



# Commodity Chain Analysis for wild mushrooms

(A Country Case Study from Bhutan)

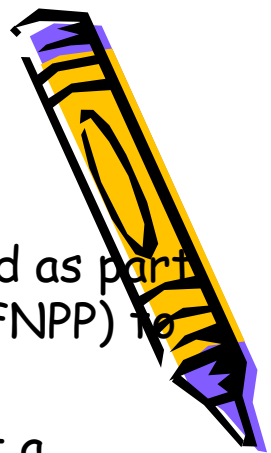
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# Back ground

- The pro poor Mushroom Commodity Chain Analysis was conducted as part of an initiative by the FAO- Netherlands Partnership Program (FNPP) to address Bhutan's food security issues.
- Various studies have also shown that poorer communities exhibit a higher dependence on mushrooms, particularly during the lean agricultural season
- It has particular importance in areas in high altitude areas or in difficult terrain where agriculture is limited or is located far away from the urban centres.
- 23% of the population is supposed to live below the poverty line the majority being in the rural areas
- The results of these analyses is expected to help devise programs for further development of this commodity to bolster food security in the country. This study focuses on the wild mushroom commodity chain with special focus on Matsutake mushroom

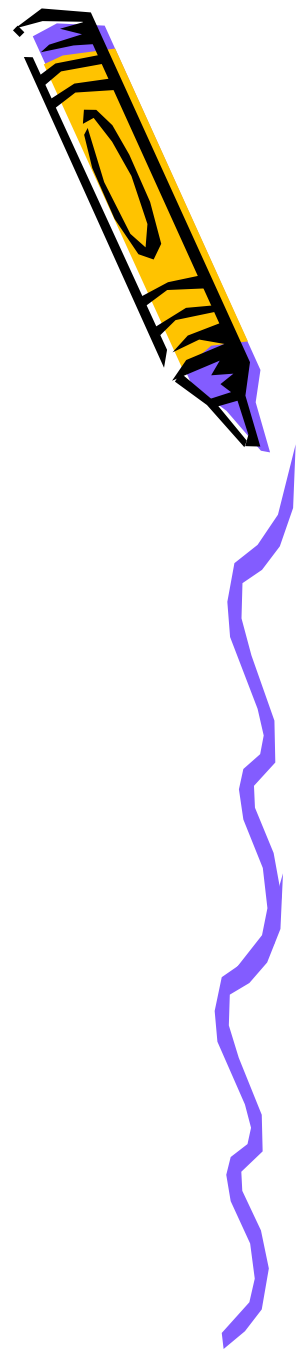


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# Sample size of Mushroom collectors interviewed

#	District (Geog)	No. HH
1	Gasa (Laya)	30
2	Thimphu (Genye)	30
3	Paro (Dotey)	25
4	Punakha (Kabjisa)	15
5	Wangdiphodrang (Bjena)	10
6	Bumthang (Ura)	30
7	Chukha (Bongo)	10
Total no. of farmers interviewed		150



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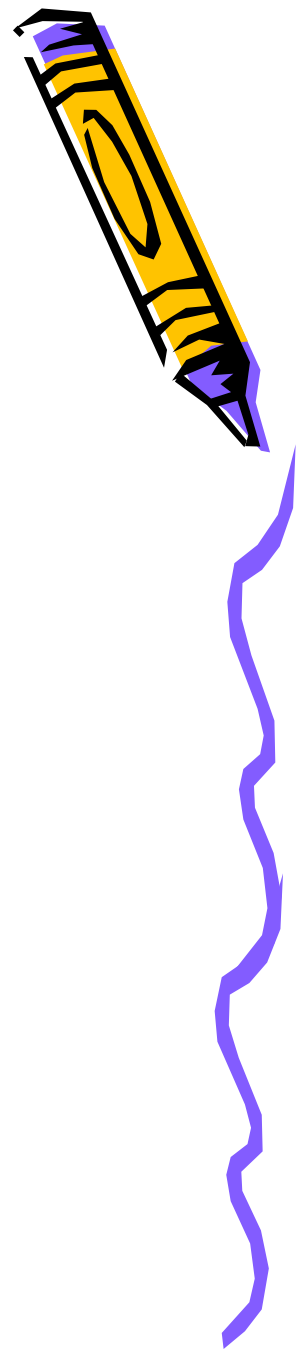


# Mushroom collection





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# Popular edible mushroom species in the country



#	Local name/Common names	Scientific name
1	Sangay Shamong/Matsutake	<i>Tricholoma matsutake</i>
2	Sese shamong/Chantarelles	<i>Cantharellus cibarius</i>
3	Naki shamong/Oyster mushroom	<i>Pleurotus ostreatus</i>
4	Sili shamong/ Yellow Oyster	<i>P. Cornucopia</i> var. <i>citrinopileatus</i>
5	Soke shamong/ Wild oak mushroom	<i>Lentinula edodes</i>
6	Kashi Ngala shamong/Shimeji	<i>Lyophyllum shimeji</i>
7	Bjili namcho/Wood ear	<i>Auricularia auricula</i>
8	Bjichu kangroo/Coral mushroom	<i>Clavaria</i> spp.
9	Gah shamong	<i>Russula delica</i>
10	Dhungshing shamong/Gypsy	

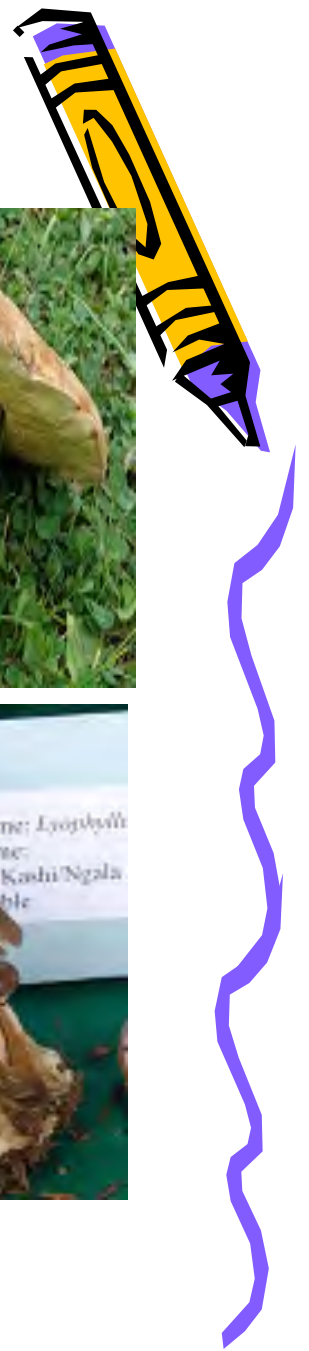


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# Wild edible mushrooms



Scientific Name: *Lyophyllum*  
Common Name:  
Local Name: Kashi Ngala  
Edible



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# Details of the Quantitative Analysis

## Farmers

Input costs

Labor: family and hired

Sold: through which channel, at what price

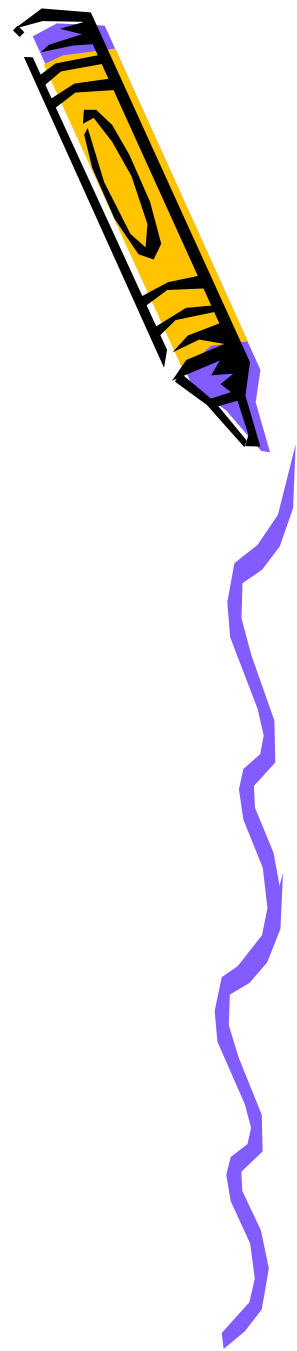
Home consumed, gifts

## Other Operators

Qty purchased at what price

Qty sold at what price

Costs involved



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# Overview of findings

- Mushroom is very important in the earnings of the people (livelihood and food security)
- Origin of Matsutake mushroom trade is traced back to one lady called Aum Kuchum in 1988 Geney
- Individual farmer's income from the sale of Matsutake is highly variable depending upon experience and presence of able bodied family members; in Geney the income varies from Nu.10,000 to Nu.85,000
- The farmers in Ura and Shingkar under Bumthang Dzongkhag are also highly dependent on mushroom collection for their cash income and employment
- The income in 2006 is within the range of Nu.2000 to Nu. 20, 000 per season in Ura.
- There is opportunity of promoting the post harvest processing, packaging and product development of mushroom from remote districts



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# Mushroom sellers



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# Overview of findings

## Share of income from mushroom and agriculture

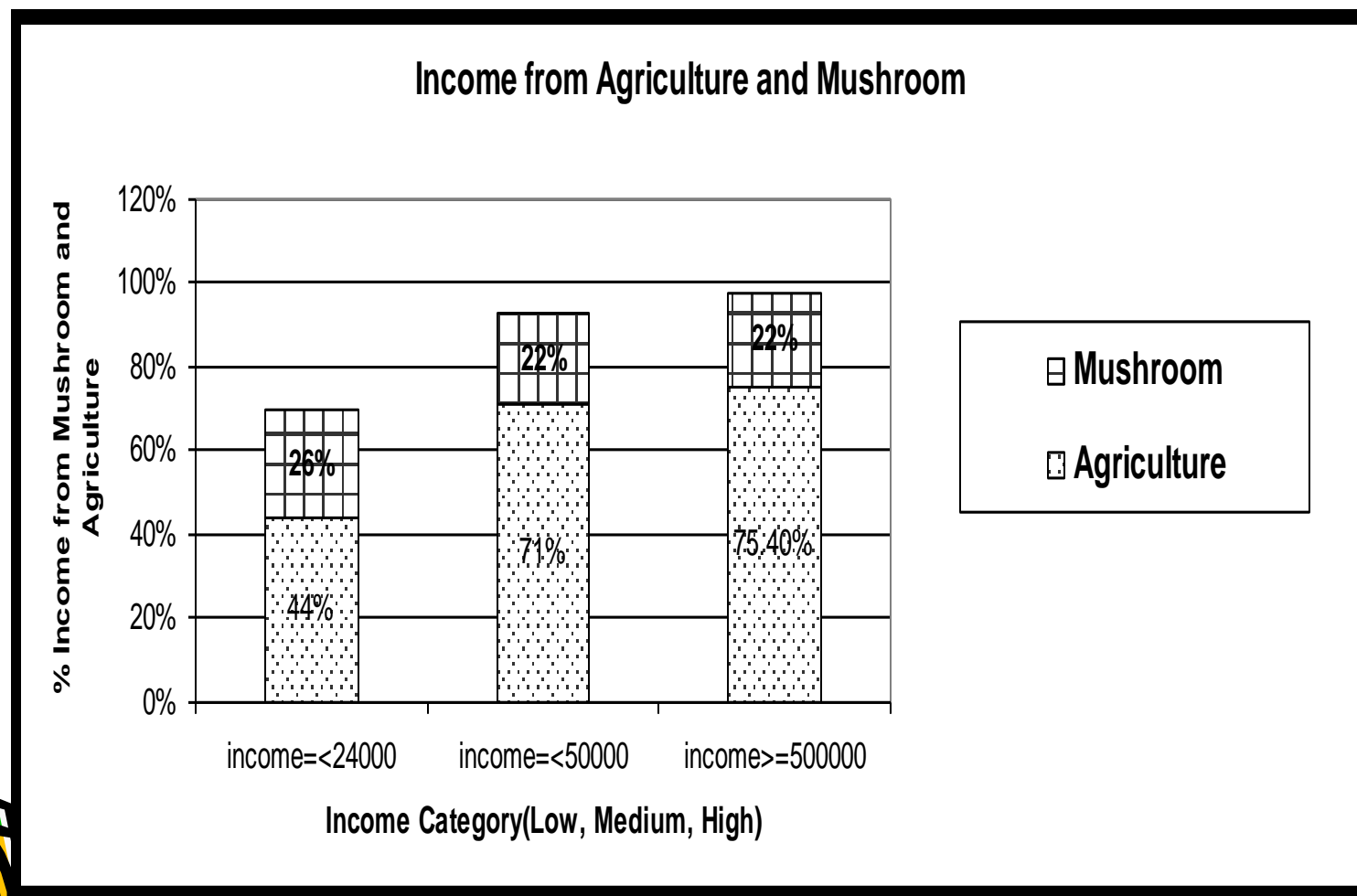
	Ave.Income (Nu.)	% income from mushroom	% income from Agriculture
Geney	48,426	43	58
Dotey	47,221	20	63
Kabjisa	6,493	27.5	23.9
Bjena	22,788	27.5	82
Ura	55,816	12	81
Chukha	5,913	13	38

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# *Income category (Low, Medium and High) from Agriculture and Mushroom*



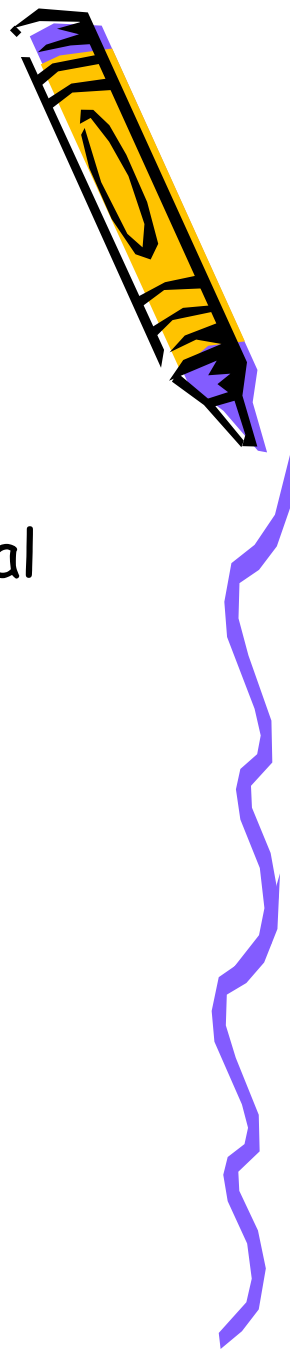
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# Utilization of income

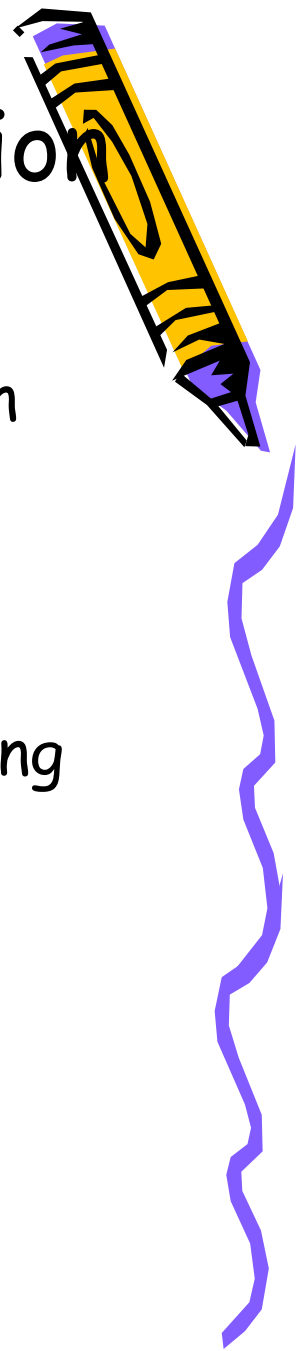
- Matsutake mushroom- major source of cash income to the farmers.
- The farming is highly subsistence (small land holdings, mostly dry land and tough geographical conditions).
- For children's education
- For buying food (rice, oil, veg, etc)
- For buying household items and clothing
- For buying farm tools and farm machineries
- For buying CGI sheets for roofing
- For buying fencing to protect their crops
- For buying oxen to plow the field



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# Benefits from mushroom collection



- Income from the nearby locality (forest)
- Food security and nutrition (home consumption and sale)
- Improved rural livelihood
- Community mushroom tourism
- Improved social status and incentive for staying in the village
- Employment in the lean season
- Poverty alleviation



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# Functional Analysis- agents involved in the chain

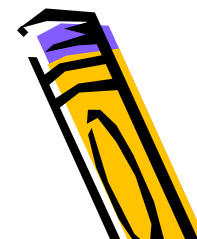


Stage	Agent	Species	Function
Input	Forest Range Office	Mainly Matsutake	Give Permit
	NMC	All	Technical Input: <ul style="list-style-type: none"> <li>• Opening date for collection</li> <li>• Advice on sustainable collection</li> </ul>
	Extension Agent	All	Farmer mobilization for technical input
Collection/ Production	Collectors/farmers	Mainly Matsutake mushroom	Collection of mushroom
	Collectors/farmers Group	Mainly Matsutake mushroom	Collective selling to agents
Post Harvest	NMC		Post Harvest Management till forest gate
Marketing	Agents	Mainly for Matsutake mushroom	i) Organize Collection at Forest Market by mobilizing farmers ii) purchase on behalf of exporters
	Exporters	Mainly for Matsutake mushroom	Export mainly to Japan and other countries
	Retailer	All	Retailing in Local market
Processing	Dept. of Revenue and Customs/ BCCI	Mostly Matsutake mushroom	Give permit for exports/trading
	Processor/Canner (Farmer group)		Selling through traditional way of drying
	NMC		Technical and financial support for processing and labeling





# Flow Analysis



% of Production			
100%	7,530.51	Total Production	
10%	741	Home Consumed fresh	
25	404	Home consumed dried	
5%	356	Gift	
79%	5976	Qty Sold	
	% sales	5976	Quantity Sold
	50%	3,000	Export market
	50%	2976	Fresh or Dried; sold in niche market



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# Resource Availability and Sustainability



- Decline in the availability of economically valuable mushrooms -too many collectors, destruction of environment, decrease of dead wood in the forest (due to wood chip exports),
- Unhealthy collection and transport (usage of plastic bags)
- Mushroom production depends on rainfall (quantity and time);
- People from outside the community not concerned about sustainability (open access)



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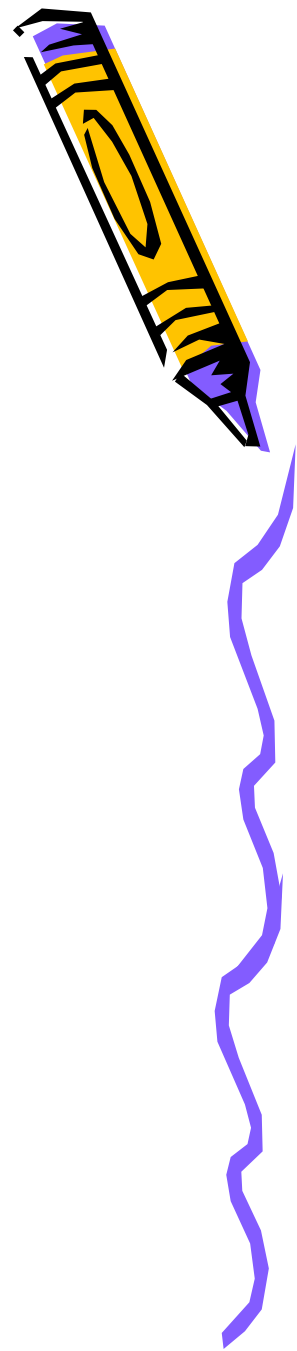
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# Meetings, discussions, trainings and awareness campaign



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# Technical Performance and Gaps



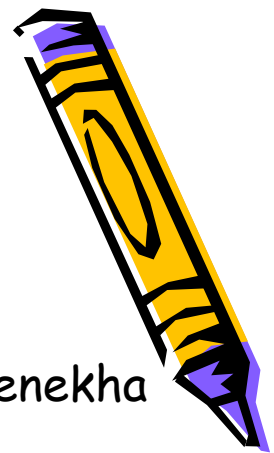
- **Input stage:** extent of royalty, extension services, role of NMC
- **Production Stage:** availability of resource over time
- **Processing Stage :** Post harvest losses: Cold storage, Transport, Packaging, Availability of processing machines (e.g dryers, canning machines). Important for communities who live far away from the urban centres and the airport
- **Marketing:** Lack of market information, Transportation issues, scattered production, not enough surplus for marketing, Diversification of product, Exploring export markets, Exploring Internal Market



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# Challenges, gaps and opportunities in Production



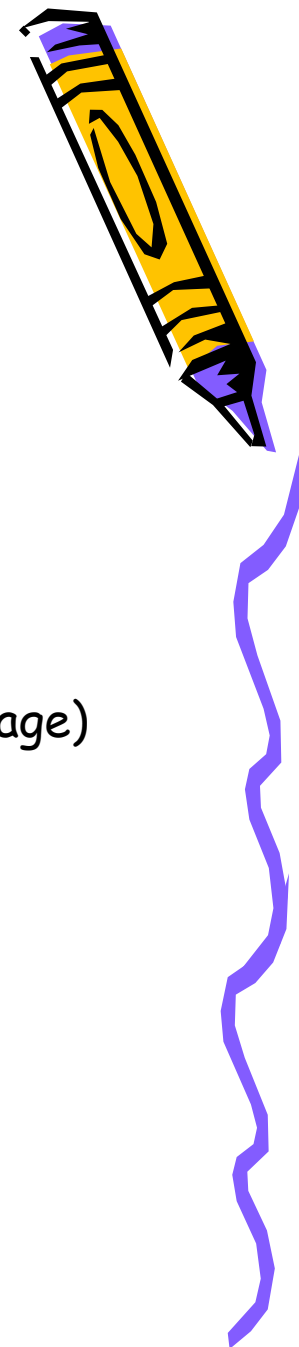
- **Challenges and gaps**
  - Limited production information
  - Open access to outsiders for mushroom in all areas except Genekha
  - Poor implementation of guidelines
  - No existing methodology for resource assessment
- **Opportunities**
  - Allocate mushroom collection area to each village
  - Formation and formalization of groups for mushrooms management-strong community organizations
  - Strong collaboration between community and entrepreneurs is often the Key
  - Enforce the implementation of harvesting guidelines
  - Training of collectors in sustainable harvesting and group mobilization
  - Establishment of Regional mushroom center to support sustainable harvesting and community groups
  - Support from DoF, DoA, NGOs in training, information mediation and technical know-how on resource management
  - Supportive policies, resources (financial & human) and infrastructures



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# Challenges, gaps and opportunities in Processing



- **Challenges and gaps**
  - Limited storage facilities by collectors and exporters
  - No processing by collectors
  - Quality lost during storage and transport
  - Collection not regular by the agents
  - Adulteration in the past years
  - Packaging for export only
  - Improvement of packaging and transport facilities cold storage)
- **Opportunities**
  - Training on storage and processing
  - Establish storage facilities
  - Training on post harvest handling and transport
  - Improve quality and quality control
  - Learning from other countries on storage and processing



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# Processing mushroom



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# Mushroom Collection and GNH



- Mushroom collection contributes to the four pillars of GNH (sustainable socioeconomic development, Preservation and promotion of culture and tradition, conservation of environment and good governance)
  - Seasonal mushroom collection and sale provides income generation and off season employment which in turn help mitigate rural urban migration
  - help conserve tradition and culture
  - by protecting the mushroom forest contributes to preservation of forest
  - formation of mushroom management groups improves peoples participation in the local government



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