

Assessment of Chiuri (*Diploknema butyracea*) resources and it's potential for commercialization (Marma Rural Municipality, Darchula District Nepal)

Presented by

Durga Datta Regmi

Consultant



Outline of the Presentation

- ❑ Methodology
- ❑ Preliminary finding of Chiuri (*Diploknema butyracea*) resource assessment
- ❑ Preliminary finding of selection of potential value chain for Marma rural municipality



Assignment: Assessment of Chiuri (*Diploknema butyracea*) Resource and its Potentiality for Commercialization (Marma Rural Municipality; Darchula District Nepal)

Key Deliverables: A comprehensive report on feasibility of commercialization of Chiuri (*Diploknema butyracea*) resources in Marma Rural Municipality.

Additional Deliverables Identification of potential value chain for RVWRMP intervention in Marma Rural Municipality



Current Situation of Non Timber Forest Products (NTFPs) /Medicinal and Aromatic Plants (MAPs)

POTENTIAL

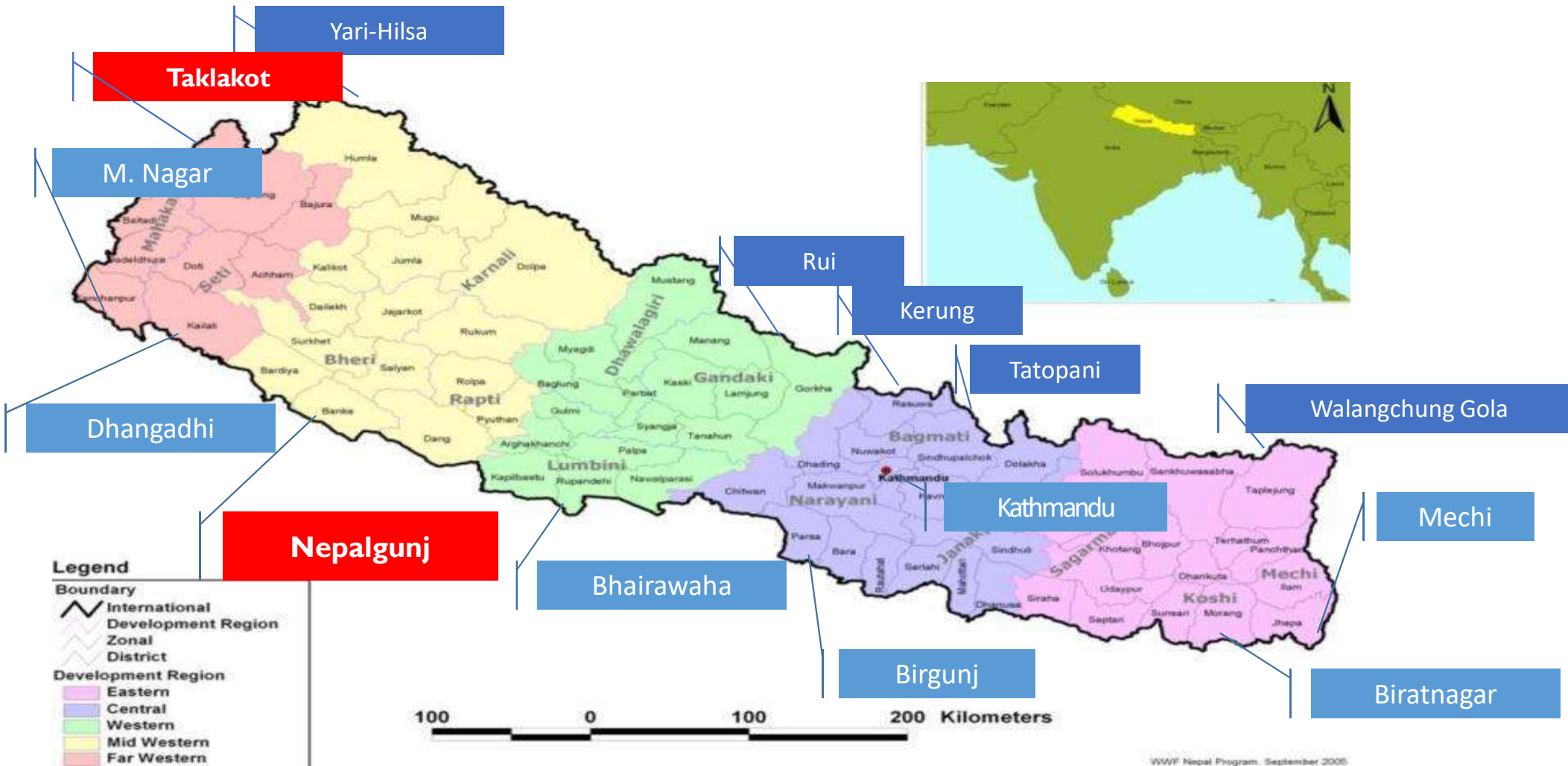
- ❑ Attractive bio-diversity; Altitude from 70 – 5,000 metres.
- ❑ 1,800 species of which 701 recognised medicinal plants.
- ❑ 20,000 CFUGs (approx 40% of pop.) that manage approx. 1.2 million ha of forest.
- ❑ Around 5,000 tonnes could be harvested annually.
- ❑ Now 20-30% is collected, processed and sold.

Top species which make up 52% of the total volume (Olsen 2005)

- ❑ Jatamansi (*Nardostachys grandiflora*)
- ❑ Chiraito (*Swertia chirayita*)
- ❑ Timur (*Zanthoxylum armatum*)
- ❑ Rittha (Soapnut) (*Sapindus mukorossi*)
- ❑ Lichens



Major Trade Routes



Major NTFP Traded form Darchula District

1. Amala
2. Barro
3. Chiraito
4. Jatamansi
5. Kutki
6. Padamchal
7. Pakhanbed*
8. Ritha*
9. Satawari
10. Satuwa
11. Sugandhawaal
12. Tejpat*
13. Yarsagumba**



Yarsagumba

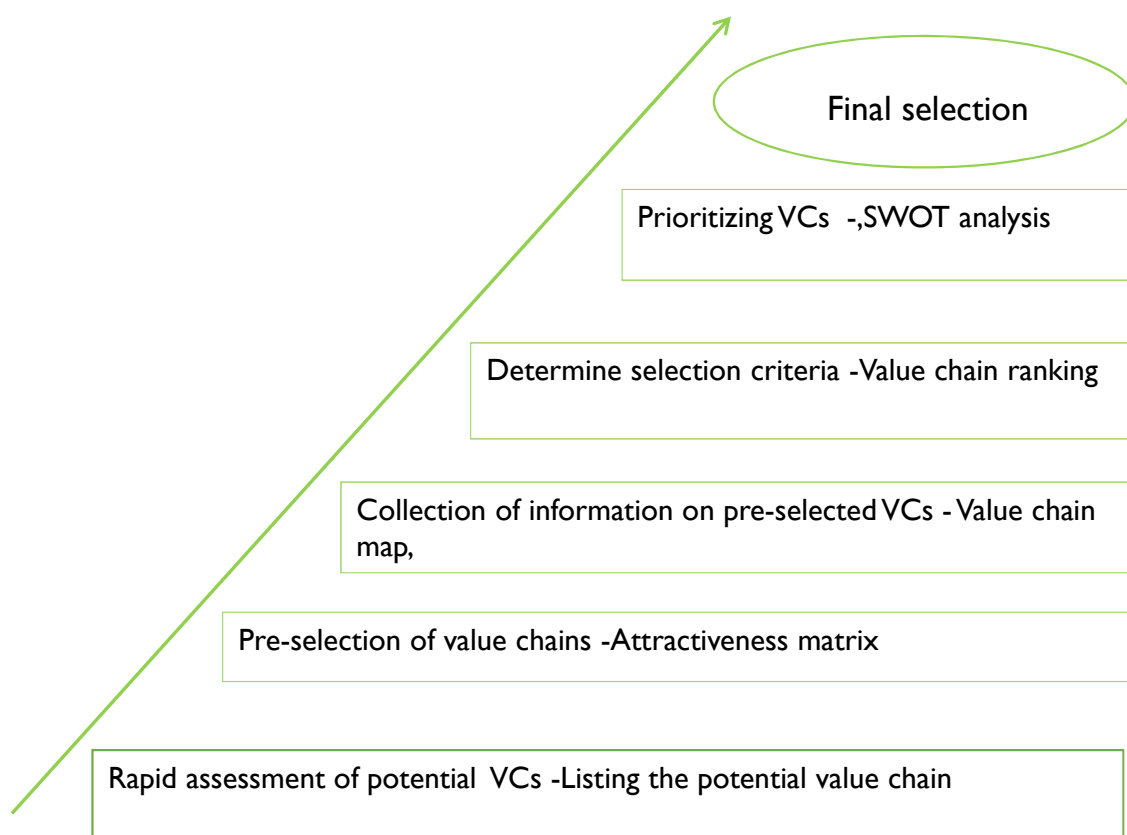


Rittha

*Comes under top 3 ranking in terms of volume ** 1st rank in terms of value

Marma Hub/market center : approx. 250 tons of different wild crafted herbs

Methodology :Value Chain Selection



Group discussion in Simalta, Marma -4

Methodology

- ❑ Review of existing studies of donors, government, projects, private company, research institution and academic institution
- ❑ Direct interview and discussion with collectors
- ❑ Discussion with focus group and key informants
- ❑ Discussion with stakeholders (E.g. Sector Forest Officer)
- ❑ Identification of Pocket Areas - Chiuri sampling, observation and yield calculation.

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संभावित वस्तुसूचक/सहस्रको सूचि

1. चिउरी *	अदुवा	हरियो तरकारी
2. अमला	बेसार	(मोफरी र बेमोफरी)
3. रिङ्गा *	रुमोकी	
4. विमर	अनेवा	
5. वास निगालो *	लसुन, खाणखेतो	आलु
6. चिराङ्गो *	कैफे	ट्याउखेती
7. सालको खोले *		राज्जा खेती
8. तेअण्ट		भटमास, मसुरो, केराउ
9. कटुको		
10. वलचन्द	उरु	वसुधापालन
11. पाँच ओले	मेवा	भेडापालन
12. सतुवा	केरा	बुखुवापालन
13. कुमकुम	सुन्तला मौसमी, जले	उच्चत गाइ भैँसी पालन
14. सेता चिन्ता (खिबेला)	गोबर *	खायो पालन
15. पाषाणवेद	हास्यति	
16. गुन्डीच्याउ	जामु	डोउट माछापालन
17. चासी गुन्डा	पुलभ	गाइपालन
18. तितपाती		
19. तिमोको		
20. तितपाती		
21. अल्लो (खवास)		मोरिपालन
22. कुरिलो		
23. ओझा		
24. मरु, वरु		
25. रिङ्गाडी (खुन्धयान)	सिन्धु वनस्पति तेल	
26. बसुन्धु चिउरी	डिङ्गोलेका- तेल	
27. अरुन्धी		
28. दिस्को	अण्डी खोले	
29. वदमारा	खेतो	
30. निरन्धि		
31. वलसुन		

Listed 60 products

Methodology

- ❑ Listing the potential value chain
- ❑ Prepared the value chain criteria
- ❑ Attractiveness matrix
- ❑ Value chain ranking
- ❑ Value chain map
- ❑ SWOT analysis



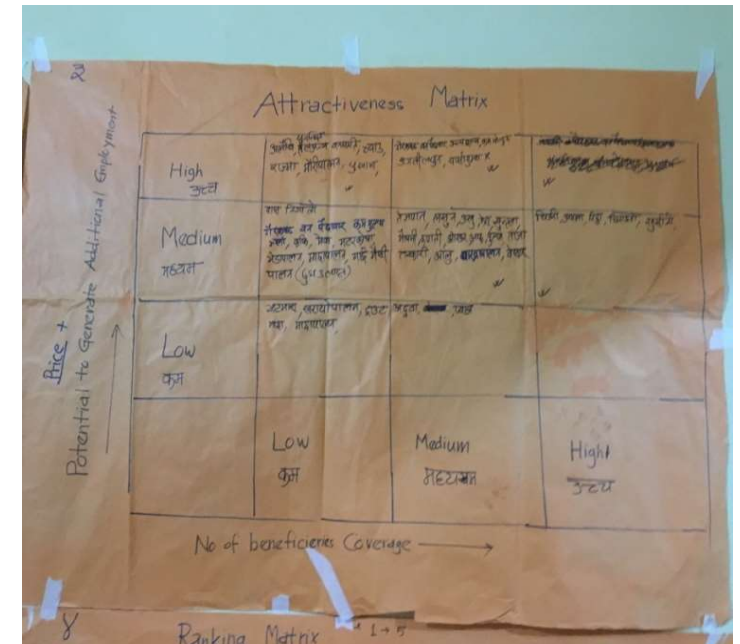
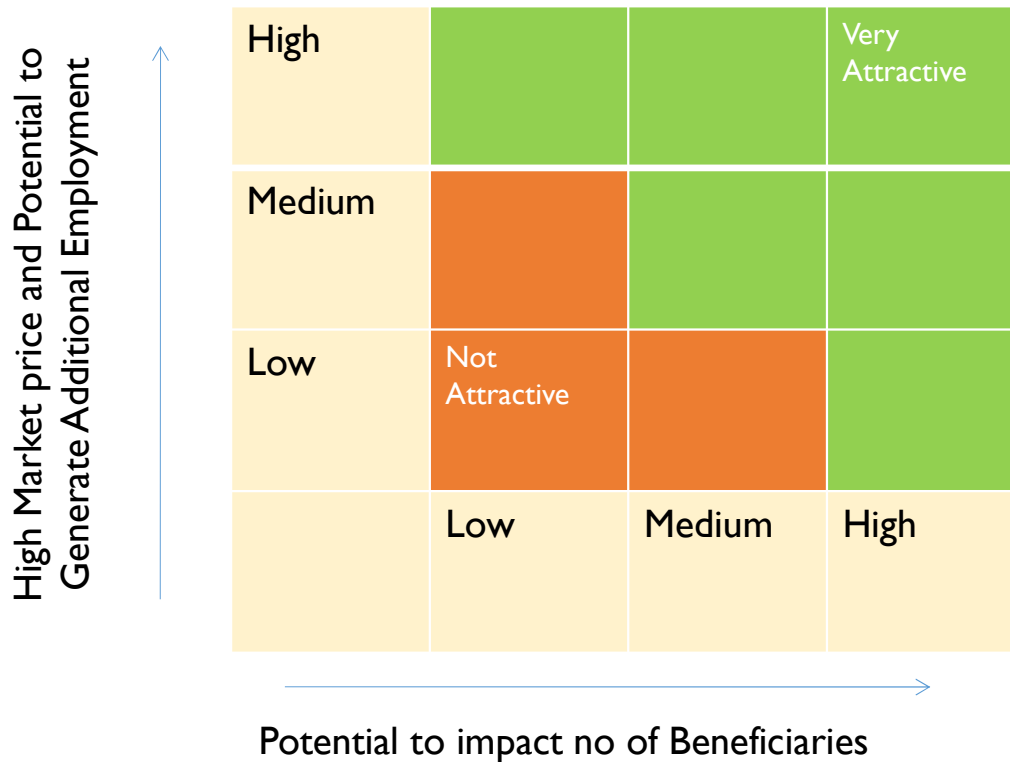
General Criteria Adopted for Value Chain Selection

- ☐ Prospects for success
- ☐ Outreach
- ☐ Competitiveness
- ☐ Unmet market demand/growth potential/potential for value addition
- ☐ Comparative advantage in local, national and export market
- ☐ Potential for income and employment creation
- ☐ Relevance to the poor, social inclusion, SMEs participating
- ☐ Program related aspects (livelihood opportunities , no. of targeted beneficiaries - women and marginalized group, number of total beneficiaries, location, contribution to family nutrition etc.)

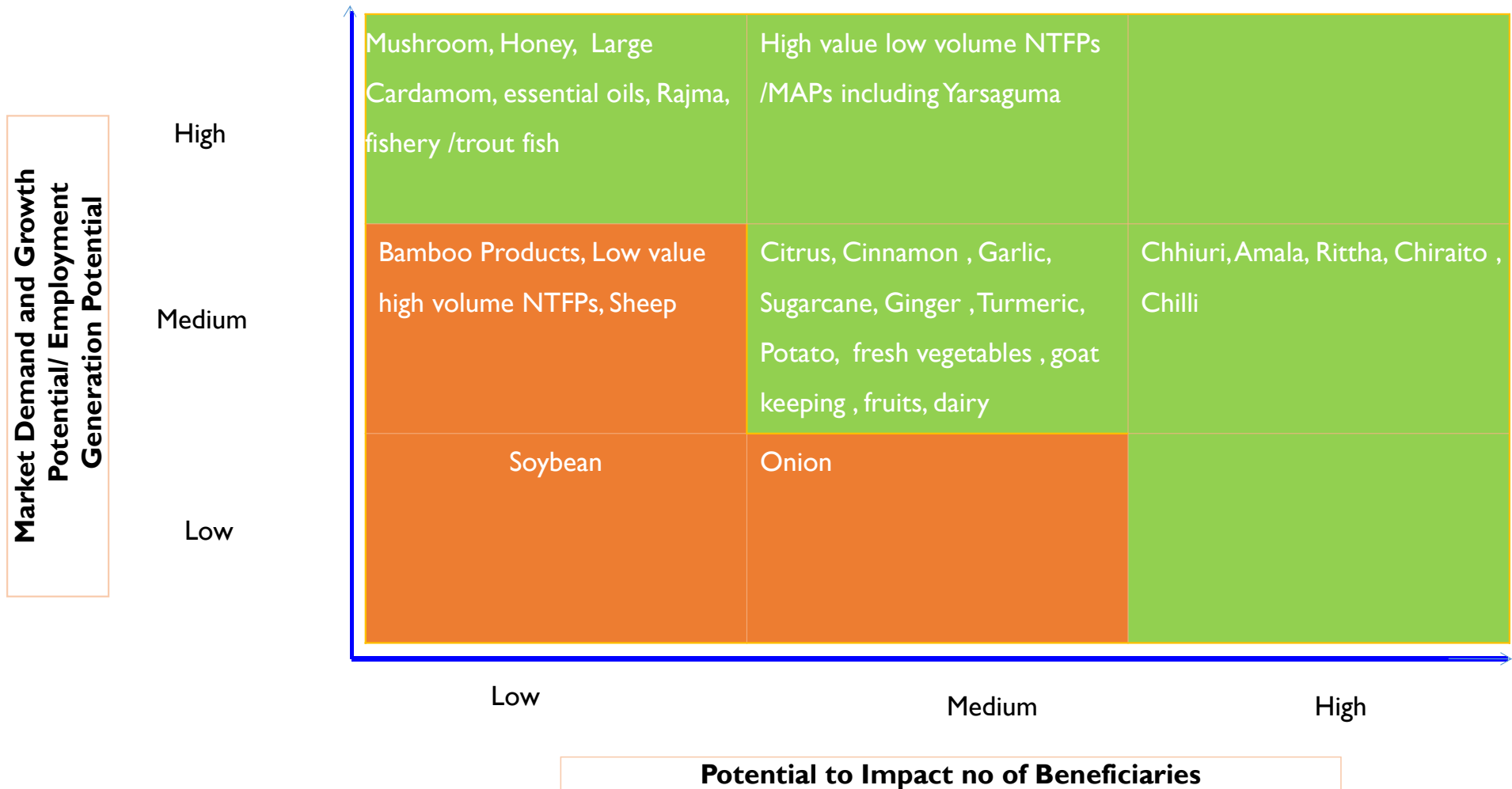


Chiuri trees in Padpada Tapoban

Attractiveness Matrix - Helps to narrow down sub-sector



Attractiveness Matrix for Short Listing of Potential Value Chains



Ranking Matrix (Score I-5)

Value Chain	Chiuri	Rittha	Amala	Chiraita	Spices	Vegetables	Fruits	Dairy	NTFP	Bee Keeping	Goat Farming	Potato
Criteria												
Potential for employment generation (5)	5x4 = 20	15	20	15	15	20	15	15	15	20	15	20
Potential to address GESI (3)	3x4 = 12	12	20	12	12	12	9	9	9	6	9	9
Potential for private sector investment (3)	3x4 = 12	12	12	12	12	12	12	12	9	6	9	9
Market price (4)	4x3 = 12	12	12	16	16	12	12	12	16	16	12	12
Market Demand (4)	4x5 = 20	16	16	16	16	16	16	16	16	16	12	12
Prospects of value addition at local level (3)	3x5 = 15	12	8	8	8	4	4	8	8	12	8	4
Resource availability , sustainability (5)	5x5 =25	20	20	20	20	20	15	15	15	15	15	15
Technical knowledge and technology (4)	4x3 = 12	12	10	8	16	12	8	16	4	8	16	12
Local interest (5)	5x5 = 25	15	20	20	12	12	12	12	16	12	12	12
Policy (5)	5x5 = 25	25	25	25	25	25	25	25	12	20	20	20
Potential to contribute in Nutrition (3)	3x3 = 9	3	9	-	12	15	15	15	0	15	6	12
Physical infrastructure (3)	3x5 = 15	15	15	15	15	9	15	12	6	6	9	9
Climate Friendly (2)	2 x1 = 10	20	10	8	8	8	8	4	6	8	4	6
Total weight	212	179	197	175	187	177	166	171	132	160	147	152
Ranking	I	IV	II	VI	III	V	VIII	VII	XII	IX	XI	X

Selected Value Chain

Rank	Value Chain	Total Score
1	*Chiuri	212
2	*Amala	197
3	Spices	187
4	* Rittha	179
5	Vegetable	177
6	*Chiraita	175
7	Dairy	171
8	Fruits	166
9	Bee Keeping	160

Chiuri , Ritha and Amala found in same habitat.

* All are forest crops . Chiraita can cultivate

Beekeeping can do together with Chiuri

8 Ranking Matrix

Value chain	सिरी	रिठा	अमला	चिरायो	मधुमासो	तरकारी	फलफूल	दुध उपहार	मैका व प.	मैदीपाल	मकखान	आलु
Criteria												
For Employment (5)	5x4=20	5x3=15	5x4=20	5x3=15	5x4=20	5x3=15	5x3=15	5x3=15	5x3=15	5x4=20	5x3=15	5x4=20
For Profit (5)	5x4=20	5x3=15	5x4=20	5x3=15	5x4=20	5x3=15	5x3=15	5x3=15	5x3=15	5x4=20	5x3=15	5x4=20
For Private Investment (5)	5x4=20	5x3=15	5x4=20	5x3=15	5x4=20	5x3=15	5x3=15	5x3=15	5x3=15	5x4=20	5x3=15	5x4=20
For Price (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
For Demand (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
For Value (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
For Sustainability (5)	5x4=20	5x3=15	5x4=20	5x3=15	5x4=20	5x3=15	5x3=15	5x3=15	5x3=15	5x4=20	5x3=15	5x4=20
For Knowledge (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
For Interest (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
For Policy (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
For Infrastructure (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
For Community (4)	4x5=20	4x3=12	4x4=16	4x3=12	4x4=16	4x3=12	4x3=12	4x3=12	4x3=12	4x4=16	4x3=12	4x4=16
Total score	187	179	197	175	189	177	166	171	160	147	152	160

CHIURI VALUE CHAIN



Marma | Paribagad, Junde

Introduction

- ❑ Deciduous, medium size tree about 20 meters height native to Nepal.
- ❑ Nepali Name : Chiuri; English Name: Butter tree and Botanical Name: *Diploknema butyracea*
- ❑ The tree produces flowers from November to January and fruits from April to June and propagates by seeds.
- ❑ It grows mainly in the sub-Himalayan tracts on steep slopes, ravines and cliffs at an altitude of **300 to 1500 meters from east to west Nepal (52 districts)**
- ❑ The main product of the tree is ghee or butter, extracted from the seeds and popularly known as “Chiuri butter”.



Availability and Distribution

- ❑ The total number of Chiuri trees in Nepal is estimated to 10.8 million with 5.6 million trees at the fruit bearing stage.
- ❑ Estimated quantity of Chiuri seeds in Nepal is 94,000 MT with the potential to produce 37,000 MT of butter per year.
- ❑ There is a vast potentiality in terms of resource availability to produce Chiuri butter in Nepal.

Seasonal Calendar							
Activities	Months/Season						
	Apr/May	May/Jun	Jun/Jul	Jul/Aug	Aug/Sep	Sep/Oct	Feb/Mar
Fruit Collection							
Drying							
Oil processing							

Source: MEDEP 2010, HBTL 2015

Current Annual Production of Chiuri Butter

Approx. 30-40 MT

Domestic consumption

- ☐ Estimated to 18-25 MT per year
- ☐ Mainly as a cooking oil in rural parts of Nepal, soap and candle manufacturing (Monasteries)

Export

- ☐ Approximate 10-12 MT (EU, US, Japan)
- ☐ R&D on product development and testing is ongoing
- ☐ Kathmandu traders are trying to positioning Chiuri products in international market

Commercial uses of Chiuri Butter

- ❑ Chiuri butter can be used as an alternative to **Shea butter** in the cosmetics industry for skin and hair related products.
- ❑ Pharmaceutical
- ❑ Confectionery
- ❑ Candle manufacturing
- ❑ Soap making and raw materials for other cosmetics



Key Finding: Chiuri Value Chain



Chiuri tree in Marmati , Marma -4

Local Uses : Chiuri as a Multipurpose Tree

- ☐ Pulp: consumed as a refreshing juice and provides significant nutritional value
- ☐ Butter: used as a cooking oils
- ☐ Cake: used to treat rheumatic pain, indigestion and skin infections
- ☐ By-product: used as manure and organic pesticide
- ☐ Timber is used for door and window making
- ☐ Leaves: used as fodder and bedding materials



Local Processing Technology

1. Raw Seed



2. Boiling and Removal of Seed Coat



3. Heating the Okhal



4. Roasting



8. Repeated the Process Again Step 3, 5 and 6



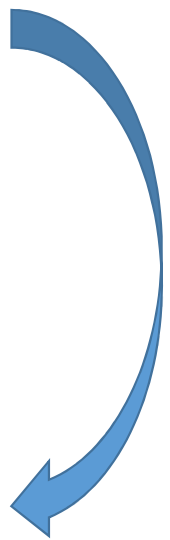
7. By Product (Oil Cake)



6. Oil Collection



5. Beating/Crushing the Roasted Seed



Processing with Mustard Oil Expeller

Roasted seeds cotyledons



Oil extraction with expeller



Service Charge: NRs 20-25 rupees/kg of roasted seed, Expelled approx 6 ton /year

Estimation: Approx. no of Trees and Quantity of Seed Collection

SN	Name of the village/pocket (1)	No of HHs (2)	Estimated no of Tree (3)	Quantity of seed collection (ton) (4)	Total amount roasted seed in ton (80% of No 4)	Total amount of ghee production in ton (50% of No 5)
1	Judi, Parbisa, Darma, Paribagad,	95	800	7	5.6	2.8
2	Shim, Daang, Oangada, Chaudeli, Laubisa, Okhadan, Chhayapani, Ghopte	32	125	1	0.8	0.4
3	Chiurani, Badhure, Bhadi, Kopare, Nalbagad	74	600	5	4	2
4	Padpada /tapoban, Madda	180	1500	13	10.4	5.2
5	Bajhkot , Dharigand, Bimti , Simalta	120	1800	14	11.2	5.6
6	Marmati, Baban, Pantbagad , tak	95	2000	17	13.6	6.8
7	Melbisha, Bhoraui, Ganedi, Linktad, Thulisalli, Maliseri, Seri, Dhadiya , Jayathala, Ghat, Siroli, Chhipan	156	4360	32	25.6	12.8
	Total (9 pockets from 39 village)	752	11185	89	71.2	35.6

Other pockets: Dethala , Chhola, Luita, Raiju, Chiuribagad (Naugand), Gotheudi, Dhuligada, Gokuleshower, Sarmoli, Rithachaupata, Bohorigoan, Shankarpur, Huti, Basedi, Hunainath, Dattu, Dhap , Khalanga, Bramadev : **approx 50 tons from 19 pockets**

- ✓ No of collectors/ HHs involved in Darchula : approx. 5000 HHs
- ✓ No of local Okhal: approx. 500
- ✓ No of small scale expeller: 2
- ✓ No of Local Koll: NA;
- ✓ No of local level traders: NA
- ✓ No of district level traders: NA
- ✓ No of Manufacturers : NA

SWOT Analysis of Chiuri Value Chain

STRENGTH

- ☐ Available abundantly in farm land
- ☐ Suitable geography and climate and easy propagation from seed
- ☐ Local processing skills and technology available
- ☐ Seed can store for long time
- ☐ Multipurpose tree
- ☐ Favorable policy

WEAKNESS

- ☐ Seed collected manually and time consuming , no seed collection technology adopted
- ☐ No appropriate technology available at local level for value addition and processing
- ☐ No idea about the possible range of Chiuri products and product diversification
- ☐ High cost of international organic certification (FSC, ECOCERT, USDA,)

OPPORTUNITY

- ☐ Road access
- ☐ Rural Municipality priority sector
- ☐ Support available from RVWRMP
- ☐ Possible to value addition and processing at local level
- ☐ Good demand of butter and soap both in local, national and international market
- ☐ Employment generation at local level

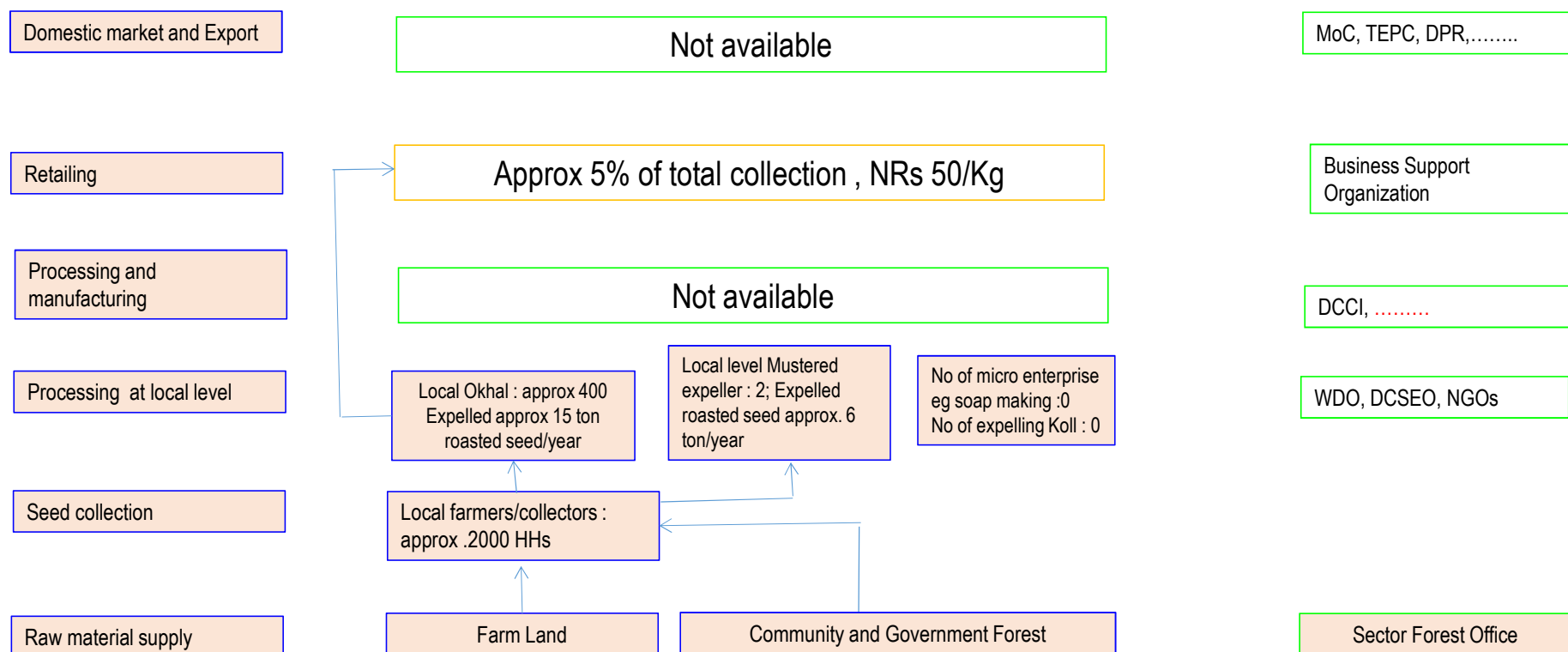
THREATS

- ☐ Difficult to meet quality standard required to export
- ☐ Bank may not ready for investment
- ☐ Fluctuation of production due to seed year

Example : Audit mission of Auracasia (US based company) on Good Agriculture and Collection Practices
(GACP) of Rittha
for USDA Certification of National Organics Private Limited Kathmandu



Chiuri Value Chain Map and Area of Upgrading : Marma Rural Municipality



Chiuri Based Enterprise Planning and Upgrading Strategy (Where we are now ?)

Identification of Value Chain	Value Chain Mapping	Preparing Market Map	Upgrading Strategy
<ul style="list-style-type: none"> ✓ Free Listing ✓ Attractiveness matrix ✓ Ranking Matrix ✓ Investment Perspective ✓ Employment Perspective ✓ Market Price ✓ Market Demand ✓ Value addition ✓ Resource availability ✓ Local Interest ✓ Project perspectives ✓ Technical Knowledge 	<ul style="list-style-type: none"> ✓ Qualitative tools ✓ Focus group discussions ✓ Identifying role and function of actors ✓ Estimation of total production 	<ul style="list-style-type: none"> ✓ Relationship of actors ✓ Key constraints and opportunities 	<ul style="list-style-type: none"> ✓ Finalization of business model ✓ End market visioning ✓ Firm level upgrading ✓ Product ✓ Process ✓ BDS including financial services ✓ Business plan: Chiuri processing enterprise ✓ Area of project intervention ✓ Sustainability strategy and exit strategy

Preliminary Recommendation

Option A

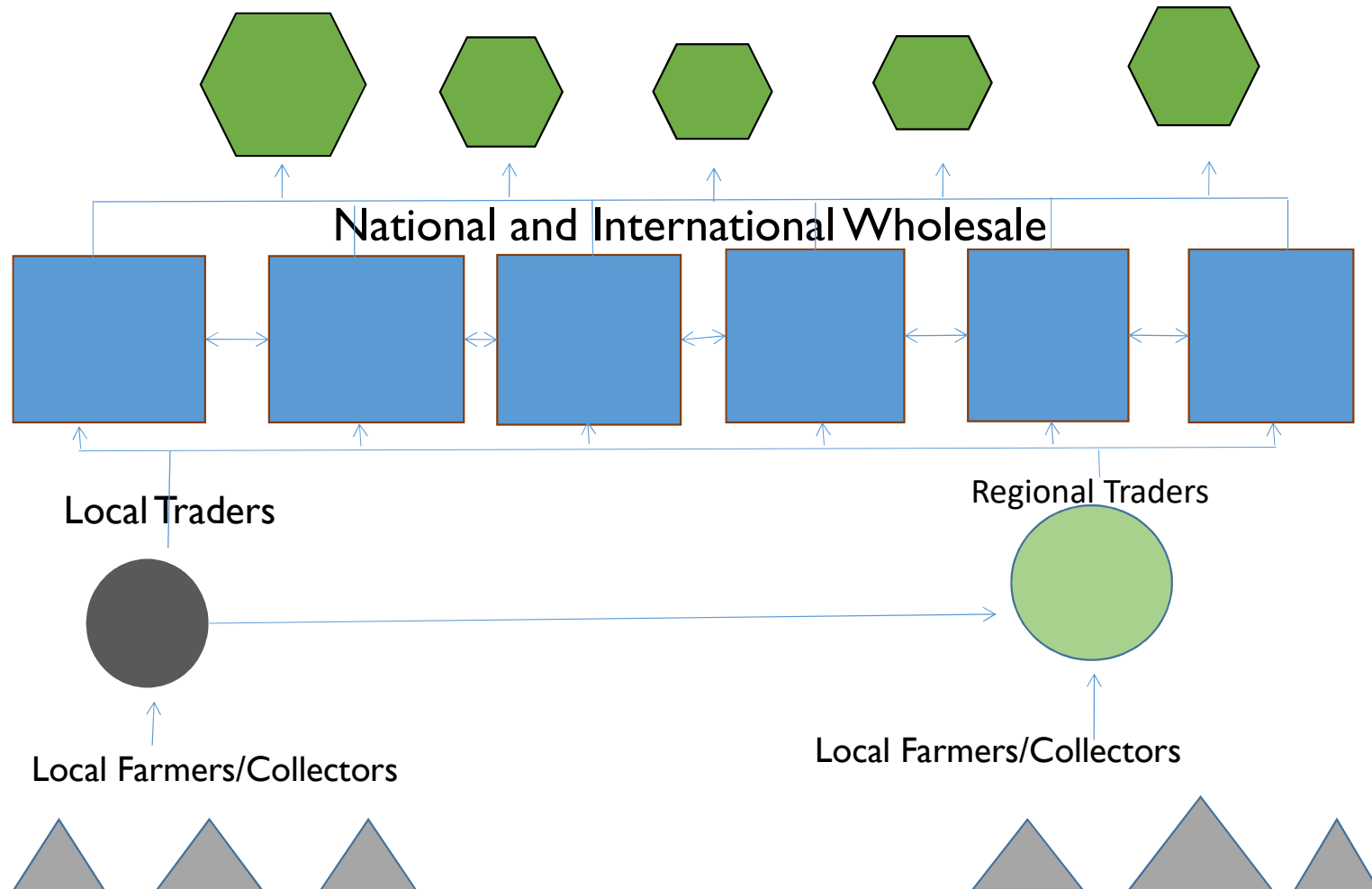
- ☐ Establish a cooperative that deals with Agri. business in share holding basis in PPP model
- ☐ Also include the pocket areas other than Marma Rural Municipality
- ☐ Soap manufacturing in local level targeting to local market, Ghee sell to Kathmandu based traders
- ☐ Area Expansion: Chiuri plantation in fallow land both in personal and community forest

Option B

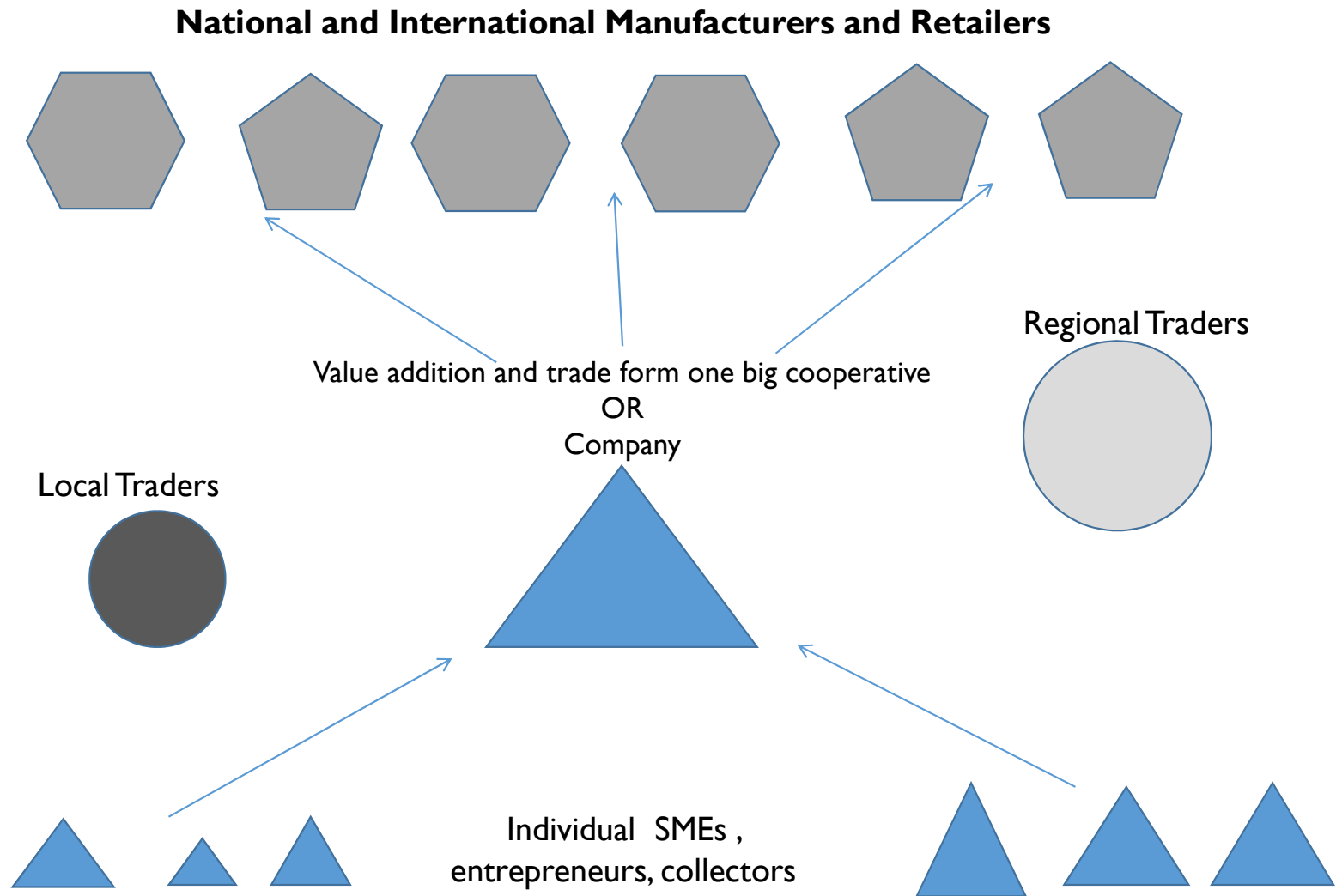
- ☐ Establishment of a private company in share holding basis in PPP model
- ☐ Also include the pocket areas other than Marma Rural Municipality
- ☐ Soap manufacturing in local level targeting to local market, Ghee sell to Kathmandu traders
- ☐ Area Expansion: Chiuri plantation in fallow land both in personal and community forest

NTFPs /MAPs TRADE : CURRENT PRACTICES OF NEPAL

Indian, American and European Companies selling to Retail Stores



Vision (Expected Scenario in the case of Chiuri and other potential herbs of Darchula)



Some Glimpse of Other Promising Sector

Soap nut



Sustainable Harvesting of Wild Aromatic Herbs and Distillation to Produce Essential Oils

SN	Company	Country
1	Provital-France	France
2	NATEVA	France
3	Fytosan	France
4	Golgemma	France
5	SAPAD	France
6	BAROSYL	France
7	Maienfeser Naturkosmetik	Germany
8	Azelis	UK
9	CTM Altromercato	Italy
10	Maharishi Ayurved	Netherlands
11	Union Nature Phyto- Inc/Divine Essence	Canada



Potential : Abies oil, Anthopogon oil, **Artemisia oil**, Juniper berry oil, Juniper needle oil, Jatamansi oil, Valerian oil

Other Potential Wild Herbs for Sustainable Management and Cultivation

Chiraita



Timur



Seabuckthorn



Kutki



Sugandhawal



Distinctive Local Faces Met During the Field Visit



Team Work Wins the Game



Thank You