INCLUDE is focusing its programme intervention on Kailali, Surkhet, Dang, Banke and Pyuthan Districts.

Under its value chain component, INCLUDE makes an effort to strengthen selected value chains with a special emphasis on the cooperative sector. Currently, INCLUDE is supporting for promotion of three value chains: honey, medicinal and aromatic plants (MAPs) and dairy. The programme is entering its second phase

starting from January 2014 until end of December 2016. In terms of value chain development, the orientation of the programme shifted from the production level to the promotion of value addition and market-orientation. Therefore, it was necessary to better understand the systemic constraints at different levels of the honey value chain that restrict promotion of the honey value chain, and design the interventions accordingly in order to address those constraints. In this context Human Resource Development Centre (HURDEC), a private development management consulting company, was assigned to carry out a detailed Value Chain Analysis of the honey subsector in the programme's working districts.

Target groups are the poor and ultra-poor inhabitants of Nepal who are or could be economically active, as well as women, marginalised castes and ethnic/religious groups, conflict affected and people with disabilities.

1.2 Purpose and Objectives of the Study

The overall purpose of the analysis was to set the basis for identifying appropriate interventions for the promotion of the honey subsector value chain in the programme districts and beyond. The value chain analysis was based on the GIZ Value Links approach.

The specific objectives of the analysis included:

- Identify the key functions in the value chain as well as vertical and horizontal relationships and linkages between the value chain operators and supporters involved in the subsector;
- Identify key strengths, weaknesses, opportunities and threats at the different level of the chain;
- Carry out economic analysis of the value addition;
- Identify key constraints and gaps, and
- Propose key intervention strategies to upgrade the functioning of the value chain.

1.3 Limitations

The biggest limitation during the field study was availability of precise data and figures related with production, processing, wholesaling and retailing. Secondary data such as number of beekeepers, annual production of honey and allied products, as well as volume of honey processed and exported from the programme districts is not easily available. The District Agriculture Development Office (DADO) does compile and publish data and figures related with the agriculture activities in the district under its annual progress report. The availability of data related with the honey subsector is scarce and sketchy in these. The figures and information used in this study report are obtained from specific officials of DADO and in some cases are not reflected in the annual progress report.

Furthermore, the data available at the central level contains only national figures relating to production trends. The national organisations involved in the promotion of the honey subsector, such as the Federation of Nepal Beekeepers (FNBK) and the Nepal Beekeepers Central Cooperative Union (NBCCU) also do not have adequate information and data. Thus, the study team had to rely very much on the impressions given in the studies carried out in the past to obtain figures and information. At producers and small processors level the required information does not exist. Thus, the study team had also to rely on the information based on the impressions given by the respondents. The information obtained from the processing units in the four districts (Kailali, Dang, Pyuthan, Surkhet) is quite limited, as the units are not fully functional yet.

1.4 Methodologies Used in the Study

The study started with an initial round of document review and consultation with the international consultant on process and methodology to be applied during the value chain analysis. An important part of the process was the study of the available information, such as internal project documents, as well as relevant external documents. (The list of utilised documents can be found in Annex 6: List of Reference Materials.)

The scope of this assignment did not justify a statistically sound evaluation of information. The sample size of respondents in each of the abovementioned groups of interviewees was too small to apply any statistical evaluation methodology. Within the given timeframe as many stakeholders as possible were interviewed in order to receive a broad picture; however, this still remained a qualitative assessment.

Standardised questionnaires were worked out for the value chain operators and the supporters. In some cases focus group discussions were organised. In such cases the questionnaires provided only a framework for information collection.

The method of information collection was primarily through individual interviews and focus group discussions. The interactions with the producers in groups or individually primarily centred on ascertaining the cost of production; challenges in the marketing of honey products; relationships with the various value chain operators; major constraints in the value chain, and key interventions required. The interviews with the traders revolved around a similar theme with more focus on issues of relationships with the producers, the issue of credit sales and purchase, quality of honey, and their prices. The interaction with the value chain supporters focused primarily on the service delivery mechanisms, information on data base available, and working relationships with other value chain promoters and the producers.

A significant part of each interview was the issues of how the interviewees see themselves within the value chain and what they suggest in order to improve the functionality of the chain. Comparing the perceptions of the roles of different stakeholders, their understanding of the present status of the chain and their vision for its improvement was valuable in suggesting specific interventions, which will have a high probability of ownership during their implementation by value chain actors.

The analysis of the subsector started in Kathmandu, as this is the largest market for honey related products in Nepal. The Key Informants Interviews in Kathmandu with the major players in the honey subsector provided insight into the functioning of the value chain by ascertaining the current supply of raw and processed honey in the market, its quality, and honey imports from other countries. Interactions were held with the officials from macro level institutions involved in the formulation of policies and programmes for the promotion of honey. Discussions were also held with the key officials from NBCCU and FNBK in Chitwan.

During the field study, the team met with value chain operators and supporters that are directly or indirectly involved in the honey subsector. These included members of the partner cooperatives of INCLUDE involved in the production of honey (15-18 producers from each of the partner cooperatives) and executives of the cooperatives. Discussions were held with producers who were operating honey production on a commercial basis in all programme districts. The major honey traders supplying raw honey to markets like Kathmandu and Pokhara were also met during the field trip. Visits were also carried out to agencies such as the District Agriculture Development Office (DADO); Department of Cottage and Small Industry Office (DOCSIs); District Chamber of Commerce and Industry (DCCI), and the Area Programme Support Office (APSOs) of Micro Enterprise Development Programme (MEDEP). (Refer Annex 1 for the list of persons met) A profile was developed of the honey, traders, processors and input suppliers in the four honey related working district of INCLUDE and in Kathmandu Valley. These actors were interviewed during the field visit.

At the end of each day, intensive discussions were held within the team on the immediate findings which were then listed as field meeting notes. These were later compiled in a data analysis form and entered into the computer for further analysis. Draft reports were then prepared along with the key points for presentations for the regional level meeting of the stakeholders as well as for the national level meeting. The draft report finalised based on the feedback received during the regional meeting and national meeting of the value chain operators, supporters and enablers along with the feedback from INCLUDE Programme officials.

2. Honey Value Chain

2.1 Overview of the Honey Subsector in Nepal

Honey production in Nepal has a long history especially in rural areas. There are five different species of honey bees found in Nepal – *Apiscerana*, *Apismellifera*, Apisloborisa, Apisdorsata and Apisflorea. Most of the honey produced in Nepal is multifloral, that include chiuri, rudilo, sunflower, buckwheat and mustard, to mention a few. The honey in the Terai region is *Apismellifera* while in the hills it is *Apiscerana*. The honey produced in Nepal can be broadly divided into five categories: plant specific, honeybee specific, location specific, commercial honey, and honeydew honey.

The Government of Nepal took the first initiative in 1968 to provide training on beekeeping through its Department of Cottage Industry and Remote Area Development Committee. In 1980, a separate unit, the Beekeeping Development Section (BDS), was established to provide training and extension support services in beekeeping. The Netherland Development Organization (SNV) in Nepal supported a Beekeeping Training and Extension Support Project (BETRESP). The International Centre for Integrated Mountain Development (ICIMOD) supported in the development of indigenous honeybee species and improvement of productivity of *Apiscerana*. *Apismellifera* was introduced into the country in 1990. The government and the non-government agencies have put a lot of effort to promote this bee species in order to increase honey production. It is estimated that there are 20,000 colonies of *Apismellifera*

[1] Honey in Nepal, Approach, Strategy and Intervention for Subsector Promotion – GTZ/PSP/RUFIN

[2] Quality Assurance for Honey Trade in the Hindu Kush Himalayan Region – ICIMOD, Kathmandu, 2012

distributed from east to west Terai and estimated production from this species is around 500-750 metric tons (MT) .

The districts which are leading in honey production are: Chitwan, Nawalparashi, Rupendehi, Dang, Sarlahi, Kapilvastu, Bardia, Kailali, Pyuthan and Surkhet. According to the Norwegian Mission Report of 2003, Nepal has the potential to produce

Table 1 Total honey production in Nepal

Year	Bee Hives (number)	Production (MT)	Average production per hive (kg)
2003/04	130,000	577	4.43
2004/05	130,000	600	4.61
2005/06	125,100	650	5.19
2006/07	124,500	650	5.22
2007/08	124,500	1,000	8.03
2008/09	124,500	650	5.22
2009/10	140,000	1,100	7.85
2010/11	140,850	1,365	9.69
2011/12	154,780	1,500	9.69

Source: Statistical Information on Nepalese Agriculture 2011/12, GoN, MOAD

over 10,000 MT of honey annually with capacity to hold 1 million beehives. *Table 1* summarises the production of honey over last ten years in Nepal.

As per the latest figures obtained from the Directorate of Industrial Entomology Development (DOIED), it is estimated that of the total beehives in the country 20% are occupied by *Apismellifera*, the remaining 80% is of *Apiscerana*. The national production figures provided by FNBK are slightly higher than that of the government's. According to FNBK, 1,625 MT of honey were produced in the year 2011/12 of which around 54% was from *Apismellifera* and 44% from *Apiscerana*. Even though only 20% of the beehives are occupied by *Apismellifera* the honey production comparably is much higher, signifying the productivity of this particular species. Honey is the major product in the subsector, apart from the production of wax which is estimated at around 6 MT annually.

It is estimated that more than 86,000 MT of honey is produced each year in the Hindu Kush Region from more than 6 million colonies and honeybee nests. Production in the region ranges from 30 MT per year in Bhutan to 400,000 MT in China. India is the eleventh largest producer in the world, producing 40,000mMT of honey annually, worth USD 100 million . (Refer Annex 2 for honey production in the Hindu Kush Himalayan Region).

According to the International Trade Centre (ITC) the total export of honey in the world is estimated to be around 493,573 MT with a value of over USD 1.7 billion. Major buyers of honey in the world include the European Union (EU) and the United States of America (USA). The EU accounts for the import of almost 50% of world's honey. The other major players in the world honey market include China, Argentina, Mexico, India and Brazil.

Although Nepal is endowed with wide variety of flora and good climatic conditions, Nepalese honey has not been able to establish its presence in the world market. The amount of Nepalese honey is only 0.25% of the honey produced in the two neighbouring countries of China and India. In the world Nepalese honey accounts only 0.05%. Honey is still considered as a medicinal product in Nepal with seasonal consumption. The estimates of honey production in Nepal vary according to sources. A conservative estimate shows that around 1,000 – 1,500 MT (Table 1) of honey is produced in Nepal, of which 500 MT is exported and consumed in the

Table 2 Export of natural honey from Nepal

Year	Quantity in kg	Value in NRs. (000)
2008/09	21,009	2,438
2009/10	200	230
2010/11	41,029	7,667
2011/12	8,537	1,898
2012/13	38	21

Source: Trade and Export Promotion Centre (TEPC) – Export of NTIS Products

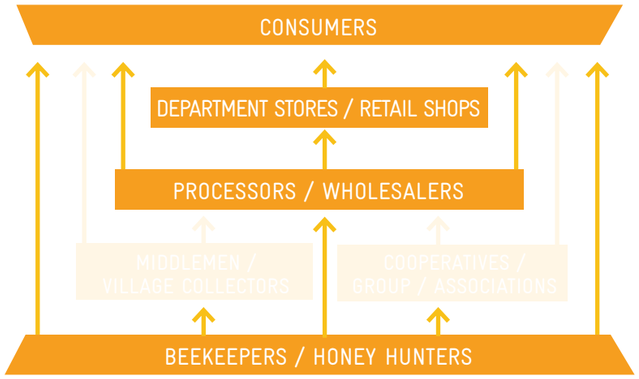
urban market whereas the remaining is consumed in the local market and villages. The data for export and import of honey in Nepal is rather inconsistent.

As per *Table 2*, in 2012/13 there was sharp fall of over 98.8% in comparison to the export in 2011/12 of NRs. 1.8million. However, certain discrepancies are noted in the given figures. The export price of honey is between NRs. 116.05 to NRs. 552 per kg between 2008/09 to 2012/13 whereas the export price in 2009/2010 is around NRs. 1,150 per kg. It is difficult to ascertain the future trend when there are discrepancies in the basic data.

Over the years, there has been a sharp increase in the importation of honey from neighbouring countries like China and India. Over 16 brands of imported honey are available in the Nepalese market, which include American, Chinese, Australian, Danish and New Zealand brands. There are over 30 national brands of honey available in the market.

The Figure 1 below outlines the supply of honey in the Nepalese market from producers to the final consumers.

Figure 1 Distribution of honey in Nepalese market



Source: Honey in Nepal GTZ/PSP-RUFIN

The Government of Nepal stresses that honey should be clean and free from inorganic and organic matters foreign to its composition. There are no adequate infrastructure facilities available in Nepal to determine the quality of honey and declare it clean. The Department of Food Technology and Quality Control (DFTQC) has set some technical requirements for honey in relation to genuineness, natural qualities, heat and storage damage and to detect adulteration. The Nepal Bureau of Standards and Metrology (NBSM) has set some standards too. These standards and regulations, however, are not uniform and compatible and can have different interpretations. A process is underway to set up a unit for Residue Monitoring Certification (RMC). (Refer Annex 3 for Nepal CODEX standard)

The Government of Nepal formulated several policies, regulations and instruments related to agriculture; trade; commerce; industries; environment protection; consumer protection, and food act, to mention just a few. However, none of the policies, acts, regulations and guidelines have a direct connection to the promotion of beekeeping.

2.2 Honey Value Chain Process, Operators and Supporters

The major functions in the honey value chain include inputs supply, beekeeping, collection and processing, wholesale/retail and the final consumption. There is no strict compartmentalisation of functions carried out by value chain operators (actors). The common practice is that an operator performs several functions starting from input supply, beekeeping, collection, processing and wholesaling/retailing. This practice is more common among the bigger and established operators in the chain compared to the small operators who are confined to the single function of beekeeping and the production of honey. As a result, the bigger organised operators are governing the entire value chain. An environment promoting collaboration between the large and the small value chain operators is at an infancy stage and in most cases does not exist. The bigger and organised value chain operators are also involved in the supply of beehives and other equipment. This has facilitated the small beekeepers in easy access to inputs. Efforts have been made in the past by both the government and development partners, in building healthy relationships among the chain operators, but results so far have not been very encouraging. If the honey value chain is to function effectively, a viable business partnership model between the large and small operators is required. There are some other agricultural products, such as organic orthodox tea, coffee and ginger, where business partnership models have been developed and are functioning.

Considering the size and the scale of operation of the beekeepers, it is quite natural that the small producers tend to sell the honey in the retail market as the prices offered are much higher. The cooperatives in the districts with low honey production and newly established processing units are not able to purchase honey from their own members as the prices offered at the local market are higher.

The problem starts when the production volume increases. This was clearly observed in districts like Dang and Chitwan where the beekeepers are facing difficulties in selling their honey, since the huge quantity produced cannot be absorbed in the local market. The high retail price in the local market is one of the motivating factors for starting up beekeeping. Once the production volume increases above the absorption capacity of the local market, prices and quality become major issues.

[2] Quality Assurance for Honey Trade in the Hindu Kush Himalayan Region – ICIMOD, Kathmandu, 2012

[3] Honey in Nepal GTZ/PSP-RUFIN

[4] National strategy on beekeeping FNBK 2012

2.2.1 Value chain operators

The linkages within the honey value chain are relatively short, starting with the input suppliers and ending at the final consumers with three or four operators within the chain. As stated earlier, the function of each operator is not confined to a single activity; they rather perform multiple functions ranging from the supply of inputs to retailing.

Input suppliers

It is rather difficult to come across an input supplier who solely supplies the inputs to the beekeepers. They are also involved in the collection of raw honey, processing, packaging, branding, and supplying to the market. They are often also involved in training and transfer of technical know-how to the beekeepers in the process of supplying the inputs such as hives and bee colonies. Considering the number of beekeepers in each district it may not be feasible to sustain by merely supplying the inputs. This could be one of the reasons that they take several functions at a time. As a result, it is difficult to ascertain the exact turnover from the sales of inputs as they do not differentiate their transactions in their recording systems.

The input suppliers in the districts normally operate from their small outlet in the market area with two rooms, usually one room as store and the other one as a sales outlet. The stores are normally packed with inputs as well as honey collected from the beekeepers. Proper store records maintained. These input supply shops are normally managed by the owner and do not have additional employees, whereas they do employ carpenters and other employees in their hive production unit. The numbers vary from 2-10 workers depending on the scale of operations.

Beekeepers (Producers)

The beekeepers are other major operators in the honey value chain. In districts like Dang and Surkhet *Apismellifera* is more common and gradually replacing the indigenous variety of *Apiscerana* using modern beehives. In some ethnic communities, such as Magar in Pyuthan District, beekeeping is a household activity where traditional beehives are used for keeping *Apiscerana*.

It is rather difficult to ascertain the exact number of beekeepers in the districts as various sources have different figures. Below in *Table 3*, the estimated number of beekeepers, types of bees and annual production in MT are presented. These figures are derived from discussions with various stakeholders during the field study.

It is rather difficult to ascertain the figures given on the table above. For example, in Surkhet, out of 4,160 beehives only 510 are modern ones (around 12%) of which 310 are used for *Apismellifera* (around 60%). Based on this, calculating the production of 5 MT of honey from *Apismellifera*, it comes to around 16.13 kg of honey per hive which is far too low compared to the average yield. Similarly, *Apiscerana* per hive production comes to 0.39 kg for 3,850 hives, if the annual production volume is taken as 1.5 MT. Among the partner cooperatives of INCLUDE the number of beekeepers are not very significant. Among the four cooperatives supported, two are specialised in beekeeping, whereas the other two are multipurpose cooperatives. The status of beekeeping in the five cooperatives is summarised in *Table 4* below:

Table 3 Estimated number of beekeepers in four districts

District	Estimated number of beekeepers	Estimated number of beehives (traditional and modern)	Annual Production in MT		
			Apiscerana (traditional and modern beehives)	Apismellifera	Total Production in MT
Kailali	550 - 600	3,000	20	30	50
Dang	734	6,870	14	210	223
Surkhet	500-600	4,160	1.5	5	6.5
Pyuthan	300-400	3,200			8
Total	2,000- 2,300	19,230	35.5	245	287.5

[5] The figure provided by DADO Kailali estimates only 250 – 300 beekeepers in the district and annual production of 28 MT for the year 2011/12. The figure quoted above is provided by INCLUDE regional office based on the survey carried out by MEDEP and FNBK a few years ago.

[6] Out of 4,160 only 510 beehives are modern beehives and remaining are traditional hives. Of these 510 beehives 310 are for Apis Mellifera. According to KakreVihar Cooperative, among its 238 members there are around 1,034 hives (Mellifera 445 and Cerana 589)

Table 4 INCLUDE partner cooperatives and status of beekeepers

District	Name of cooperative	Total members	Number of beekeepers	Number of hives	Hives maintained by the cooperative	Outreach in groups and numbers
Kailali	Pragatishil Beekeeping Cooperative	86	52	577	30	6 groups 164 member
Surkhet	KakreVihar Beekeeping Cooperative	218	218	360	60	10 groups 283 members
Dang	Nari Jagaran Mul	135	32	257	38	5 groups 127 members
	Ambikeswori Beekeeping Cooperative	53	39	504	40	4 groups 100 members
Pyuthan	Airawati Multipurpose Cooperative	589	146	600	30	1 group 25 members
Total		1,081	445	2298	198	699

All figures given in Tables 3 and 4 are estimates, as exact numbers are not available. Even with the partner cooperatives it was difficult to ascertain exact figures, especially when beekeeping is carried out in groups. For estimation purposes it can be safely said that there are around 550-600 beekeepers, with more than 10 beehives each, involved with the partner cooperatives of INCLUDE.

Table 5 Categorisation of beekeepers in four districts

Category	Number of beehives	Major features
1	<10	In this category are two types of the beekeepers: a) Those who are keeping bees as a hobby and not for generating regular earnings. b) Poor and marginalised families where beekeeping is promoted by cooperatives with support from development partners. Both groups do not regard the income generated by honey production as substantial earning in the family. They do not have means and resources to take colonies for grazing and to provide supplementary feeding. The productivity per hive is around 20kg on average; the honey is sold in local markets.
2	10-25	Those who started with a few hives and are gradually increasing the numbers. Still facing problem in taking the colonies for grazing and in providing supplementary feeding due to lack of working capital. Still prefer to sell honey at retail prices and not to cooperatives.
3	30-80	Semi-commercial in nature but beekeeping is becoming the major source of income. They take bee colonies for grazing jointly with other beekeepers. They supply honey to honey collectors and wholesalers. Normally have an extracting drum of various capacities.
4	>100	Full time enterprise employing 2 to 5 workers. Sell to collectors or have their own brand. Some have their own processing unit and even supply inputs to the small beekeepers. Have linkages with various buyers and even collect honey from small beekeepers in the vicinity.

[7] The number of hives includes the ones owned by the members of the cooperatives and the groups under the outreach programme

[8] The number of beekeepers in the cooperative is provided by INCLUDE although the figures given by the cooperative was only 40 beekeepers

During the field survey it was analysed that the majority of beekeepers in the four districts fall under category one and two. Only in Dang and to a large extent in Chitwan District, do beekeepers fall under category three and four.

For the majority of the beekeepers sales of honey are not a major source of earning. Usually in rural areas the farming population has multiple sources of income as they cannot solely rely upon one source due to limited assets and capital. The cooperative members supported by INCLUDE are mostly in Group 2, having multiple income sources, where beekeeping is of increasing importance. The partner cooperatives also maintain around 30-50 beehives at their premises. The honey produced in these beehives is the primary source of raw materials for their newly established processing units.

Collectors (Traders)

The collectors of honey are district based traders who collect honey during certain months of the year. They are usually local traders who not only collect honey but also deal in supply of inputs to the beekeepers. Among the four districts the concentration of collectors is comparatively higher in Dang, where honey is produced in large quantities. These honey collectors have linkages with wholesale and retail buyers in urban areas like Kathmandu, Pokhara and other urban centres. In districts like Kailali, Surkhet and Pyuthan honey is mainly sold in the local market by the beekeepers and therefore the collectors are almost non-existent.

In an ideal situation cooperatives are supposed to collect the honey from members, but this is not the common practice at present. The beekeepers tend to supply honey to the cooperatives only when they are unable to sell the produce in the market. It is a risk on the part of the cooperatives to buy honey from their members as they are not sure if they can sell their products. The cooperatives also lack skills to determine the buying price for raw honey. For example, Kakrevihar Cooperative in Surkhet purchased around 300kg of raw honey paying NRs. 180/kg to its members when the bulk purchase price of raw honey in previous season was NRs. 140/kg. The stock has remained in the cooperative for almost a year. Even processing could not take place as the raw material price paid by the cooperative was too high.

The normal practice among collectors is to collect the honey from the beekeepers based on individual contacts and relationships. There is no formal contractual agreement between the collectors and the beekeepers. The transactions take place purely on a trust basis. The case is the same between the collectors and wholesale and retail buyers. There is no written agreement. There is no long-term relationship between the buyers and the sellers, thus even with a slight increase of price the tendency among the beekeepers is to change the buyer. In order to facilitate easy access to the market the Nepal Beekeepers Central Cooperative Union (NBCCU) was established with an initiation from the Federation of Nepalese Beekeepers (FNBK). But the NBCCU was unable to buy honey from beekeepers primarily due to lack of working capital as well as management and organisational problems.

Processors

The presence of processors in the districts is quite limited. There is only one processor in Dang District, established with the support from MEDEP/UNDP. Over the last year two additional processing plants were established in Dang (one at Ambikeswori Beekeeping Cooperative in Ghorahi and the other one at Nari Jagaran Kendra in Tulsipur) with support from INCLUDE. Similarly, INCLUDE supported the establishment of processing units in Kailali (Pragatishil Beekeeping Cooperative), and in Pyuthan (Airawati Multi-Purpose Cooperative). Kakrevihar Cooperative in Surkhet established the processing units with the support from the Department of Cooperative and INCLUDE. These processing units are functioning under the control of cooperatives, except for one which is privately owned. The primary reasons behind the establishment of these processing units was to provide a ready market for raw honey produced by their members and to reduce their vulnerability due to changes in the market prices. They were also established with the idea of supplying quality honey in the local and regional market; and with the assumption that the members of the beekeeping cooperatives will readily supply raw honey to these processing units. The processing units are generally managed and maintained by selected members of the executive committee and the manager of the cooperative. The selected members of the executive committees have undergone basic training on the technical aspect of the processing units.

Wholesalers

The wholesalers are urban-based traders who obtain honey from collectors or producers in the districts in containers of 20-40 kg and repackage them in smaller containers of different weights. Some of the wholesalers obtain already packed honey from processors, ready to be sold to the retailers or bigger consumers, such as hotels, restaurants and trekking agencies. Only a small volume of honey goes through formal distribution systems like wholesalers. The wholesalers normally deliver honey to retail shops and supermarkets. The mode of transaction is primarily on commission basis, which is around 10-25% per kg. The wholesalers carry out door-to-door marketing, based on individual linkages and contacts. Some of the wholesalers obtain government certification from the Department of Food Technology and Quality Control (DFTQC) on an annual basis. The wholesalers usually have storage space for stocking the packed honey either in big or small containers. The supply of honey through these wholesalers goes up during the winter season from November to March, when market demand is high. Generally speaking, a wholesaler supplies around 5 to over 100 tons of honey in a year, depending on their size and scale of operation.

Retailers

The supermarkets, grocery stores and Ayurvedic shops are the major honey outlets in the market. In the districts the selling of honey through retail outlets is rather low compared to urban centres. On an average, retail outlets in the district sell around 5-12 kg of honey in a month; whereas the volume of sale is higher in urban centres from the supermarkets and other shopping centres.

The most common brand found in the retail stores is Dabur Honey, apart from other Nepalese brands. The word Shudda (Pure) is a prefix to all local honey brands, regardless of source, origin and categories.

It is estimated that there are 16 brands of imported honey in the market. The retail outlets are very particular on the issue of brand, quality, commission and conditions of sale. The honey available in the retail stores is packed in plastic or glass jars of different weights, ranging from 200 grams to 1kg. The suppliers to these retail stores vary. The big supermarkets have more than 10 suppliers for national and imported honey; whereas some retail store have only one supplier. The bigger the retailer the more brands of honey are available at the store. The sales volume also differs; it is rather difficult to ascertain the sales volume per month.

The honey consumers can be broadly classified into tourism sector (hotels, restaurants and trekking agencies), Ayurvedic medicine producers, and individuals (nationals and foreigners).

Consumers

A market study by GTZ/PSP revealed that in Nepal, branded honey occupies around 48% of the market share, whereas unbranded honey directly supplied to the market is around 52%. Dabur honey leads among the brands. The Dabur Nepal effort in promotional activities has largely contributed to the growth of the honey market in Nepal. Over the years the consumption of honey has increased in urban areas but honey is still a luxury good in rural areas. The per capita honey consumption in Nepal is 36gms per year which is 50 times lower than in Germany, which has per capita consumption of 1.8kg/year.[11]

The honey consumers can be broadly classified into tourism sector (hotels, restaurants and trekking agencies), Ayurvedic medicine producers, and individuals (nationals and foreigners). The general perception of good quality honey for the urban dwellers is liquid and transparent honey, without any crystals on the bottom of the jar. It is generally perceived by the urban dwellers that honey with sediments or crystals on the bottom of the jar are adulterated; whereas in the districts and rural areas honey without solid substance is not considered pure honey.

[9] Honey in Nepal – GTZ/PSP/RUFIN

2.2.2 Value chain supporters

Even though the supply and production of honey in Nepal is limited there are several organisations and associations established to promote the honey subsector. The major value chain supporters and enables are briefly described below.

Federation of Nepal Beekeepers (FNBK)

FNBK is a national federation of beekeepers providing services to its members through its district chapters, resource centres and groups. It has its district chapters in 28 districts. FNBK was established to organise beekeepers under one umbrella and to advocate for them on matters related to beekeeping. It offers capacity development services to its members and maintains networks and linkages with government offices, NGOs and development partners for the promotion of beekeeping.

Nepal Beekeepers Central Cooperative Union (NBCCU)

NBCCU was established under the initiation of FNBK to work on the challenges faced by the beekeepers cooperatives in the area of marketing. It started with an affiliation of 27 primary beekeeping cooperatives in 13 districts and it is now affiliated to 56 cooperatives in 25 districts. Its primary objective is to enhance the productivity of beekeepers and identify regular markets for honey produced by its member cooperatives.

Apiculturist's Network (Api-Net Nepal)

Api-Net Nepal is a networking apex body dedicated to facilitate on all issues related to the development of the beekeeping and honey business in Nepal. It organises workshops and meetings, conducts studies, disseminates information, lobbies and advocates for the promotion of honey subsector.

Central Honey Entrepreneurs Association of Nepal (CHEAN)

CHEAN is a recently established organisation by entrepreneurs involved in the honey trading. It also works for the promotion of the honey subsector through lobbying, advocacy and holding promotional events such as honey fairs and exhibitions in collaboration with other actors in the honey value chain.

2.2.3 Value chain enablers

Bee Development Services (BDS)

BDS is a government body under the Department of Agriculture, Ministry of Agriculture Development. It organises apiculture related activities in collaboration with District Agriculture Development Office (DADO) for lead farmers, as well as senior and junior level agriculture technicians. It also develops various training manuals, leaflets and posters. BDS is also involved in technical support services such as lab testing of honey quality, diagnosis of bee related diseases and offers beekeeping equipment on subsidy to beekeepers.

Directorate of Industrial Entomology Development (DOIE)

The Apiculture Development Programme under the DOIED and the DOA is a key government institution at the central level involved in the promotion of the honey subsector. Its primary objectives are to increase the production of honey qualitatively and quantitatively; to contribute in crop production through increased pollination, and to increase the consumption of honey through awareness creation. It works on policy issues related to commercialisation of *Apiscerana* and *Apismellifera* in appropriate zones; the establishment of well-equipped laboratory in honey and honey products in coordination with the Department of Food Technology and Quality Control (DFTQC), and promotes the continuity of resource centres for farmers-to-farmers technology transfer, as well as human resource development and other promotional support for the development of apiary. Its activities are implemented from the district by DADO.

Department of Cottage and Small Industries (DOCSI)

The DOCSI is a government department under the Ministry of Industry (MOI) involved in the promotion of beekeeping by offering basic training in beekeeping. It is also involved in registration of beekeeping and processing enterprises at the district level.

Council for Technical Education and Vocational Training (CTEVT)

CTEVT offers long and short-term training programmes on developing human resources for agriculture development. It offers a 78 credit hour course on beekeeping for agriculture students.

Department of Food Technology and Quality Control (DFTQC)

DFTQC is one of the three departments under the Ministry of Agriculture Development. The main aim is to ensure and enhance the quality and safety of food and feed products in the country. Further, the department has a paramount role in augmenting appropriate food processing and post-harvest techniques to promote agribusinesses.

Micro Enterprise Development Programme (MEDEP)/UNDP

MEDEP is involved in the development of beekeeping and the establishment of honey processing units formed by the groups or cooperatives. It offers various training programmes on beekeeping, supports in technology transfer, marketing of honey products, and financial services from its micro finance component.

Inclusive Development of the Economy (INCLUDE) Programme

INCLUDE has extensively worked in the honey subsector in the past few years. The programme primarily works with local partner organisations, cooperatives and associations in the area of beekeeping by capacitating them as business entities and service providers for the beekeepers. The programme supports to improve the product quality and to access high value speciality markets, product diversification and market linkage as well as creating a common platform for the stakeholders involved in the honey subsector. Moreover, it also supports capacity development of all value chain actors and the development of market strategies.

International Centre for Integrated Mountain Development (ICIMOD)

ICIMOD has been involved in the promotion of honey for a long period not only in Nepal but in the mountain regions of the Hindu Kush belt in Asia. It focuses on conservation and promotion of indigenous bee species, transfer of technology, and linking the corporate sector with beekeepers. An ICIMOD project, in partnership with FNBK, on linking up local beekeepers with a major honey operator was recently concluded. The current beekeeping

promotion activities are in the hill districts of the Far-Western and Eastern Development Regions of Nepal under its regional livelihood development programme in Kailash and Himalika respectively.

Physikalisch-Technische Bundesanstalt (PTB)

PTB is supporting the national quality infrastructure (QI) in Nepal. The objective of the project is to strengthen central institutions of the Nepalese quality infrastructure, to interconnect them, and to improve their services, especially in the fields of food safety and public health. INCLUDE is coordinating with the Physical Technical Federal Institute of Germany (Physikalisch-TechnischeBundesanstalt) to enhance the institutional and technical competence of the Department of Food Technology and Quality Control and Department of Plant Resources within the framework of quality infrastructure to enable them to offer the services as demanded by honey and MAPs value chain clients.

Trade Promotion Programme (TPP)

The Trade Promotion Programme aims to improve the implementation of the National Trade Integration Strategy (NTIS) by the Nepal Government and the private sector. The programme targets owners, managers and employees of Nepalese SMEs with export and employment potential, specifically in three export value chains - honey, medicinal and aromatic plants (MAPs) and silver jewellery. The project activities are directed towards strengthening the private sectors and service providers to

[10] Blitz Media 2006

[11] Honey in Nepal – GTZ/PSP/RUFIN

[12] Extracted from www.doiednepal.gov.np/agriculture.php

increase exports, capacity building of the National Implementation Unit (NIU) as well as to improve dialogue and cooperation regarding trade policy issues between the public and private sector through consultation mechanisms.

2.3 Current Status of the Value Chain (Major Findings)

The major findings elaborated below are primarily based on information collected from various operators and supporters of the honey value chain. The findings are drawn from over 120 respondents directly or indirectly involved in the various nods of the value chain. These findings revolve around the current status in each nod in terms of production, returns, margins and possible areas of cost reduction, as well as major challenges and relationships between the various operators.

2.3.1 Input supply

Inputs in the honey value chain refer to the supply of wooden hives; bee colonies; comb foundation; bee veils and other protective clothing; medicines; supplementary feed (sugar and soya); technical know-how; packaging containers, and small equipment such as smokers, uncapping knife, hive stands, and honey extractors of different capacities. The materials for supplementary feeding, such as sugar and soya beans, are available from the general grocery stores in the market. As stated earlier, the input suppliers do not confine themselves to one particular function, but rather take up several functions.

The sources of inputs are Kathmandu or India for items like honey extractors, bee veils, and comb foundation, while beehives and other small equipment such as smokers and stands are fabricated at the local level. The supply of queen bees is not a common practice. The sale of beehives constitutes of over 65% of the total sales. The prices of beehives vary in different districts. The price ranges between NRs. 2,700to NRs. 4,000(without bees), depending on the type of raw material used. In monetary terms, the honey extractor drum is the most expensive equipment. The prices range from NRs. 5,500 (zinc sheet – two frames) to NRs. 30,000 (stainless steel – 8 frames). The major buyers for the honey extractors are beekeepers with over 100 hives or those cooperatives that have received support from development organisations.

Position of the input suppliers in the value chain

The other value chain operators perceive input suppliers to be in a strong position. In a ranking of the chain operators, where 1is the weakest and 5 is the strongest, the input supplier scored 3.6. They were positioned just after the retailers, who were perceived as the strongest. The input suppliers were seen in a strong position since they are able to sell their products easily to the beekeepers, with low risks as they usually do their transactions on a cash basis.

Issues of concern to input suppliers

- Lack of working capital: As the input suppliers carry out several function sat a time, they are always short of working capital. The common practice is to invest in different activities rather than plough back the return into activities related to the supply of inputs.
- Inadequate supply of quality woods for beehives: The input suppliers are facing problems in acquiring quality wood for beehives. Good quality hives are made from wood called Tuni, which is costly and very difficult to find. Various regulation and norms of community forestry also hinder in the smooth supply of raw materials for the hives. The beekeepers voiced their concern on the quality and the durability of the beehives. They informed that the hives last for only two to three years as the type of wood used is of inferior quality.

2.3.2 Production

Honey is the major bee product currently produced, apart from wax. The production of wax is not very significant in terms of volume and return. The currently produced honey is plant specific– mustard, chiuri, rudilo, shisahu, and in some cases saaj.

The production of honey is seasonal, between the period of November to April (chiuri - October to end of November; mustard – November and December; rudilo – February and March, and sishau – March and April). Honey based on saaj is not very common. The Saaj tree flowers during the monsoon and the honey based in Saaj trees has high water content and does not receive a good price in the market. Saaj honey is available during June and July.

The production per hive is very much determined by the scale of operation and management of the beehives as well as the migration of beehives to various locations. Honey can be extracted from a beehive three to four times annually, if the bees are well fed and maintained. The production of honey per colony varies within the district. The maximum yield from a beehive is 110kg/hive, although this can be considered as an exception. The average yield from a hive of *Apismellifera* ranges between 30- 60kg per year. The yield from an improved hive of *Apiscerana* is around 12-18kg. In traditional beehives the production per hive is around 7-8kg. *Table 6* gives a summary of average yield from a hive of *Apismellifera* and an estimation of required investment.

There are initiatives to promote the production of honey among the poor and the disadvantaged groups in the districts. Considering their weak economic condition, beekeeping in groups is promoted. The other reason for beekeeping in groups is to gradually develop the skills of the group members in beekeeping and distribute bee colonies and hives among the members when they multiply. In reality, the group concept approach among the poor and disadvantaged has not produced the desired results. In an interview with one of the beekeepers in Dang, it was found that most of the group members have lost interest in working in groups and the entire responsibility of managing the beehives falls on the shoulder of one group member (usually the group leader), who volunteered in the beginning to keep the hives at his/her house. The group size was reduced from 20-25 members in the beginning to the present number of 5-10 members. The other challenge in beekeeping in groups is that in the beginning the earnings from the sale of honey are deposited in the group saving scheme for future investment. The honey yield is low and eventually the earnings are not significant. As a result, the interest of the group members usually declines.

There are no exact figures available at the district level on the production of honey. Based on the information obtained from DADO and interaction with other actors in the value chain, the production status of honey is summarised in *Table 7* below:

Table 6 Average honey production from Apismellifera

	Category	Annual average yield in kg per hive	Investment size (one time investment)
1.	< 10 hives	15- 20	NRs.50,000 (maximum)
2.	10 - 25 hives	25-30	NRs.75,000- NRs.250,000
3.	30 - 80 hives	40- 60	NRs.275,000 – NRs.800,000
4.	> 100 hives	>60	Over NRs.1 million

Table 7 Production of honey in four districts

District	Annual Production in MT			Contribution to national production in percentage	Pocket areas
	Apiscerana (traditional and modern beehives)	Apismellifera	Total Production		
Kailali	20	30	50	3.34	Mussoria, Shukkad, Durgauli, Manawait and 7 hill VDCs potential for *Apiscerana* and 35 VDCs in Terai suitable for *Apismellifera*
Dang	14	201	215	14.33	Panch Kule, Shantinagar, Hapure, Hapur, Naraynapur, Saiha, Shil Gaun, Siunja, Lwarpani, Kavre, Rampur, Ghorahi and Tulsipur
Surkhet	1.5	5	6.5	0.43	Birendranagar, Lekhparajul, Vidyapur, Gutu, Bijaura, Gadi, Kalyan, Sahare, Kunathari, Rajena, Ranibas Lekhagaun, Pokhari Kanda
Pyuthan			8	0.53	Dhunge Gadi, Hansapur (current production), Baraula, Dhubang, Ramghi, Daman, Pakala (potential)
Total	**35.5**	**236**	**279.5**	**18.64**	

Source: Field survey and information obtained from DADO and other agencies in various districts

Among the four districts, Dang is the major producer of honey. The district's contribution to the national production is about 14%. Kailali is another district where production is gradually increasing. Although the current production pockets in the districts are limited, all the VDCs in the district have good potential for beekeeping. There is heavy concentration of *Apismellifera* in the districts of Kailali and Dang. In Pyuthan and Surkhet *Apiscerana* is common, but there is a shift towards using modern beehives for *Apiscerana*. In Pyuthan the government is very much focused on promoting *Apiscerana*, considering their appropriateness to the climatic condition and geographical terrain of the district.

The multiplication of bee colonies (frames) is playing a major role in the expansion of the beehives. Normally, one modern beehive can occupy 8-10 frames. A well maintained beehive can multiply into 3-4 hives within a season of 3-4 months. It also contributes to the income of the beekeepers at the current market price of NRs.500-600 per frame of bee colony.

Cost of production

The costs involved in the production of the honey can be broadly divided into two categories, fixed and variable costs. The summary of cost of production per kilo of honey in four districts is summarised in *Table 8* below. The cost of production is derived from discussions with beekeepers and other chain actors in the district. The issue of costing is not a priority among the beekeepers that have less number of hives as they feel that it is not necessary to maintain records.

The above table indicates that the productivity is quite low in Kailali, Surkhet and Pyuthan Districts in comparison to Dang. In Pyuthan the majority of beekeepers are involved in traditional method of beekeeping with *Apiscerana* having low productivity. There have been some efforts to shift to modern beehives in recent days. The gross margin on the direct cost of production is significant, ranging from 65 to 112%. Even returns on sales after deducting all the costs is slightly less than 50%in three districts.

If the productivity increases, the cost of production per kg can be reduced. The major reason for the high cost of production per kg of honey is the limited number of beehives among the beekeepers. In districts like Kailali and Surkhet, beekeeping is still in its infancy stage and not a full-time occupation. The farm gate price of the honey varies in the districts. In Dang, as the volume of production is quite high, the beekeepers sell their honey to the collectors between NRs.130 – NRs.150 per kg; whereas in other districts the beekeepers are receiving higher prices as they sell directly to the retail outlets or individuals in the market.

In Kailali and Dang supplementary feeding (sugar and other substance) constitutes almost 40 to 50% of the total operational costs; whereas transport cost is between 15 to 20%. In Surkhet the transport constitutes over 50%of the cost, but the cost of supplementary feeding is less than 15%; signifying that the beekeepers take bees for migration and depend more on flora.

While analysing the annual profit and loss for 20 beehives it is noted that annual net profit for keeping 20 beehives is around NRs. 88,475, with Return on Investment (RoI) of around 33 to 38%, where the total investment is around NRs.2 63,000. (Refer Annex 4 for Annual Profit and Loss Statement and Annex 5 for the Schedule of Fixed and Variable Costs)

Table 8 Production of honey in four districts

District	Costs and margin							
	Total operating cost (NRs.)	Annual production per hive in kg	Total production in kg	Direct cost/kg	Current selling price/kg (NRs.)	Gross margin in%	Total cost of production/ kg (NRs.)	Return in%
Kailali – 30 hives	95,562	30	900	**102.84**	**170-200**	**65.3**	**125.7**	**47**
Surkhet – 20 hives	57,825	35	700	**82.60**	**180-250**	**86.8**	**120.9**	**48**
Dang -30 hives	106,650	50	1,500	**71.10**	**140-200**	**96.9**	**96.7**	**45**
Pyuthan -10 hives	15,050	10	100	**150.50**	**320.00**	**112.6**	**170**	**99.7**

Source: Field survey

Most beekeepers have limited awareness of the quality and legislative requirements of honey within the domestic market. It is generally perceived that setting up quality assurance systems are only necessary for meeting import requirements of developed countries, when in fact such systems should also apply for the domestic market. Generally speaking, the honey produced in these four districts is of good quality, except that beekeepers are not much aware about maintaining basic cleanliness while extracting the honey and storing it in containers. At their level there is no strict quality control measures applied and considering the production volume of honey it is very difficult to trace the origin, as records are not maintained. The beekeepers are yet to realise the importance of maintaining quality and standards in honey, as they have not been thoroughly oriented in issues of quality production and standardisation. The flat prices offered by collectors, irrespective of quality and source of honey, have also contributed in making beekeepers less conscious on the quality aspects.

Position of beekeepers (producers) in the value chain

The other value chain operators perceived producers in the weakest position. In a ranking of the chain between one to five, with1 being the weakest and 5 being the strongest, the producers were scored 1.4. Even in terms of categorisation of constraints by the value chain operators the production scored 3, where 1 was biggest problem area and 7 the least problematic area. This signifies that they are at the receiving end of the value chain, generally regarded as the poor people in the rural area. It is a common perception in the agriculture sector in Nepal that producers are deemed as the weakest operators in the chain, even though the return to beekeepers from the sale of honey is quite substantial.

Issues of concern to the beekeepers (producers)

Lack of adequate technical skills: One of the major challenges among the beekeepers is that they lack adequate technical and business skills to run commercial beekeeping. They usually have basic skills in beekeeping, which was acquired through one-time technical training (3-7 days duration). There is lack of adequate follow-up and technical back-up services to these beekeepers. The majority of them are running their beekeeping on a learning-by-doing basis. Although they are affiliated to cooperatives, these cooperatives are not in position to offer effective technical back-up systems. Due to the poor handling of the beehives it is reported that in Pyuthan District the bees have abandoned the colonies especially *Apiscerana* when they were transferred from the traditional beehives to modern beehives. The concept of good beekeeping practices is missing among beekeepers, resulting in lack of awareness on the production of good quality honey. The beekeepers also lack awareness on usage of standard beekeeping equipment.

Low productivity: As stated earlier, beekeeping activity is a part-time income generating activity for the majority of beekeepers. The income generated from beekeeping normally only supplements the current family income. Less than 2% of the beekeepers are in commercial production. The scale of operation is so low that the return is also not very significant. Due to the limited number of hives it becomes too costly to migrate bees for grazing to other areas. Furthermore, honey production is a seasonal activity. All these factors have contributed to low productivity.

Cost of inputs and ability to afford: The cost of supplementary feeding is almost 50% of the total operational cost. The bees depend upon sugar syrup and other supplementary feeding during monsoon (July to September). It becomes costly for small beekeepers to afford sizeable amounts of supplementary feeding. The transport cost during the migration is also quite high. In districts like Surkhet, 51% of the total operational cost consists of transportation. Even if migration is carried out, there is a problem of farmers not allowing grazing bees into their mustard cultivation, thinking that the production of mustard seed will be reduced. Further, there are several instances where the community forest charges a levy purely on its discretion without any basis, ranging from NRs. 50 to NRs.200, making the grazing expensive.

Inbreeding of queens: There is a gradual loss in productivity due to inbreeding of queens. As a result the egg laying capacity of queens has deteriorated covering only 2-3 frames with the eggs. The beekeepers also lack adequate skills in extraction of the queen which has direct impact on the productivity of the hives. Until now, the issue of inbreeding has been more prevalent among beekeepers who migrate their colonies on their own, compared to those beekeepers who take their colonies in groups.

Weak bargaining position: As the production volume is low, the traders and collectors set a very low price for honey. The beekeepers have no voice in the

[13] Quality Assurance for the Honey Trade in the Hindu Kush Himalayan Region, ICIMOD Kathmandu 2012

market regarding the issue of prices. In addition, the small beekeepers are generally not aware of the cost of production. Even at the present market prices the return is quite good (Table 9) but the beekeepers are hesitant to supply to collectors and cooperatives and are lured with retail prices in the market.

Delay in payments: The common practice is that honey is purchased on credit by the collectors and there is no guarantee of payment within a short period of time. The collectors claim that they have to depend upon their buyers for the payments. This creates a problem in the entire chain. The major issue is not the lack of market but delay in payment to the producers which has been a de-motivating factor in promoting beekeeping. There is tendency among the producers to look for the buyer who makes prompt payment or offers slightly higher prices. This issue is particularly serious in Dang District, where there is bulk production of honey.

Lack of adequate working capital: As a substantial amount is required for supplementary feeding and transport, beekeepers are always short of the required working capital. Access to financial institutions to obtain the working capital is quite limited. It is only the Agriculture Development Bank Ltd. that offers credit facilities for beekeepers, but credit is collateral based and has stringent terms and conditions. The beekeepers should be organised under cooperatives or join the existing cooperatives which can provide financial services that cater to their needs.

Deforestation of bee pasture areas: With rapid depletion of forests, the area for bee pasture is gradually decreasing. There is limited effort in developing pasture land for bees. There is also lack of management of bee pastures from the beekeepers and community forestry programme. The beekeepers and members of the community forestry lack adequate awareness and skills on pasture management, preparation of floral calendar, and conservation and cultivation flora suitable for bee pastures.

2.3.3 Collection

Honey collection is only prevalent in Dang District, as the volume of production in the district is high. Commercial beekeeping has started in Dang; whereas in the other three districts producers with more than 50 beehives are rare. The other factor is that honey produced in Kailali, Surkhet and Pyuthan is supplied to the local market. As stated earlier, the members of the cooperatives sell honey at the local market at retail prices. They only bring their products to the cooperatives when they are unable to sell in the market at higher prices. In districts like Dang, each honey collector usually supplies around 5 MT of honey annually to the buyers in Kathmandu. Apart from buying from the beekeepers, those collectors also have 50-100 beehives themselves. Their production also becomes part of the supply to buyers in urban areas. It is estimated that around 175 MT of honey is collected by the collectors in Dang District and sent to other locations in the country, primarily Kathmandu.

Honey collectors use containers for storage and transportation which can accommodate 20-40 kg of honey. These plastic containers are normally sent back to the collectors. If the containers are to be retained by the buyers, there is a slight increase in the price of the raw honey. The consignments are sent by public transport to their buyers in different locations. The normal practice among the collectors is buying the raw honey from beekeepers on credit. The credit period lasts from one month to several months. The major concern of the traders is that they are unable to make prompt payment to the beekeepers as they have to wait forth payment from their buyers. The cost for collection and supply of raw honey is given in *Table 9* below.

Table 9 Cost and gross margin for collection and supply raw honey (for 1 kg)

Cost description	Cost/kg NRs.
Price of raw honey	135
Storage charge	3
Load, unload, weighing, etc.	2
Packing container cost	2
Transport	4
Operation cost	3
Taxes (DDC)	2
Per kg cost	151
Selling price per kg	160
Gross margin%	6

Normally the collectors buy raw honey for NRs.135–140/kg and supply to the buyers and the processors at NRs.150-160/kg. Even with a gross margin of 5-6% collectors have a substantial return as the volume of transacted goods is quite high. The cost of raw honey constitutes a major cost component around 93% of the total cost. Apart from packing the raw honey in the container very little value adding is done at this point.

Position of the collectors (traders) in the value chain

Other value chain operators perceive traders/collectors as in a strong position. They rank just behind the input suppliers and the retailers, who are regarded as strongest. In a ranking done by the other operators of the chain between one to five, where 1is the weakest and 5is the strongest, the collectors scored 3.4. In terms of categorisation of constraints, market access is the major bottleneck, with a score of 2.6 on a scale from 1 to 7.

Issues of concern of collectors (traders)

- Lack of reliability of producers for regular supplies and tendency to switch buyers without any prior notice;
- Lack of adequate working capital for the purchase of raw honey, forcing them to depend totally on their buyers for payment, as well as high interest rate in borrowing;
- Frequent strikes (bandha) and other political disturbances affecting transport and supply of honey;
- No standard taxation policies and extortion at different points;
- Difficulties in maintaining uniformity in the quality of the honey as volume of production is limited and they have to depend upon many beekeepers for the supply of raw honey;
- Lack of quality containers for storage as there is no regular supply of standard containers in the market, and
- Lack of adequate collection, testing and packaging facilities.

2.3.4 Processing

Honey is one of the most natural products in the world; it is simply collected from the hives by beekeepers and packed into bottles by the processors. Once beekeepers have extracted the honey it is delivered to the processors in containers of various sizes.

The processing capacity of the recently installed processing plants at the cooperatives in four districts range from 300to 500kg/hr. This is very high in comparison to the availability of raw honey in the area. Furthermore, as stated earlier, there is hesitation on part of the beekeepers to sell their honey to these processing plants at lower prices than the current retail market prices. Equally challenging is the seasonality of the production of raw honey. As a result these processing units require large sums of working capital to buy the raw honey during the season. *Table 10* below briefly summarises the capacity utilisation of installed plants at cooperatives.

Two additional processing units are in the planning (one in Surkhet – private sector, and another one in Kailali – supported by MEDEP). These processing plants will be close to the already operational plants. It is difficult to ascertain if these newly established plants will be viable when the established plants are already operating far below their capacity. There are two to three well established processing plants in Chitwan and Nawalparashi as well as one in Kathmandu on a joint venture with an European investor (with a processing capacity of 1,500kg/hr). Apart from these units, the other major processing plant is run by Dabur Nepal, the lead player in processing of honey.

Table 10 Capacity utilisation of installed processing plants in the last season

Name of cooperative	Plant capacity in kg/hr	Quantity of processed honey in the last season	Capacity utilisation in percentage	Remarks
Nari Jagaran Kendra, Tulsipur, Dang	500	1,500kg	0.12	Capacity of processing 1,248 MT of honey annually
Ambikeswari Cooperative, Ghorahi, Dang	250	500kg	0.08	Capacity of processing 624 MT annually
Pragatishil Cooperative, Mussoria, Kailali	300	300 kg	0.04	Capacity of processing 748MT annually
Kakrevihar Cooperative, Birendranagar, Surkhet	200	150 kg	0.03	Capacity of processing 500MT annually

The processed honey is normally packed into plastic containers of different weights, usually 1kg, 0.5kg and less, with a label and the brand name. They have a foil seal. The cooperatives involved in the processing use a common brand called ´SuddhaSahakariMaha´. The brand name is promoted by NBCCU. The private processors use their own brand name. Normally the packed and processed honey is supplied directly to the retail stores with provision of commission between 15-20%. Payments are made after sales.

The newly established processing units operating in the four districts are not yet fully operational. They are still in the phase of trial production. The major challenge they are facing is the availability of raw honey. The primary source of raw materials for these units is the production by members. It is noted that these processing units were not even functional for a period of one week in the last season. It is only Kakre Vihar Cooperative in Surkhet which has worked out the costing of processed honey. This is given in *Table 11* below.

Table 11 Cost of 100 kg processed honey

Cost Description	Unit	Unit price (NRs.)	Total cost (NRs.)
Raw honey	110	155	17,050
Container for honey 1 kg capacity	102	22	2,244
Label for the container printing cost	100	3.5	350
Sealing tape	100	2.5	250
Labour charge for packing	3	350	1,050
Electricity and water for processing			200
Storage charge	100	1.5	150
Transportation of finished products	100	1	100
Depreciation etc.	100	0.5	50
Other expenses, commission	100	2	200
Total cost			21,644
Total cost of production per kg			216.5
Gross margin % (current market price of NRs.250/kg)		225-250	15.5

The normal practice at present among the processors is to supply honey in smaller containers of 1 kg and less and to supply directly to retail outlets or sell the products at various district level trade fairs and exhibitions. The delivery of the honey is made by the processors. As the production volume is quite limited some of the costs, such as packing materials, are quite high and thereby can be bought ordering in bulk. This will reduce the cost of production. The processors still do the sealing of containers manually using an electric iron and not following the standard manufacturing process. There is no proper system of checking the finished products after packing and as a result a few retail stores in Nepalgunj reported that some containers were not sealed.

Position of the processors in the value chain

The other value chain operators perceived processors as in a weak position compared to other operators in the chain. The ranking was particularly for those newly established processing units in the four districts. The ranking does not take into account processing units operating in Chitwan and Kathmandu. In a ranking, between one to five, where 1is the weakest and 5 is the strongest, the processors were scored 2.2.

Issues of concern of the processors

Lack of contractual agreement: The newly established processing units in all four districts are running far below their capacity, see Table 10. There is no system of contractual or binding regulations that the members of the cooperatives must supply the raw honey to the processing unit. Similarly, the processing units do not have any type of contractual agreements with any of the buyers, wholesalers or retailers for the supply of processed honey on a regular basis. The current practice is to sell processed honey by participating in trade fairs. The contacts with the retailers are developed while participating in these district level trade fairs. These types of short-term measures cannot sustain the processing units for a long period. They do not have any marketing plans and do not have trained human resources to look after the marketing of products.

Cost of production not yet established: Except for Kakrevihar Cooperative, none of the new processing units have worked out the cost of production. They claim that they are still in a trial phase. Indeed the trial phase is the right opportunity to work out the cost of production and test-market the products.

One of the reasons for this is that the cooperatives do not have skilled human resources with a background of running the enterprise. The manager of the cooperative, who is already overloaded with the regular function of the cooperative, is assigned with the additional task of looking after the processing plant. The processing units claim that they have cleared the stock of processed honey but it is doubtful if they will be able to collect back 100% of the credit sales as they do not have a proper recording system.

Lack of technical staff: There is also the acute problem of lack of qualified staff at the processing units to supervise the production process and check the quality of products. In the case of Nari Jagaran Kendra in Dang the former executives of the cooperatives were trained in handling the processing unit. As there is a new executive body, at present none of the new members of the executive committee have any training on handling the processing plant.

Proximity of the processing units: The processing units are established with support from various development partners and government agencies. The decisions on the establishment of the processing units are solely based on the demand and the request from members of the cooperatives without any kind of feasibility studies, proper market survey or analysis on availability of raw materials. They operate in the same vicinity, targeting the same beekeepers for a supply of raw honey. There are no incentives in place to attract the beekeepers to supply raw honey. There are plans underway at a nearby location to establish another processing unit with the support from MEDEP. If this trend continues it is likely that none of the processing units will be able to function properly. A similar situation is prevalent in Dang, where three processing units are battling to survive. This tendency is common among the primary level producer cooperatives in Nepal where they have the tendency to work on every nod of the value chain rather than focusing primarily on production and not venturing into areas of processing, which is not their strength area.

Quality consciousness: The newly established processing units are not conscious in terms of quality of the product. The units are more production oriented with a tendency to claim that their product is the best without any substantial facts and figures to substantiate their claims. They are not properly oriented on the current market demand, especially the quality, taste and quantity of honey sought by the consumers.

2.3.5 Wholesaling and retailing

A formal distribution channel is not very common in the honey value chain. The wholesalers and retailers are more confined to the urban centres like Kathmandu and regional headquarters. While calculating the cost, price and the gross margin for wholesalers and retailers the cost of raw honey constitutes the major cost component, around 62%. The other major cost component for the wholesalers is commission to retailers and sub-dealers, which is around 16% of the total cost. The total cost for the wholesalers comes to around NRs. 300 per kg of honey and they are selling in the range of NRs. 380–400/kg which gives the gross margin of around 27%. In case of the retailers, the total cost comes to around NRs. 382/kg and current retail price in the market ranges from NRs. 420- 450/kg thus the margin for the retailers comes to around 12%.

Position of wholesalers and retailers in the value chain

The other value chain operators perceived wholesalers and the retailers as in a strong position. Particularly for those wholesalers and retailers operating in major urban centres. In the ranking of one to five, where 1 is the weakest and 5 being the strongest, wholesalers and retailers scored 3.4 and 4 respectively. The beekeepers have some linkages with retail shops in the district headquarters as they often sell honey directly to retail stores. The new processing units have some linkages with one or two big retail stores in Nepalgunj. The major linkage that the wholesalers and retailers in Kathmandu have is with selected collectors in districts like Dang.

Issues of concern of wholesalers and retailers

Payment after sales: The normal practice among retailers and wholesalers is to make payment to the honey suppliers only after the sale of purchased stock. This has consequences all along the chain and affects the beekeepers at the bottom of the chain. To minimize investment on stock, the wholesalers and retailers purchase honey from the producers on credit. Due to the delay in payment by the concerned businesses, the producers do not get their money on time. Thus, the wholesalers have problems in getting access to bulk honey. There are no contractual agreements between the wholesalers, retailers and the suppliers of honey.

2.3.6 Other major issues of concern

Besides the major issues and challenges elaborated in each nod of the value chain there are certain critical issues raised by the chain operators that are hindering the growth of the value chain. These include policies and regulation, access to finance, infrastructure facilities as well as enterprise management culture.

Lack of adequate government policies and regulations: Almost all operators in the value chain pointed out that the existing regulations and policies are not favourable for the growth of the subsector. There are no clear cut government policies and strategies on the promotion of beekeeping. Although honey is included as one of the product under the Nepal Trade Integration Strategy 2010 (NTIS) there are no specific programmes to promote production and marketing of honey. The budget and resources allocated for the promotion of the honey subsector are too low for programme activities. At the district level the situation is even worse; where allocated, resources are too small for any kind of meaningful programme activities. The concerned district offices do not have adequate information on beekeeping activities in the district. Even in relation to quality control and standardisation there are no specific measures in place for testing honey and monitoring and analysing residue of pesticides and antibiotic content. The other challenge is in the implementation of already formulated policies related to monitoring and control of pesticides and import and export of honey (assurance of safety, hygiene, VAT local taxes, etc.). The policies regarding the pocket areas for beekeeping, zoning of forest areas for grazing of bees, and the fixation on levy to be collected by various agencies such as community forest, DDC and other agencies, are yet to be formulated. The policies so far do not clearly define the categories of honey producers, thus it is difficult to ascertain and design incentives for the commercial production of honey. The activities launched byte government and the development partners are too thinly spread, thus it is difficult to see concrete results. Each agency is working on its own and there is limited coordination between the value chain supporters. With the support of INCLUDE, a national apiculture development strategy and action plan has been drafted that is in the process of endorsement by the government. It is expected that the policy related issues will be resolved after effective implementation of this plan.

Difficulty in access to financial services: As in the other sectors of agriculture, access to finance is a major problem in the honey subsector. The majority of the private sector actors have not shown any interest in investing in the honey subsector. Those already involved, are either small or dependent on development partners for support. Access to financial services from commercial banks is not easy and there is no form of subsidy or incentives from the financial institutions for the development of the subsector. There are some efforts being made through micro finance to avail financial support but the investment is too small for the commercialisation of the subsector.

Poor infrastructure: Apart from road infrastructure for the transportation of beehives to the grazing areas, there is also an acute shortage of storage and testing facilities. The quality of Nepalese honey has not been ascertained, as there are no testing and laboratory facilities.

2.3.7 Relationships and governance

The value chain operators are multi-functional at present. Each value chain operator performs more than one function. The cooperative or private company acts as a service provider offering training and other technical support as well as operating as beekeeper, collector and honey processor. The linkage between the various operators in the chain is not very healthy as each perceives the others with a sense of distrust. There is tendency to look at short-term immediate gain in order to survive.

The supporting actors (associations and federations) have limited resources and means to work for the upgrading of the value chain. Instead of collaborating with each other the associations and federations perceive each other as competitors. There is a conflict of interest among the promoters of these associations as they also run their own private enterprises in the honey subsector.

There are some efforts being made through micro finance to avail financial support but the investment is too small for the commercialisation of the subsector.

There are limited efforts made in enhancing the productivity of the beekeepers by expansion of beehives and promotion of good beekeeping practices. The extension services at the district level are inadequate. The supporting actors are too confined with small activities within the value chain such as working with a handful of beekeeping cooperatives, individual beekeepers or the one or two processing units. The support activities have been compartmentalised to a large extent and the entire value chain has been overlooked. The focus is still on production instead of market. There is still strong presence of the welfare approach, even among the operators and the supporters of the value chain. The other sectors in agriculture, such as orthodox tea, ginger and coffee, have gradually moved away from this welfare to a market-driven approach, which is necessary in the honey value chain too. The national plan drafted by all stakeholders is a good basis for strategic development of apiculture in Nepal. All stakeholders/actors should work under that umbrella.

3. SWOT Analysis

Based on the interactions with the value chain operators and supporters, the following SWOT analysis has been developed.

Strengths	Weakness
• Diverse climatic conditions and abundance of flora suitable for beekeeping. • Unique taste of Nepalese honey due to climate and flora. • Availability of technical support and some form of subsidy from the government to beekeepers. • Number of associations/cooperatives and the development partners working in the promotion of honey subsector. • Involvement of the private sector. • Beekeeping has been practiced for generations. • Honey listed as a Nepal Trade Integration Strategy (NTIS) product.	• Size of beekeeper's operation is small and not attaining the economy of scale, resulting in high cost of production. • Productivity per hive still low in the districts. • Credit sales and collection along the chain resulting in delay in payment. • Deep sense of mistrust among the value chain actors and promoters. • No long term link between the producers and the buyers. • Refusal to sell honey to processing units by the members of the cooperatives. • Lack of testing and quality certification facilities. • Under capacity utilisation of the processing units. • Lack of enterprise management skills. • One actor performing too many functions at a time. • Lack of technical backup both at production and processing level. • Poor marketing of the products, which are sold more on an individual contacts and relationship basis. • Not private sector driven. • Development efforts scattered and too thin; promoters acting in isolation, resulting in duplication of activities • Lack of clear cut policies, regulations and strategies and slackness in implementation of existing policies. • Lack of quality control and standardisation procedures. • Lack of access to financial services.
Opportunities	**Threats**
• Availability of processing units at the local level for value addition on raw honey. • Easy access for small beekeepers to the local market. • Availability of corporate buyers like Dabur Nepal and other private sector operators within the country. • Availability of international market; conditions in terms of quality and standard are met. • Potential for associated diversified business (honey recipes for more honey products, wax, hives, equipment, colonies, queen etc.)	• Competition from cheaper imported honey from neighbouring countries. • Beekeepers losing interest in beekeeping due to failure to find a market. • Lack of awareness on the part of consumers on reliability and usage of honey. • Lack of interest among the organised private sector to invest in the honey value chain. • Development partners pulling out support.

4. Areas of Interventions

4.1 Proposals by the Value Chain Actors

4.1.1 Enhancing production and productivity

The current level of production and productivity in the districts is not reaching the economy of scale. If the commercial production of honey is to be attained the number of beehives should increase two to three times. At present the technical back-up services is not regular. The training packages developed so far are not standardised, with some lasting between three to seven days. This one-time technical training is not adequate to enable beekeepers to run a commercial beekeeping enterprise.

Due to the strict rules and regulations regarding forest products, it has become difficult and expensive to obtain quality woods (variety like tuni) for making of the beehives. Thus, the current raw materials used for beehives are from low quality wood whose life span is two to three years. The frequent replacement of hives and frames affects productivity. In countries like India and China a material called thermocol is used for beehives which is cheaper, light and easy to transport for migration. This kind of technology needs further investigation in order to decrease dependence on forest based products.

4.1.2 Improving enterprise management skills

Generally speaking, there is a lack of enterprise management skills among the various value chain operators ranging from the beekeepers to the retailers. Some of these skills include costing and pricing methods; carrying out market surveys; negotiation skills with the buyers; record keeping; packaging, and presenting the products in the market.

Some of the skills that need to be developed among the processing units include finding the right market for their products; developing annual business plans for the operation of the processing units; proper record keeping systems for purchase of raw materials, and sale of finished products. The processing units need to develop human resources that are trained in running it as an enterprise rather than an arm of the cooperative.

X4.1.3 Better access to financial services

The concern of all the operators in the value chain is lack of adequate capital for expansion of the enterprises from the beekeepers to the wholesalers. The severity of the problem is more for the beekeepers, traders (collectors at the district level) and newly established processing units. There is some subsidy provided by the government for purchase of beehives and other equipment, but these subsidies are limited in terms of coverage and amount. The financial service sector is still not forthcoming in investing in beekeeping with their stringent collateral based lending policies. It is very difficult for rural based beekeepers to have access to credit facilities as their properties are not accepted as collateral. Furthermore, the lending procedures are too lengthy and bureaucratic.

One of the major hurdles pointed out by the actors in the honey value chain at all levels is lack of favourable policies and regulations for the promotion of the honey subsector.

4.1.4. Improvement in existing policies and regulations

One of the major hurdles pointed out by the actors in the honey value chain at all levels is lack of favourable policies and regulations for the promotion of the honey subsector. Beekeeping activities do not fall under a priority area of the DADO. Although a district may have the potential for beekeeping there is not adequate support from government agencies. Unlike in other agriculture sectors, the government has not identified pocket areas for development of beekeeping. The subsidy provided until now is minimal. There is also a lack of coordination within the government agencies such as the Ministry of Agriculture Development, Ministry of Industry, Ministry of Peace and their concerned line agencies, although all of them have some activities to promote beekeeping.

4.1.5 Effective role of support institutions

There are several agencies, GOs, INGOs, associations, federations, NGOs and private sector actors in the promotion of the honey subsector. The efforts so far have not been able to produce tangible results as they are very thinly spread and scattered. The interventions are geared towards enhancing production rather than looking at the promotion of the entire value chain. The interventions are very much project focused for a specific period of time, normally two to three years, which is not sufficient to bring about substantial changes in the subsector. The projects should therefore work with the "champion" companies and support their business plan which would contribute to upgrade the entire value chain.

4.2 Commercialisation of Existing Beekeepers

As reported in the findings, the number of beehives per beekeeper is quite low especially in districts of Kailali, Surkhet and Pyuthan. Dang is in a slightly better position. The current number of hives available per beekeeper needs to increase if beekeeping is to be commercialised.

Identification and development of beekeeping clusters in the districts

As a first step, a rapid assessment should be carried out in collaboration with other district level agencies such as DADO, district chapter of FNBK, DCCI and interested private sector operators to identify major beekeeping areas in the district. The planned survey to be carried out by Kakrevihar Cooperative in Surkhet can have the component of identifying the potential beekeeping clusters in addition to surveying the number of beekeepers in the district. Depending upon the size of the district and the beekeeping practices, there can be a number of beekeeping clusters in the district. It will be more appropriate if these beekeeping clusters are adjoining, and thus can better attain economic scale both in production and cost cutting measures.

A beekeeping cluster can cover a radius of 5-10 km in area depending upon access to road heads, forest areas and other infrastructure facilities. The government and value chain operators are of the opinion that commercialisation of beekeeping at the production level can be attained when a beekeeper is able to maintain at least 50 beehives. This may not be possible in the short run, considering the status of the average income and the investment capacity of households in rural areas. Thus, it is proposed that each household should be able to possess at least 10 beehives and there should be at least 10-15 households which are willing to invest in beekeeping in a cluster area. Preference should be given to those households which are already involved in beekeeping, rather than developing new beekeepers. The proposed minimum number of beehives is not static, but is a must.

In the process of identifying and developing the cluster areas, negotiations should commence with the organised private sector operators involved in collection and processing of honey. The possibility of investment from the private sector in developing a cluster should be explored and there should be continuous dialogue between the private sector and the beekeepers. There should be firm commitment from the private sector in terms of investment, provision of extension services, and other aspects of commercialisation apart from access to market in terms of sale of raw honey.

The concept of a cluster development approach should be private sector led and the role of support agencies and programmes such as INCLUDE and FNBK district chapters should be limited to facilitation and developing linkages and to overseeing that none of the value chain operators are exploited or taken undue advantage of. There should not be any rush or pressure on beekeepers in the cluster location to form new cooperatives or other forms

of associations. If there are any cooperatives, groups or associations functioning for the promotion of beekeeping in the cluster area, they can be linked to the private sector operators. The business operation modalities between the cluster and the private sector should be decided mutually.

In the process of developing a cluster, INCLUDE should not limit itself to the existing cooperatives. Thus, it is proposed that INCLUDE should join hands with other value chain operators, including established beekeepers in the district and other value chain supporters like MEDEP, DADO and FNBK, in order to have a higher coverage in developing the clusters.

The concept of a cluster approach can prove effective in many ways, ranging from effective delivery of extension services; technical back-up; collective bargaining of the beekeepers with other operators of the value chain; reduction in the operational costs (transportation for migrating bees, bulk purchase of supplementary feeding); product development, and developing long-term relationships between the beekeepers and honey processors. The cluster approach can also open an opportunity for the input suppliers who at present are district headquarter based. The possibility of using local agro-vets as agencies for the supply of inputs should be explored by the current input suppliers in these cluster areas. These agro-vets can also be equipped with basic training on the technical aspect of beekeeping and affiliated to FNBK and they can serve as local technical resources at the local level.

The box below is an example of cooperation between the processors and producers in orthodox tea production in Ilam.

Gorkha Tea Estate at Sundarpani, in Fikkal, Ilam is producing organic orthodox tea and selling in the international market. It produces about 70 MT of tea annually and about 49% is exported to Germany and the remaining to India. It has its own tea garden of about 25 ha and it also collects tea from the smallholder farmers. These smallholder farmers are organised into four cooperative. The processing unit has agreements with the cooperatives to collect tea from their production. The price is fixed on an annual basis depending upon the quality of tea to be supplied by the cooperative farmers.

In order to ensure quality, the processing unit provides technical extension services to the cooperative farmers, which include one technical staff per cooperative. Each technician looks after the cultivation and production of tea. The extension worker trains the farmers to maintain a production log book; maintain the garden, and on all related activities of tea cultivation and production.

The processing unit also supports the farmers to construct a compost pit, maintain cattle, a bio-gas plant, sprayers, drums, and protective wear. In the beginning, these initiatives started with the support of GIZ. It helped the farmers for organic certification which costs about USD 8,000 annually. The cooperatives have also been provided with net bags for the collection of green leaf and free transportation from the collection centre to the processing unit. If the collection centre is far from the farmers' tea garden it provides a transport subsidy of NRs. 2 per kg of leaf. Additionally, it is providing NRs. 5 per kg of green leaf to enhance the organisational capacity of the cooperatives. The buyer in Germany provides about NRs. 200,000 annually per cooperative as an incentive from his profit from the sale of tea in the German market. Each year the buyer visits the cooperatives with a team of German tea shop owners for interaction with the smallholder farmers.

Source: Value Chain Analysis of Orthodox Tea in Eastern Nepal, Inclusive Growth Program, UNNATI - Danida, Nepal 2013

The above case reflects that the pie could be made bigger if there is a good relationship and trust among the major value chain actors (producers, collectors, processor and the buyer). Although organic orthodox tea focuses on the export market, a similar kind of model in the honey value chain can be considered, not only for the export market but even for the domestic market. As shown, there is a good, complementarily, and healthy relationship among the actors in the orthodox tea value chain, which has helped to expand the market as well as the production in a steady manner benefitting all in the process. This mechanism is both sustainable and natural and can be replicated in the honey value chain.

Commercialisation also demands quality and sustainable standards of the product.

4.3 Development of Standard Training Packages

The commercialisation of agriculture activities requires continuous education and follow-up right from the beginning. Currently, there have been several training modules and packages designed and tested for beekeepers. It is important that these training materials are standardised in terms of duration and content based on region and location. Commercialisation also demands quality and sustainable standards of the product. If the proposition of a cluster approach is to be followed, it is important that even the capacity development programmes such as trainings, are of a certain standard.

It is proposed that uniform training materials be developed for beekeeping clusters. Instead of each agency providing training programmes at the district level, a batch of trainers should be developed at the cluster level (1-2 trainers for 3-4 clusters). As stated above, the trainers can be local agro-vets or experienced beekeepers. Organisations like FNBK should take a lead role in developing uniformed training packages, but the private sector should be consulted while designing the training content and modules.

4.4 Facilitating Long-Term Market Linkages

The market has become a major issue especially in those districts where the volume of production has increased over the years. The beekeepers are unable to sell their products easily. The problem is not severe in districts like Kailali, Surkhet and Pyuthan, as compared to districts like Dang, Chitwan and Nawalparashi. Over a period of time it is most likely that the above districts will also face a market problem if preparation to mitigate such problems does not start now.

The current practice in the market is short-term relationships between beekeepers and the other operators in the value chain. There is low degree of trust between those parties; each blaming the other for not functioning well within the value chain. A review of the experience of the contractual agreement between FNBK and major operators can be a good starting point to identify factors that created a major hindrance in the successful completion of contracts. Similarly, INCLUDE should also identify avenues to involve other private sector players in the honey value chain. The proposition of a cluster development approach for beekeeping should be floated before the organised private sector players to assess their interest in this approach.

4.5 Facilitating Marketing

Market analysis for determining consumers' needs and domestic market trends: Until now interventions have been very much focused on production aspects without considering what the real demand within the domestic market is. As a result, the market is forced to take on what producers and processors produce rather than them producing, processing and packaging according to market trend and demand. The supply driven approach has left the market saturated with similar type of products. There can be a niche market for different types of honey based on their origin, flora and consumer use. Market analysis should be carried out in collaboration with organised private sector, who are involved in honey processing. This information should be the basis for production for beekeepers and processors. Absence of these

crucial steps may mean Nepalese honey may fail to compete with imported honey in the coming years.

Creating customer awareness: Consumption of honey is still regarded as a luxury for the majority of the population. Furthermore, honey consumption is seasonal. This has direct impact on the sales volume. There are also different interpretations about the quality of honey in the market. Dabur Nepal, for instance, has been able to create more awareness among urban consumers. This kind of consumer awareness campaign should be given continuity. Support should not be confined to periodic trade fairs and exhibitions. An extensive mass awareness campaign strategy should be developed in collaboration with private sector operators and associations. A mass awareness campaign can focus on different target consumers, highlighting the usage and benefit of honey and honey products.

Institutional marketing: The other big potential domestic market for honey can be agencies dealing with security forces such as the army, police and other security agencies. With an estimated total number of around 200,000 in the Nepal Army, Armed Police

and Nepal Police, they can consume almost all the honey production, if it was included in their food ration. INCLUDE can support organisations like DOIED, FNBK, NBCCU and others in developing substantial strategies for lobbying and advocating at the policy level for including honey in food rations.

4.6 Operationalisation of New Processing Units

The recently established operational plants in all four districts are not fully functional yet. All of them have taken some initiatives in testing the market, but they have not been able to penetrate the market. The ´SuddhaSakakariMaha´ jars can be detected at some retail stores and hotels in district headquarters, and in regional centres like Nepalgunj and Dhangadi but the brand presence is not strongly visible. The processing units are struggling to obtain raw honey as members of the cooperatives are not selling honey to them but selling directly to the retail market. The cooperatives do not have qualified human resources to run and manage these processing units. These newly established cooperatives require immediate attention if they are to run as an enterprise. INCLUDE can render support in the following areas:

Preparation of business plans: As all the processing units carried out trial productions and also introduced their products in the market, it is important to carry out a review of the trial and ask for feedback from the market. The findings of the market research, commissioned by INCLUDE, on brand, packaging and other aspects can provide valuable information for the review. This review exercise should be carried out with the executive members of the cooperatives and even involve the existing and potential buyers (retail stores and others). Based on the review, a business plan needs to be developed which should be focussed on four major elements – market and marketing, collection of raw materials and production targets, costing and pricing of products, management of the processing unit.

Facilitating hiring of a qualified manager to run the processing unit: A mechanism needs to be developed within the cooperative to ensure that business plans are executed for which the cooperative needs to appoint a qualified manager to run the processing unit. The manager should be preferably from the private sector and hiring should be based on a performance-based incentives system. The manager can be assisted by a person from the cooperative who can later take on the position of the manager. Operational guidelines need to be developed for the processing units and their operation should be purely based on private sector profit driven principles. The executive board of the cooperative should have minimum interference in the operation of the processing unit. The concept of a management contract under the leadership of a qualified manager or by a private sector operator may be the viable solution where the cooperative receives a mutually agreed fixed amount per year from the profit generated by the processing unit.

Joint marketing strategies of the cooperatives: All the processing units are producing almost similar type of products and trying to penetrate the same market, thus creating unhealthy competition among them. It may prove difficult in the initial years for a single cooperative to have adequate resources to launch an aggressive promotional campaign. Development of a joint marketing strategy and promotional measures are necessary where each cooperative can pool resources. It may necessitate each processing unit having market segmentation in terms of geographical coverage and plant species of honey, i.e. mustard based honey from Dang and chiuri based honey from Surkhet or Pyuthan. In the long run, this practice will promote the concept of developing a niche market.

4.7 Formation of District Level Task Force

There are several actors at the district level working for the promotion of the honey subsector. These include government agencies; district chapters of FNBK and NBCCU; development partners; district cooperative unions, and development partners, to mention a few. The major issue is that each actor is working on its own with limited activities and resources. As a result these interventions have limited contribution in the promotion of the honey subsector. There is a need for a committed actor in the driving seat at the district level that can coordinate with various agencies.

It is proposed that instead of forming a task force of a uniform nature in all districts, the local actors should have a voice on who should lead the task force, based on their activities in the past; level of engagement in honey value chain; their workload and regular functions, and availability of human resources. Each district can have a different setup - where in one district FNBK may be in the driving seat, in another it may be DADO, and in a third DEMEGA, DCCI or a private sector operator or cooperative can be leading the task force.

The task force should be the link between the value chain operators and the concerned agencies and support actors at the district level. Its role should be clearly worked out but the main objective should be to facilitate towards an enabling environment for the promotion of the honey subsector in the district. It can be developed as a common platform where the privateactors as well as public and development agencies involved in the honey subsector can meet regularly and chart out the way forward. This will reduce the possibility of each actor working on its own resulting in a lot of resources spending duplication. Even issues like proposals for setting up a processing plant should be discussed among the concerned actors to ensure that the proposed venture is feasible.

4.8 Exploring the Potentials for Product Diversification

Honey is the major product of beekeeping in Nepal at present. In many other countries where commercial beekeeping is underway, honey is not the only product. The focus until now in Nepal is on the production of honey and even the beekeepers and other value chain operators are not aware about other primary products (wax, pollen, propolis, royal jelly) and value added products (medicine, cosmetics, beverages, textile, printing, leather, tobacco flavouring, etc.). Exploratory research can be carried out to assess the viability of other products from beekeeping in collaboration with the private sector operators. The Food and Agriculture Organization (FAO) has extensive publications on various usages of primary products and value added products from beekeeping.

Annexs

Annex 1

List of People Interviewed

S.N	Name	Designation/Organization
1.	Jagadish Bahadur Shrestha	Program Director/Directorate of Industrial Entomology Development
2.	Jaganath Sharma	Chief of Planning Division / Directorate of Industrial Entomology Development
3.	Pramod Koirala	Senior Research Officer, Department of Food Technology and Quality Control
Micro-Enterprise Development Program (MEDEP)		
4.	Narendra Rasaili	MEDEP
5.	Bhim Bista	APSO/MEDEP/ Chief Area Program Support Office
6.	Uttam Shrestha	APSO/MEDEP /Chief Area Program Support Office
7.	Megh Raj Acharya	APSO/MEDEP /Chief Area Program Support Office
8.	Vim Basnet	DEMEGA
9.	Bhuwan Chaudhary	DEMEGA
District Chamber of Commerce and Industries (DCCI)		
10.	Pradeep Bhandari	District Chamber of Commerce and Industries
11.	Padam Bahadur Shahi	President/ District Chamber of Commerce and Industries
12.	Madhu Sudan Vaidya	President/ District Chamber of Commerce and Industries
13.	Sashi Panthi	District Chamber of Commerce and Industries
14.	Madhav Raj Bhandari	President/ District Chamber of Commerce and Industries
15.	Jhalindra Sharma	Executive Secretary / District Chamber of Commerce and Industries
16.	Narayan Prasad Sharma	Treasurer/ District Chamber of Commerce and Industries
17.	Dilip Bahadur Chand	Acting Chief/Department of Cottage and Small Industries
18.	Binod Dev Panta	Chief/ Department of Cottage and Small Industries
19.	Bhakhat Sharma	Department of Cottage and Small Industries
20.	Ram Prasad Devkota	Training Chief / Department of Cottage and Small Industries
21.	Madhav Nepal	Chief / Department of Cottage and Small Industries
District Agriculture Development Office (DADO)		
22.	Khagendra Prasad Sharma	Senior Agriculture Development Officer/District Agriculture Development Office
23.	Chitra Bahadur Rokaya	Acting DADO/ Crop Disease Specialist /District Agriculture Development Office
24.	Ram Milan Prasad Biswakarma	District Agriculture Development Office
25.	Sailesh Ram Chaudhary	Crop Specialist / District Agriculture Development Office
26.	Mahesh Chandra Acharya	Senior Agriculture Development Officer/District Agriculture Development Office
27.	Tej Bahadur Bista	District Agriculture Development Office
28.	Mohammad Munir Khan	Ilika Agriculture Office
Federation of Nepal Beekeepers (FNBK)		
29.	Rajendra Gautam	President
30.	Thakur Prasad Dawadi	Executive member
31.	Jhamal Prasad Tilami	Executive Member

Annex 1

List of People Interviewed

S.N	Name	Designation/Organization
Nepal Beekeepers Central Cooperative Union (NBCCU)		
32.	Ganesh Bahadur Basnet	President
33.	Arjun Pokharel	Vice President/ Nepal Beekeepers Cooperation Union
34.	Krishna Hari Jamarkattel	Secretary
Honey Entrepreneurs Association of Nepal		
35.	Dharma Raj Shrestha	President
List of People Met in Nari Jagaran Cooperatives (Focus Group Discussions)		
36.	Rama Dangi	Tulsipur Municipality
37.	Samjhana Sharma	Tulsipur Municipality
38.	Gauri K.C	Tulsipur Municipality
39.	Manju Shrestha	Tulsipur Municipality
40.	Janaki Shrestha	Tulsipur Municipality
41.	Mina SHrestha	Tulsipur Municipality
42.	Mina BK	Tulsipur Municipality
43.	Kumari Goma Dhital	Tulsipur Municipality
44.	Goma Devkota	Tulsipur Municipality
45.	Ganga Bohora	Tulsipur Municipality
46.	Champa B.K	Tulsipur Municipality
47.	Aasha Kharal	Tulsipur Municipality
48.	Bishnu Oli	Tulsipur Municipality
49.	Upendra Kunwar	Tulsipur Municipality
50.	ManiKarna Neupane	Tulsipur Municipality
51.	Gita Dhital	Tulsipur Municipality
52.	Dr. Surendra Joshi	SNV, Nepal
53.	Dr. Uma Partap	ICIMOD, Hattiban, Lalitpur

Annex 2

Honey Production in Hindu Kush Himalayan Countries (Tons)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Afghanistan	4,515	4,538	4,424	4,674	3,300	2,800	3,000	2,800	2,800	2,800	3,600
China	251,839	254,359	267,830	294,721	297,987	299,527	337,578	357,220	407,219	407,367	398,000
India	52,000	51,660	50,092	52,518	40,650	39,446	53,048	51,000	55,000	43,865	39,500
Myanmar	208	223	237	300	382	436	700	900	1,002	716	700
Nepal	-	-	-	-	577	600	650	650	1000	850	1,100
Pakistan	1,500	1,701	2,000	3,000	4,000	4,000	4,000	4,000	4,000	4,000	4,800

Source: ICIMOD, Kathmandu, – Quality Assurance for Honey Trade 2012vzz

Annex 3

Comparison between Nepal and Codex standards

Parameters	Nepal		Codex		
	Technical Regulation of DFTOC	NBSM Standards			
	Pure Nectar Honey	Other Honey	General	General	Specific
Moisture Content (%)	Max 23	Max 23	Max 20	Max 21	Max 23 (heather and clover honey)
Sucrose content (g/100g)	Max 5	Max 10	Max 6	Max 5	Max 10.0 (honey dew honey, blends of honeydew and blossom, robinia, lavandula, citrus, alfalfa, acacia, red gum, sweet clover, leatherwood)
Reducing sugars (g/100g)	Min 65	Min 60	Min 65	Min 65	Min 60 (honeydew honey)
Fructose/glucose ration	Min0.95	Min0.95	Min 1		
Ash or Mineral Content (g/100g)	Max 0.5	Max 0.5	—	Max 0.6	Max 0.4 (honeydew, blends of honeydew and blossom)
Acidity as formic acid (%)	Max 0.2	Max 0.2	Max 0.2	Max 0.4	
Water insoluble content (g/100g)	Max 0.5	Max 0.5	—	Max 0.1	Max 0.5 (squeezed honey)
HMF content (mg/kg)	Max 40	Max 40	Max 80	Max 40	Max 80
Electrical conductivity (mS/cm)				Max 0.8	Min 0.8 (honeydew and chestnut honey)
Diastase unit (Schafe Scale)				Min 8	Min 8 (honey with natural low enzyme content)

Annex 4

Estimated Annual Profit & Loss Statement for the Producers - 20 Bee hives per Household

Annual Income from sales

Description	Unit	Unit Price	Total
Sales of Honey (20 beehives @ 50 kg per hive)	1,000	140	140,000
Sale of colony (3 per hive)	60	250	15,000
Wax	20	300	6,000
Total Income			161,000
Total Expenes			
Operating cost			
Foundation Wax	3	600	1,800
Medicine - Fermic Acid and Apisten strip (packet has 20)			600
Sugar Syrup (4 months, Ashar - Asoj)	100	70	7,000
Soya Flour, etc.			1,625
Labour Cost Estimated (months)	4	2,000	8,000
Transport (hive transport and other transport)		**1,500**	**30,000**
Packing Container (20 kg capacity)	40	300	12,000
Other Misc expenses			4,000
Total Operating Cost			65,025
Fixed Cost - Annual			
Depriciation of bee hives (8 years lifespan with value of NRs. 4,000/hive)	20	500	10,000
Depriciation on various small tools, gloves and other equipment			4,700
Total Fixed Cost			**14,700**
Total Cost (Operating + Fixed cost)			**79,725**
Net Income			**81,275**

Total Investment for 20 Hives per Household

Description	Total
Hive, Frame, Stand , Colony etc.	235,000
Operation Cost for 6 Months	28,913
Total Investment for 20 Hives per Household	263,913
Net Profit	81,275
ROIon Percentage	31

Annex 5

Schedule of Fixed and Variable Costs

Type of Cost	Description	Durability	Current market price in units (Rs.)	Remarks
Fixed Cost	Bee hives	2-8 years	2,700- 4,000	This varies depending upon the type of raw materials used
	Bee colony	8-10 years	500-600	
	Hive tool	8-10 years	2,500	
	Honey extractor	12-15 years	5,500 -30,000	Determined by number of frames and body made of stainless steel or zinc sheet
	Smoker	5 years	300	
	Bee veil	3 years	500	
	Uncapping knife	5 years	250	
	Honey container	1-2 years	22- 200	Prices vary depending upon the capacity of container
	Hive stand	10 years	300-400	
Variable costs	Supplementary feeding (Sugar)		70-75kg	
	Medicine and drugs		100/hive	
	Migration cost		30,000 -60,000	This varies according to distance and number of times hives are migrated
	Comb foundation		600/kg	
			6,000/month	Varies

Annex 6

List of Reference Materials

Honey in Nepal – Approach Strategy and Interventions for Subsector Promotion, GTZ

Value Links Manual, GIZ

Benefit Cost Analysis of Agriculture Enterprise, KH Devkota

The Study Report on Trade Competitiveness of Nepalese Honey, FNCCI/AEC

Market Access of Nepalese Honey, Phanindra Raj Pandey, AEC/FNCCI

National Strategy on beekeeping, FNBK, 2012

Quality Assurance for Honey Trade in Hindu Kush Himalayan Region, ICIMOD, Kathmandu, 2012

Annual Progress Report, DADO-Surkhet 2068/69

Minimum Quality Standards in Food and Feed, DFTQC-2068

Directorate of Industrial Entomology, Annual Report 2069

A Market study of Honey, MEDEP-2002

Statistical Information Nepalese Agriculture 2011-2012, MoAD/Agri-Business Promotion and Statistical Division

WTO and its Implications on Nepalese Application, Jagadish Bhakta Shrestha

www.doeddnepal.gov.np/agriculture.php

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Inclusive Development of the Economy Programme (INCLUDE)

Kathmandu Office:
Narayani Complex, 4th Floor
Pulchowk, Lalitpur
P.O. Box 1457, Kathmandu, Nepal
T: +977-1-5555289
F: +977-1-5521712
E: include@giz.org.np
I: www.includenepal.org

Nepalgunj Office:
P.O. Box 69, Rambag 17
Nepalgunj, Banke
T: +977-081-527740
F: +977-081-521655
E: include.npj@giz.org.np

Commissioned by

BMZ Federal Ministry for Economic Cooperation and Development