



VALUE CHAIN DESIGNING OF

# Timur

OF PANCHASE PROTECTED FOREST AREA



**Implementing Agency**

**Ministry of Forest and Soil  
Conservation, Department  
of Forests**

**Implementing Partners**



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# Timur

## Introduction of Timur

Timur (Botanical Name- *Zanthoxylum armatum*; English name-Prickly Ash) is an important medicinal plant belonging to Rutaceae family. Eight species of *Zanthoxylum* are reported from Nepal out of which *Zanthoxylum armatum* is the most widely used species, both for trade and domestic use. This document deals with the value chain analysis of Timur of Panchase area.

## Habit (Characteristics)

Timur is a shrub or small tree often reaching up to 5m in height, with corky bark and numerous long straight spines on brachlets and leaf-stalks. Leaves are opposite, pinnately compound with narrowly winged stalk. Leaflets 2-6 paired, ovate to lanceolate, 8cm, long toothed, sparsely gland-dotted. Flowers green or yellow coloured and appear in short branched lateral clusters. Flowers are very small; about 1mm; and are unisexual. Ripe capsules 3-4mm, globular, red, wrinkled, aromatic; seeds shining black with an aromatic husk which becomes red on maturity. Branchlets leaves, fruits and seeds are aromatic. Flowering occurs in April-May and fruiting on July-November (Polunin and Stainton 1984, Ghimire *et al.* 2008b). Fruits take 6-8 months to mature.



Pictures: Timur in wild habitat (left); fruiting twig (middle); and fruits (right)- All photographs by Dipesh Pyakurel

## Habitat and Distribution

**National Perspective:** Timur appears as shrubberies on cleared forests, degraded slopes and on the edges of cultivated lands. It grows naturally in well drained soils and survives on soils with low fertility and resists strong acidity. It generally prefers moist, semi-shade or light shade condition, and hardly thrives on dense forest with maximum crown cover. It grows well in farmlands and wastelands than in natural forests. The plant cannot withstand hailstone and storms during the flowering season. In natural forests, it is associated with *Berberis aristata*, *Castanopsis indica*, *Castanopsis tribuloides*, *Pinus roxburghii*, *Pyracantha crenulata*, *Pyrus pashia*, *Quercus lamellosa*, *Quercus lanata*, *Quercus leucotrichophora*, *Rhododendron arboreum* etc (Pyakurel and Baniya, 2011). Timur is naturally distributed in more than 30 districts within the altitudinal range of 1100m to 2500m. Mid-Western districts like Rolpa, Rukum, Salyan, Pyuthan, Dang, Surkhet, Gulmi, Baglung and Jajarkot are the reservoir of Timur.

**Distribution of Timur in Panchase Area:** Timur has been recorded from Panchase area within the altitudes of 1100m to 2000m. It is naturally available in the southern slopes of Panchase area. Arther, Barsing, Chitrie, Bhadaure, Ramja are the VDCs which have natural population of Timur. However, resource assessment is mandatory for the exact quantification. Timur can be cultivated in those areas, both in farmlands and in the Community Forests.

## Uses of Timur and Zanthoxylum oil

Timur has a wide range of traditional, medicinal and commercial importance. Fruits of Timur have its uses in traditional and modern medication system. Fruits are pickled and used as spices. The fruits are used in cough and cold, tonsillitis, headache, fever, toothache, altitude sickness, dizziness, diarrhoea and dysentery. Fruits are traded all over Nepal due to its wide range of domestic uses.

Essential oil extracted from the dried fruits of Timur is traded with the name of Zanthoxylum oil and are sold in national and international markets. The oil has wide range of therapeutic uses and also used to manufacture pharmaceutical products, flavouring agents and in perfumery (used in fragrance). The oil possesses disinfectant, deodorant and antiseptic properties.

## Objectives

The major objective of this study is to prepare comprehensive value chain analysis report of Timur. Specific objectives are:

- Suggest value chain constraints in Timur as per the experience from other parts of Nepal

- Suggest business service provision gaps and how it can be fulfilled
- Suggest key business enabling environment constraints and opportunities
- Suggest sustainable business system of NTFPs from successful lessons learnt from different parts of Nepal

## Supply Chain of Timur and Zanthoxylum oil

**National Perspective:** Most of the collected Timur from Nepal are transported to five regional headquarters. They are either traded in retail at Haat bazaar (weekly market centre in the village which is very common in the rural areas of Nepal), or the district level traders purchase and sold to essential oil entrepreneurs at regional and national level. The Zanthoxylum oil extracted from different region are transported to Kathmandu or Nepalgunj and sold to herbal products based companies and to the traders/exporters. The herbal products based companies produce different health care products and sold to domestic market. The traders sell the oil to essential oil exporters who are mostly stationed in Kathmandu or Nepalgunj. Finally, the oil is exported to India and third countries. It is estimated that more than 90% of production are exported, while only 10% are consumed domestically. A simplified supply chain for Zanthoxylum oil in Nepal is given below:

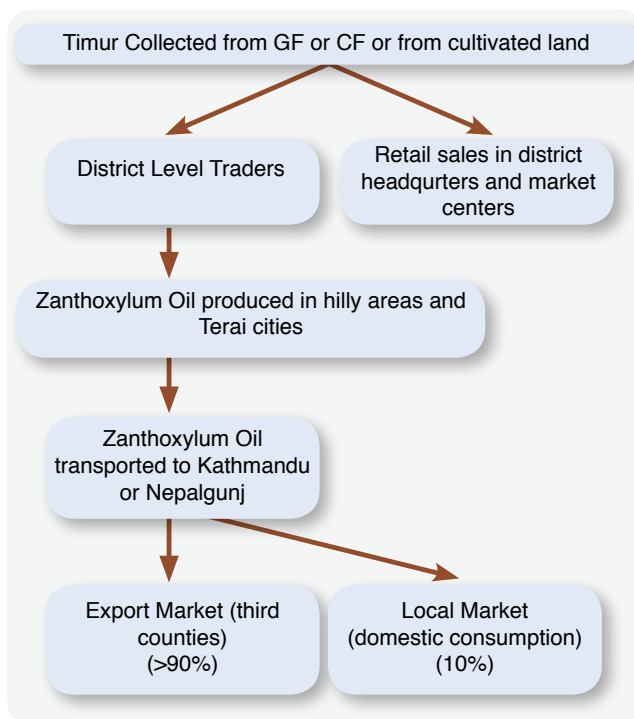


Figure: Supply Chain of Zanthoxylum oil (adopted from GTZ 2007)

## 2.4 Value Chain Map of Timur/Zanthoxylum oil

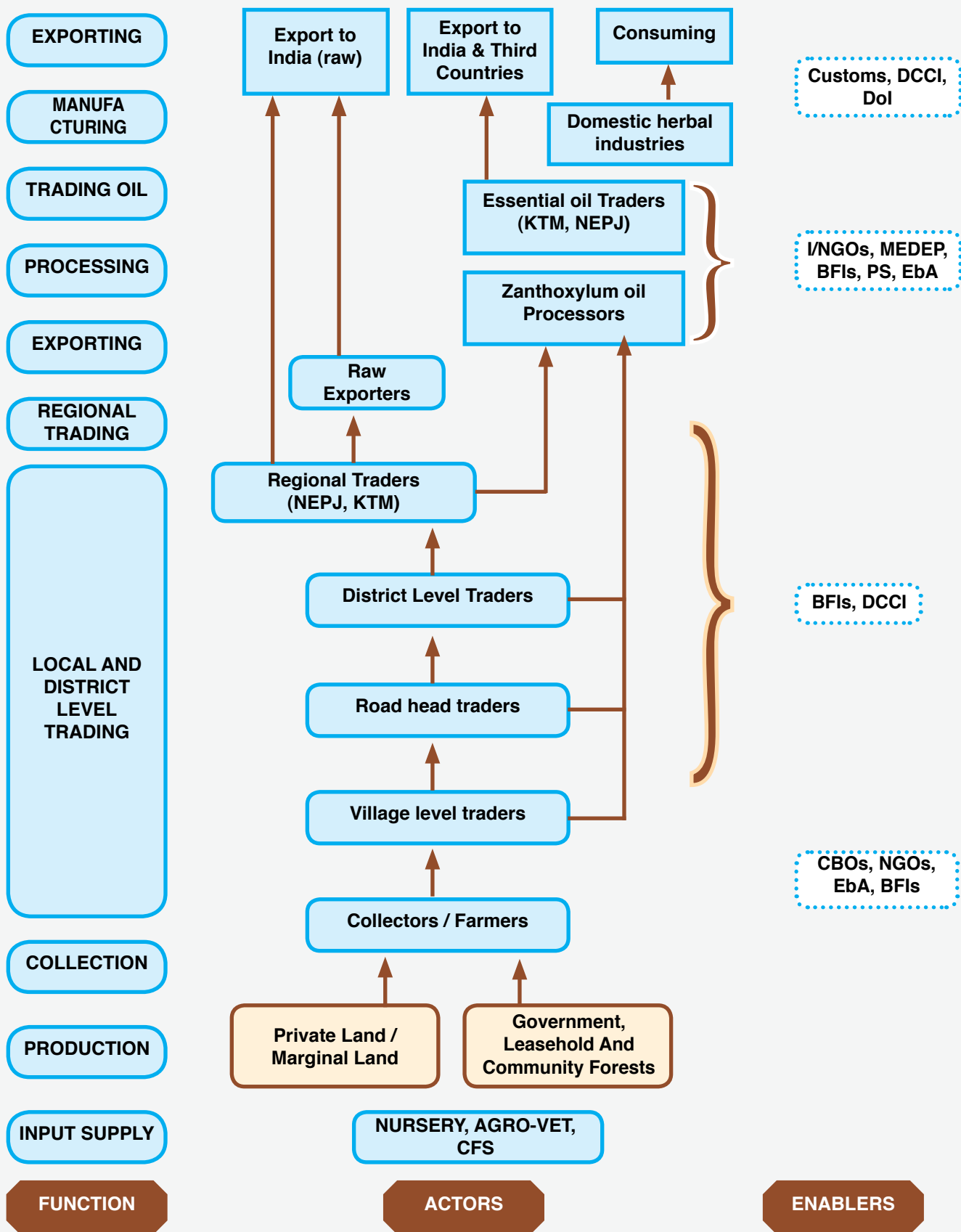


Figure: Value Chain Map of Timur

## Role and Function of Actors and their relationship

Timur in Panchase area is locally consumed and there is no proper value chain actors present. The value chain actors to move ahead are described in functional upgrading. Apart from farmers/ collectors there are other value chain actors present which can be described as:

### Raw Exporters:

Exporters stationed at regional centres like Nepalgunj, Bhairahawa, Dharan etc purchase Timur from regional level traders and export to India via respective customs.

### Essential oil Processors:

The trade of Zanthoxylum oil is flourishing with the advancement in technology and higher demand for essential oils from European market. Essential oil processors are either located in the rural areas near to the source, or at the vicinity of district headquarters. They often have very strong network with the producers (mass producers, cooperatives etc) and purchase either directly or from traders at different levels-Village level, middlemen, district level traders. The essential oil thus produced is purchased by essential oil traders from Kathmandu or Nepalgunj.

### Essential oil Traders/ Exporters:

Exporters are mainly located in Nepalgunj, Dang, Krishnanagar, Bhairawaha and Kathmandu and export Zanthoxylum oil as per the demand of Indian and European market. Most of the extracted oils are exported to India (90%) whereas only (10%) are exported to third countries. Some quantity are consumed at local level to produce herbal healthcare products like Sancho, dentifrice etc (SNV 2011).

### Manufacturers:

Companies like Dabur Nepal, HPPCL etc are manufacturing different products from Timur and Zanthoxylum oil. The oil is an essential ingredient of Sancho, a trademark product of HPPCL. Likewise, Dabur Nepal is manufacturing different products (tooth paste, dentifrice) by using Timur and oil. The final products are mostly sold in national market whereas Dabur Nepal is also exporting the products (SNV 2011).

### Enablers

Enablers of "Timur value chain" in the present context are those who are likely to work for the value chain actors and provide facilitating and

regulatory supports. Activities of enablers ranged from collection to end use, advocacy for simplifying trade policy and procedures, organizing groups and networks for reinforcement, and market information and linkages for better access. Regulating agencies are also working as a facilitator in many cases. The anticipated role of facilitating and regulating organisations for the proper functioning of value chain is given in the following table.

*Table: Anticipated roles of facilitating and regulating organisations to move Timur in the market chain*

Major Activities	Facilitating Organizations (anticipated)	Regulating Organizations
Cultivation and Sustainable cultivation	MDO, EbA, Hariyo Ban, CFUGs	DFO, PPFMC
Resource Management	MDO, EbA, Hariyo Ban, CFUGs	PPFMC
Collection permit	MDO, EbA, Hariyo Ban	PPFMC
Harvesting	MDO, EbA, Hariyo Ban, CFUGs	DFO, CFUGs, PPFMC
Royalty Exemption (for cultivated Timur)	MDO, EbA, Hariyo Ban	DFO, PPFMC
Transport/ Export permit		DFO, PPFMC
Local Taxes		DDC, VDC
Market Information	AEC, ANSAB	

## Economic Analysis of Timur and Zanthoxylum oil

According to the price list published by ANSAB, the average annual price of Timur with seed was the lowest as NRs. 44/Kg in 2007 and as high as NRs 210/Kg in September 2013 in a period of last seven years. The collectors' price is around Rs 150 per kg (December 2013). Collection of Timur from wild is a supplementary income generation activity and the amount provides substantial support for disadvantaged groups and farmers with low land holdings. Additionally, as for wild harvested Timur, it is just the labour and no other investment is required as in cultivation.

Zanthoxylum oil is extracted from dried fruits of Timur. The fruits yield up to 6% of Zanthoxylum oil, but in average 4%-5% oil has been extracted at commercial level. The price of oil is around NRs. 6,500 per Kg.

# Timur cultivation and sustainable management

## Cultivation cost

The cost per hectare is Rs 65,500 for first year, Rs 28,900 for second year and Rs 54,900 for third year. The expert consultation cost is kept Rs 20,000 collectively. Thus the total cost of production is Rs 1,69,300 for three years. About 3500 kg can be produced in a hectare and if sold at Rs 100 per hectare (September 2013), the total sales is Rs 3,50,000. Profit per year per hectare is estimated to be Rs 60,200.

### Cost per hectare for First Year

SN	Particulars	Qty	Rate	Total
1	Nursery preparation (man-days)	10	400	4,000
2	Pipe & other items purchase (set)	1	20,000	20,000
2	Digging pit and manuring (man-days)	40	400	16,000
3	Seedlings	1000	4	4,000
4	Compost fertilizer (tons)	5	700	3,500
6	Plantation in the field (man-days)	10	400	4,000
7	Weeding and composting (man-days)	20	400	8,000
8	Regular watering (man-days)	15	400	6,000
Subtotal for first year				65,500

### Cost per hectare for second year

SN	Particulars	Qty	Rate	Total
1	Compost fertilizer	7 tons	700/ton	4900
2	Weeding and Composting (man-days)	20	400	12000
3	Regular watering (man-days)	15	400	12000
Subtotal for second year				28900

### Cost per hectare for Third year

SN	Particulars	Qty	Rate	Total
1	Compost fertilizer	7 tons	700/ton	4,900
2	Weeding and Composting (man-days)	20	400	8,000
3	Regular watering (man-days)	15	400	6,000
4	Harvesting (man-days)	80	400	32,000
5	Drying and storage (man-days)	10	400	4,000
Subtotal for third year				54,900

### Total cost, productivity and profit

SN	Particulars	Qty	Rate	Total
1	Cultivation cost for first three years			1,49,300
	Expert cost (borne collectively)			20,000
Total cost				1,69,300
2	Timur production	3500 kg	100	3,50,000
3	Total profit			1,80,700
4	Profit per year per hectare			60,200





## Value Addition

Essential oil production is the most preferred value addition for Timur. The fixed capital requirement to establish essential oil enterprise is estimated to be Rs 801,380 and the pre operating cost is estimated to be Rs 10,000.

Resource inventory determines the total productivity, and production quantity in turn determines the required working capital. Rural entrepreneurs do not always have enough working capital to run unit

throughout year. Furthermore extraction of Timur is expensive because of the higher price of raw material. Therefore production and sale should be planned in such a way that 10 batches extraction of Zanthoxylum oil (total yield per cycle is 120 kg) in a production cycle and sold at a time enable the entrepreneurs to prepare for next cycle of extraction. Thus by multiplying Rs 3,427/- (production cost per kg) with 120 kg (production in 10 batches), Rs 411,240/- is required as initial working capital.

### Fixed Capital requirement to establish Zanthoxylum oil processing unit

SN	Description	No.	Rate	Amount (Rs)
1	<b>Land and Improvement</b>			
	1.1 Water supply (3/4" Polythene Pipe)	1 roll	5,000	5,000
	1.2 Land Development		25,000	25,000
2	<b>Building</b>			
	2.1 Factory, store and office; A single storey, double partitioned, wood fenced, 500 sq ft base			1,50,000
	2.2 GT sheet roofing (10 ft X40 number) including nails	40	1,500	60,000
3	<b>Equipments</b>			
	3.1 SS wet steam DU: 1000 liter capacity	1	5,00,000	5,00,000
	3.2 1000 liter water tank	1	15,000	15,000
	3.3 Bucket	2	300	600
	3.4 Jug	2	40	80
	3.5 HDPE containers	4	1,000	4,000
	3.6 Weighing balance	1 set	4,000	4,000
	3.7 Wooden mallet	2	200	400
	3.8 DU transport and installation	LS		30,000
4	<b>Furniture</b>			
	4.1 Chairs	5	500	2,500
	4.2 Bench	2	400	800
	4.3 Cupboard	1	4,000	4,000
	<b>Total Fixed cost</b>			<b>801,380</b>



Table: Unit cost of production of Zanthoxylum oil.

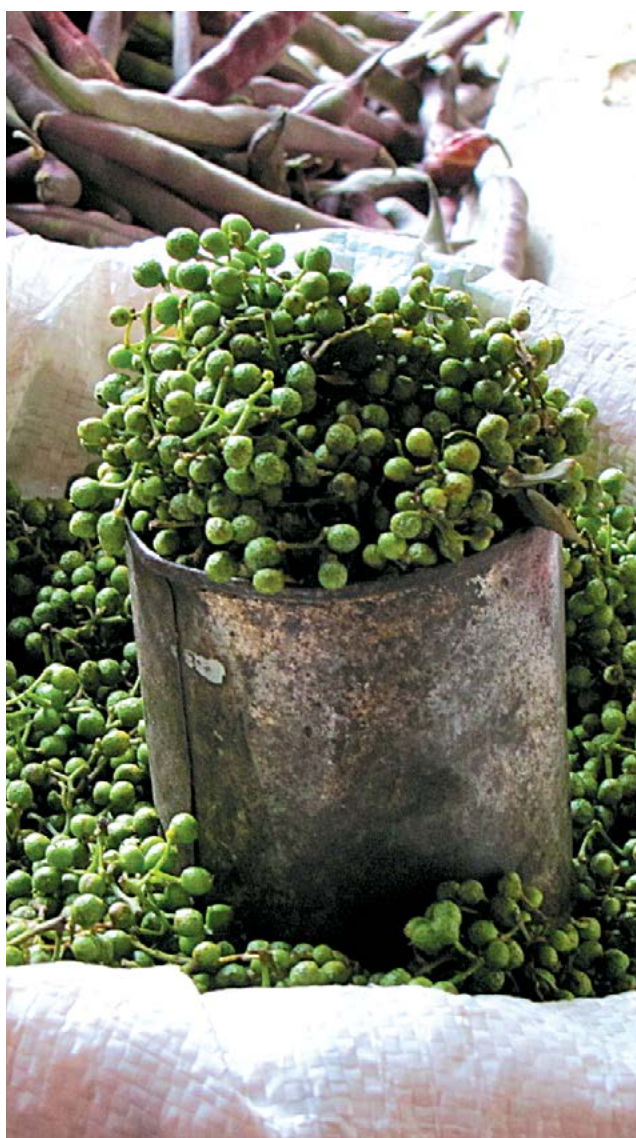
Description	Rate (Rs)	Quantity	Amount
Fruit cost per batch	110	300 kg	33000
Royalty (Royalty is waived for cultivated Timur)	8	300 kg	2400
Fuel (estimated)	50	8 bhari	400
Unit Operator	450	1	450
Helper	400	1	400
Miscellaneous (water, cleaning of DU)	200		200
Sub Total			36850
Per kg production cost (@4% oil content, 12kg of oil extracted from a batch)	3070		
Market and Sale			
Risk and uncertainty cost (about 10% of factory cost)			307
Transportation cost (per kg)	Lumpsum		50
Direct cost (per kg)			3427
Price (selling) at Kathmandu			5500
Profit margin per kg excluding the fixed costs (NRs)			2073

## Demand and Supply

**National Perspective:** Fruits are now-a-days sold at local, regional and national market for spices. More than dozen of trading companies are exporting Zanthoxylum oil in international market, the major market being Europe. There is no recorded data of household consumption of Timur within Nepal. The biggest buyer of Timur with seed for processing in the country is Dabur Nepal (200 MT annually). Similarly, HPPCL has a demand of more than 200 Kg of Timur oil (equivalent to 6.6 MT raw; 3% yield) for using it as a major ingredient in Sancho. Similarly, many other ayurvedic companies and dentifrice industries have demand of Timur in Nepal but the quantity demanded is unknown. Nepal exported the highest quantity of the product in 2003 that was 650 MT, which however followed by a reduction in subsequent year, with a record low 280 MT export in 2006. It is believed that the low demand in these years were down because of two reasons: first - mixing foreign materials gave negative impression to the buyers, and second - some big buyers/stockist kept a large quantity of Timur in their stores (SNV 2011).

**Panchase Specific:** Collection of Timur from Panchase core area is not allowed as per the Panchase Management Plan. Being relatively low valued, Timur is not collected from Panchase area.

Detailed resource assessment is mandatory to assess the present stock of Timur in Panchase area. Natural distribution of Timur in Panchase is limited. Extensive cultivation campaign in the private lands of Panchase area is needed to meet the demand of Timur.



# SWOT Analysis of Timur

The SWOT analysis has been carried out focusing on the trade and market of Timur.

Table: SWOT Analysis of Timur

Strength	Weakness
<ul style="list-style-type: none"> <li>- Good demand in Indian market since 1980s and oil is considered as a new product in Western Market</li> <li>- Grading and value addition possibilities</li> <li>- Local demand for pickle</li> <li>- Can be used as bio- pesticides for soil treatment from insects in grain storage</li> <li>- Export volume of Timur is large compare to other herbs</li> <li>- Traditional Knowledge on collection</li> <li>- Easy plantation in marginal land ( private and CF)</li> <li>- Rare infestation of diseases and pest</li> <li>- Favorable geo climatic condition and possibilities of natural regeneration</li> <li>- Timur is a prioritized commodity for export</li> <li>- Good initiative to promote export as no fees (any type) and local levy on the transportation within the country</li> </ul>	<ul style="list-style-type: none"> <li>- No economy of scale; small patch plantation/ collection limits to access buyers and little imitative has been taken towards plantation and spacing for natural generation</li> <li>- Difficult to harvest due to thorns</li> <li>- Collector often lop off the branches while collecting; such lopping off practice decreases subsequent fruit production</li> <li>- Early harvesting is in practices that cause fungus development in the dried product, and loss in dry weight</li> <li>- Inadequate quality control: Mixing of other materials (tigedi, thrones, stems, dust, kala dana etc.) in seed decreases the quality of the product</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>- High priority product for export</li> <li>- High scope to increase productivity</li> <li>- Availability of distillation unit within the country</li> <li>- Possibility of value addition within the country</li> </ul>	<ul style="list-style-type: none"> <li>- Fluctuating price in the market, dependent on Indian market</li> </ul>

The market based solutions to identified weakness and threats, and to tap the existing opportunities are provided as BDS strategy in next section as a part of Value Chain Upgrading Strategy.



# Value Chain Upgrading Strategy

## End Market Strategy

The product is found in many places or markets in the country for sale. However, Dang, Surkhet, Nepalgunj, Kapilvastu, Butwal, and Kathmandu are the major trading markets in Nepal. Among them, Kathmandu can be considered as the end market for both the oil and raw form of Timur in terms of household consumption, industrial and ayurvedic uses. Tanakpur, Lucknow, New Delhi, and Kolkata are the major trading centres in India. Similarly, France, Belgium, Germany, UK and USA are the overseas markets for oil.

End market strategy is prepared to fulfil the gap between market requirements and present status (other parts of Nepal). This is shown in spiderogram looking at six parameters.

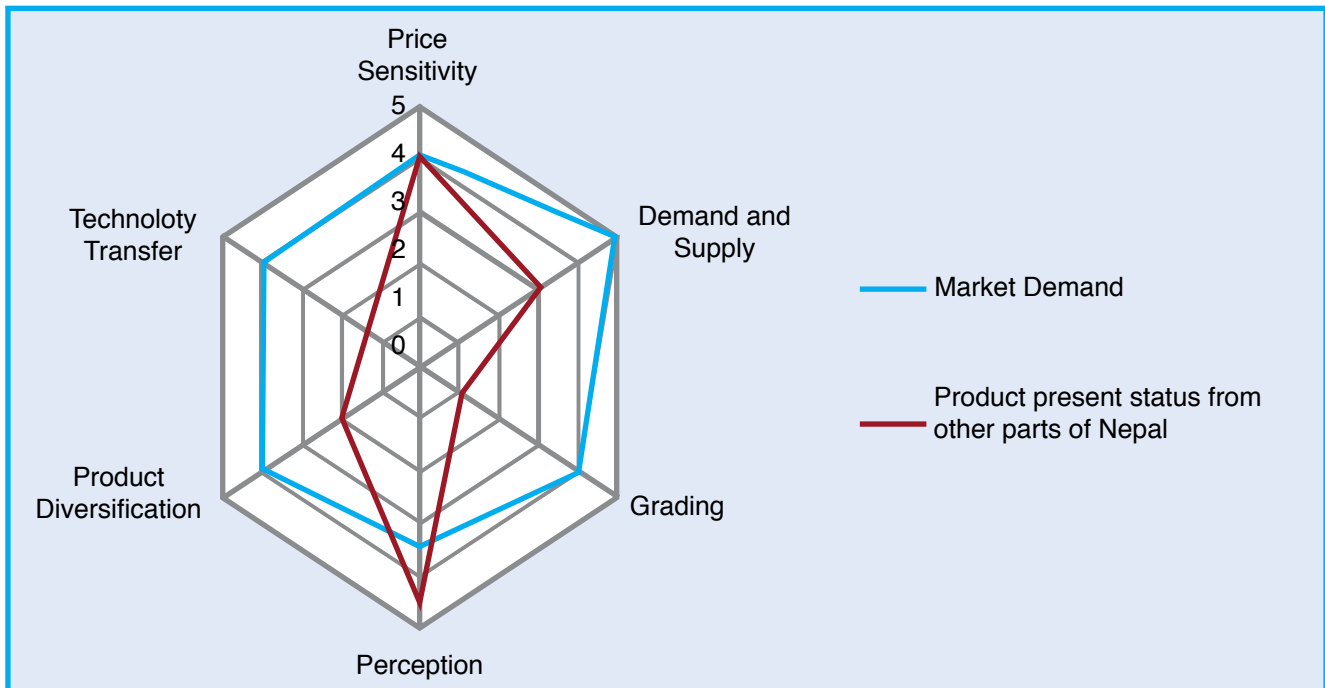


Figure: Spiderogram that analyse market gaps

### This shows strategy to be undertaken at Panchase area:

- Grading of Timur
- Technology transfer for process efficiency, reduction in production cost and increase value addition
- Product diversification (extracting essential oils)
- Meeting increasing demand

Above gaps from end market analysis has resulted in the following end market envisioning in case of income and investment opportunities.

## Firm Level upgrading Strategy

### Product upgrading

The product upgrading is based on three years plan and within this year present product will be sold by grading, cleaning and packaging. The next year plan will be extraction of essential oils from Timur and selling to market.

Table: Product upgrading strategy for three years

Parameters	Present	Year 1	Year 2	Year 3
Product	Non existence of Timur business	Legal procedure to sale Timur	Timur Increase 20% by sustainable harvesting and cultivation	Timur Essential Oils start up Timur Essential Oils as per resource availability and market
Price (based on present price)	N.A	Nrs. 70 per kg	Nrs. 80	Timur: Based on grade: Nrs.75, Nrs. 80, Nrs. 85 Essential Oil: Nrs. 6500 per kg
Place	N.A	End market: Kathmandu, Pokhara, Butawal and Nepalgunj	Timur: Majority in Kathmandu	Timur: Majority in Kathmandu Essential oil: Production in project area and market in Kathmandu
Promotion	N.A	Good perception of Timur of this region	Cleaning and Grading	Cleaning, Grading and product diversification, national standard process

### Process upgrading

The process upgrading refers to the whole process from input supply to production, harvesting, post harvesting, and essential oil extraction to marketing. This is reference to successful practices in different parts of Nepal, and what are the upgrading strategies required:

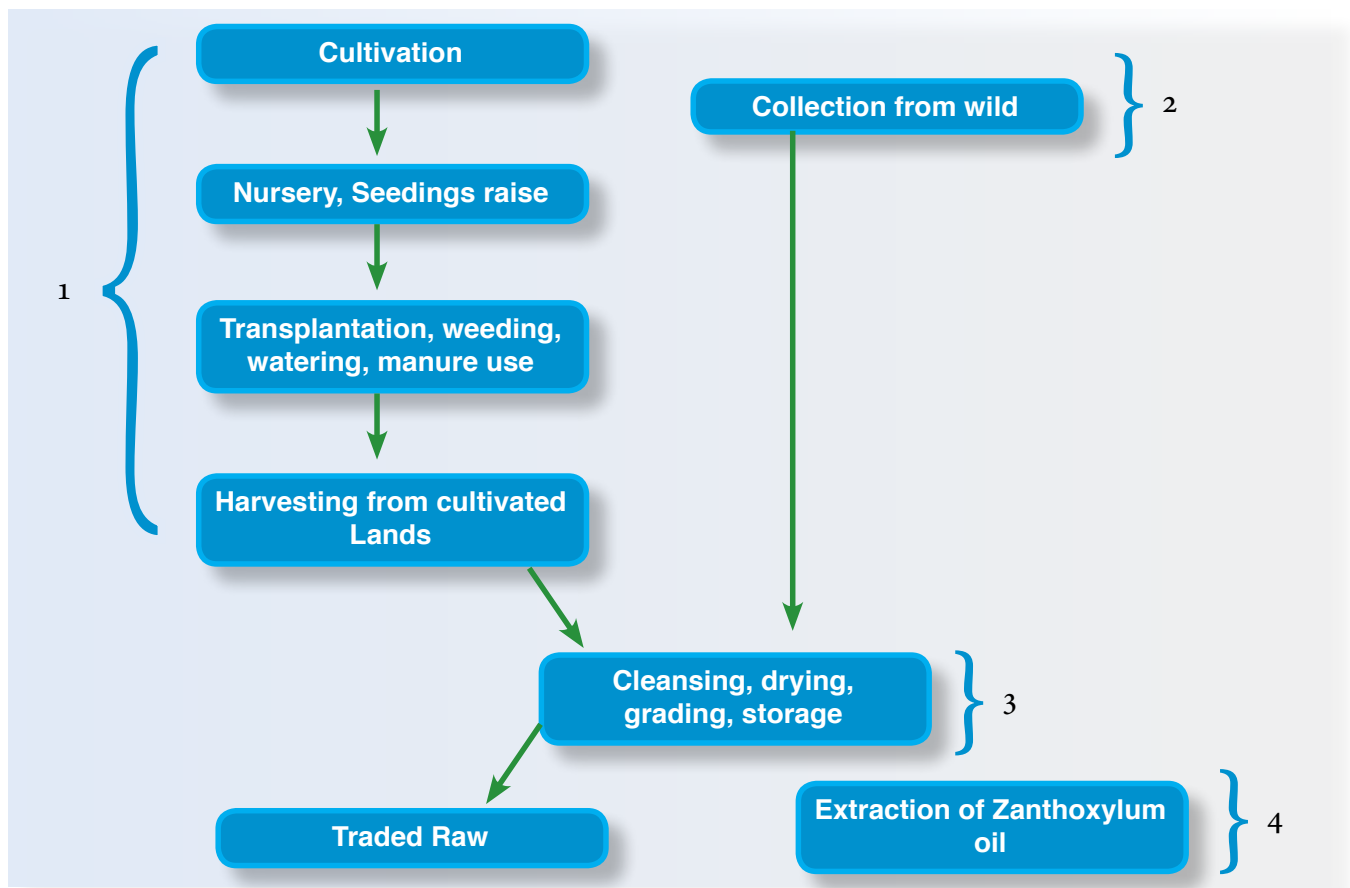


Figure: Parameters for process upgrading

Figure above shows that there are four major processes. The upgrading in each step is given in the following table.

Table: Process upgrading matrix

Process Upgrading	Existing practices	Recommended practices	Technical knowledge/ Technology used and cost	Anticipated benefits
Upgrading 1: Cultivation Process	N.A	Cultivation in fallow land and then mass cultivation	Existing technology	Mass production and sustainable supply
Upgrading 2: Wild collection	N.A	Collection Only After seed matures and adopting rotational harvesting system Appropriate low cost methodology for plucking	Resource assessment Leather gloves, staircase, derivatives	Sustainability managed resource Efficient, people friendly
Upgrading 3: Post harvesting	N.A	Adequate cleansing, grading and storage	Technical information and knowledge	Quality improvement
Upgrading 4: Extraction of essential oils	N.A	Appropriate extraction process	Distillation unit, cost: Nrs. 8,00,000 for machinery only	Product diversification, value addition

### Channel upgrading

Though the Timur is not marketed from Panchase area, the possible routes would be as follows

- Bhadaure Tamagi-Kande-Pokhara
- Chitre-Dimwa-Pokhara
- Arther/Ramja Deurali-Syangja or Pokhara
- Syangja-either to Bharahawa via Butwal or to Pokhara
- Products from other VDC also follows the Pokhara or Syangja route

Once the product reaches Pokhara, the product will follow the Kathmandu or Tarai route.

#### **The study recommends focusing on:**

- For the first year: Sale Timur to trader in Pokhara
- For second year: Sale Timur to oil extractor based in Kathmandu
- For third year: Sale Timur oil to exporters

### Functional upgrading

The major actors in the Timur Value Chain are as follows and their function upgrading need to be carried out in the following ways.

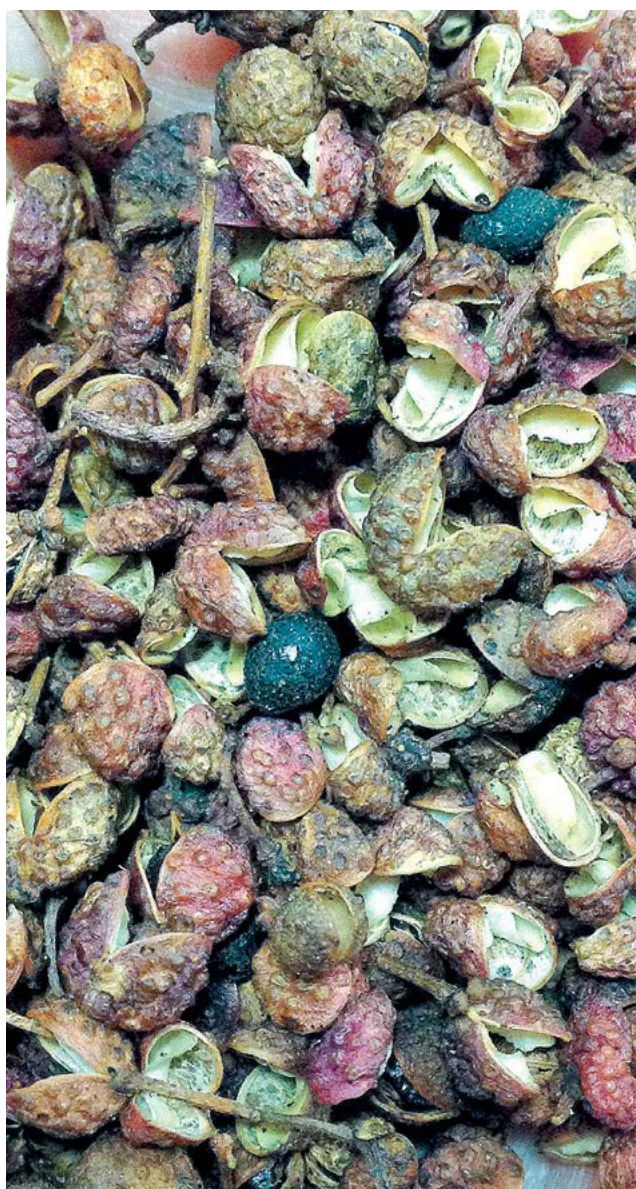


Table: Functional upgrading matrix

Actors	Present Function	Upgraded Function
Farmer	N.A	Cultivation in fallow land, Cultivation in Agriculture land, Lease hold forestry, community forestry
Collector	N.A	Wild Collection, Cultivation
Cooperative/ Village level traders	N.A	Buy from farmers and sale to district level trader
Cooperative/ District level trader	N.A	Buy from farmers/ collector and village level traders, Storage, sale it to regional market and national market (Nepalgunj, Krishnanagar, Kathmandu)
Wholesaler	Collection of Timur from district trader and sale it to retailers and exporters	...
Retailer	Sale it to consumer	.....
Essential Oil Manufacturer	Manufacture essential oils at regional and national level and sale it international market	.....
Exporter	Export Timur to India and essential oil to India and third country	.....

## Transectoral upgrading

Timur cultivation and collection is a part time income generating and employment opportunities for the people and it is mono crop and the practices for intercropping and transectoral upgrading has not been observed in practice.

## Interfirm upgrading

**The in term upgrading has to be carried out in two ways:**

- a. Alliance between value chain actors from cultivators/ collectors to wholesaler regarding pricing of the product according to post harvesting upgrading strategy. This means Timur that is cleansed, dried and properly stored fetch more price along the value chain. Also, Timur sold according to grade has to get price accordingly.
- b. Alliance between cultivators/ collectors, distillation enterprise at district and national level essential oils producers has to be linked so that product quality and marketing is assured throughout the value chain.

## Business Development and financial service strengthening

The assessment of Business Development Services and Financial services in this report also has been considered taking in view of:

- c. Categorization of business service demand from beneficiaries (value chain actors) in terms of Very strong, strong, weak and very weak categories
- d. Categorization of supply side of BDS provider's in terms of Very strong, strong, weak and very weak categories.

Table: BDS and FS Matrix

<b>SUPPLY SIDE OF</b>	Very strong				
	Strong	Access to land for cultivation			
	Weak		Value Chain financing	Entrepreneurship skills Business Planning	Market Information Technology- Oil processing Input Supply Technical Knowledge
	Very weak				Technology post harvesting Testing Laboratory
		Very weak	Weak	Strong	Very Strong
<b>DEMAND OF SERVICES BY VALUE CHAIN ACTORS</b>					

The commercial viable business services for the above services requirement can be catered as:

**Table: Listing out commercially viable business options**

Services	Strategy
Inadequate market Information	<ul style="list-style-type: none"> <li>- Provision of Market Information System in collaboration with DCCI, JABAN, NEHHPA and ANSAB (via web site)</li> <li>- Coordination and linkage between village, district and regional level traders</li> <li>- Enhanced use of multipurpose cooperatives to maintain the price list</li> </ul>
Low access to market	<ul style="list-style-type: none"> <li>- Enhanced coordination between the chain actors, starting from producers to exporters</li> <li>- Institutionalize the existing market</li> </ul>
Technology and Product Development	<ul style="list-style-type: none"> <li>- Training and capacity building on nursery management, plantation/production, sustainable harvesting and post-harvest handling for farmers and collectors to produce international buyers' specifications.</li> <li>- Skill training on quality control, value addition/processing for local traders and processors</li> <li>- Developing innovative technology for cultivation</li> </ul>
Inadequate input supplies	<ul style="list-style-type: none"> <li>- Providing healthy seeds and seedlings to farmers</li> <li>- Strengthening and capacitating input suppliers (agro-vets, nurseries)</li> </ul>
Inadequate testing facilities	<ul style="list-style-type: none"> <li>- Increase awareness and capacity building of existing testing facilities of DPR, JABAN</li> <li>- Support testing facilities to upgrade to provide standard testing requirements</li> </ul>

## Sustainability Strategy

Strategies discussed above have to be sustainable and most important parameter for sustainability is shared vision. The study has discussed in depth with value chain actors and come out with strategies that will address constraints at each level of value chain focusing on increasing income, employment opportunities for poor along with increasing investment from private sectors. Sustainability strategy has to be implemented from start up of the project intervention. Specific sustainability strategies are:

- Completion of legal procedures of Timur sustainable business operation
- Cultivation practice which will lead to sustainable supply chain of Timur
- Sustainable harvesting practices
- Increasing entrepreneurship skills of value chain actors
- Strengthening of important BDS and FS services
- Increasing investment from DDC and VDC in NTFP value chain

## ABBREVIATIONS

AEC	Agro Enterprise Centre
ANSAB	Asia Network for Sustainable Bio-resources
BDS	Business Development Services
BFI	Banks and Financial Institutions
CBOs	Community Based Organisations
CFs	Community Forests
CFUGs	Community Forest User Groups
DCCI	District Chamber of Commerce and Industry
DDC	District Development Committee
DFO	District Forest Offices
DoF	Department of Forests
DPR	Department of Plant Resources
EbA	Ecosystem Based Adaptation
FNCCI	Federation of Nepalese Chamber of Commerce and Industries
GF	Government Forests
JABAN	Jadibuti Association of Nepal
LF	Leasehold Forests
MDO	Machhapuchre Development Organization
MEDEP	Micro Enterprise Development Programme
NA	Not Available
NCC	Nepal Chamber of Commerce
NEHHPA	Nepal Herbs and Herbal Products Association
NGOs	Non Governmental Organisations
NPQP	National Plant Quarantine Programme
NTFPs	Non-Timber Forest Products
PPFMC	Panchase Protected Forest Management Council
PS	Private Sectors
RP	Range Posts
SWOT	Strength, Weakness, Opportunities, Threats
VDC	Village Development Committee

## REFERENCES

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