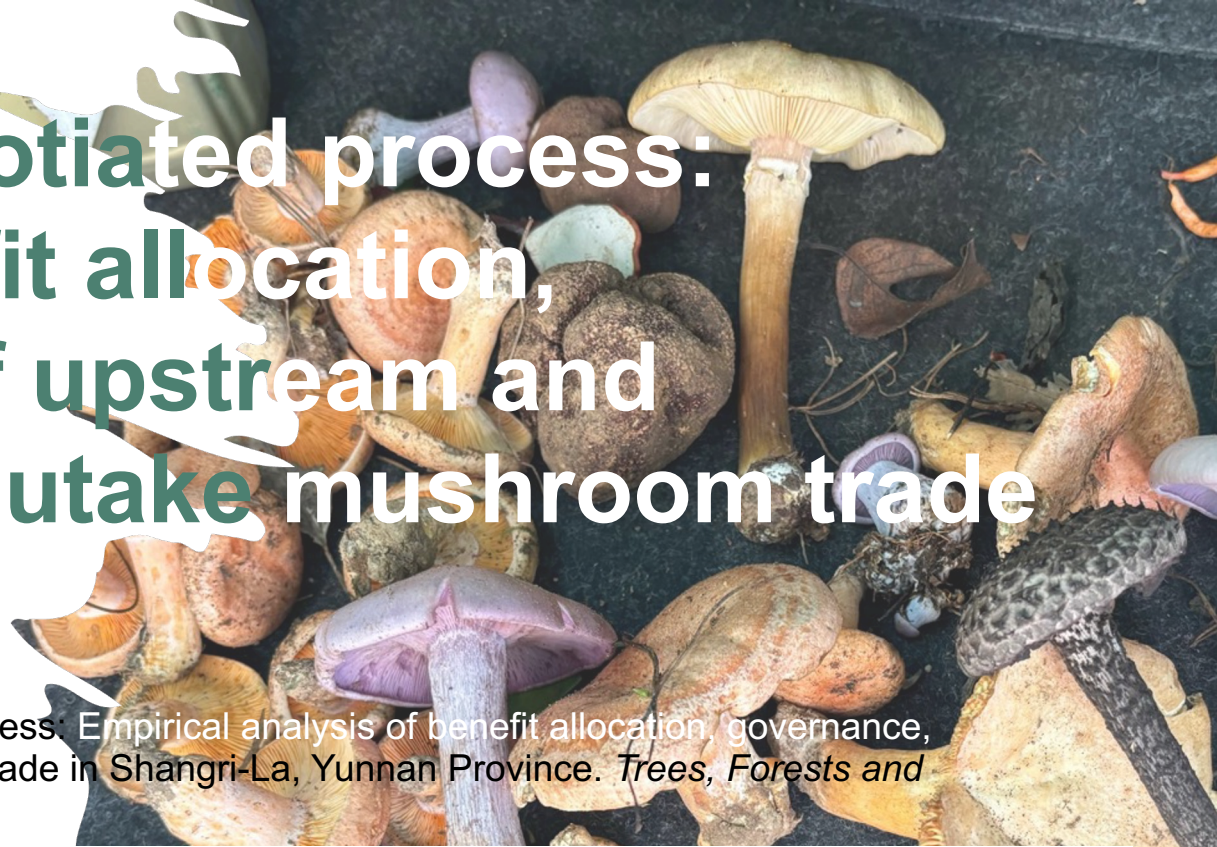


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Commodity chain as a negotiated process: Empirical analysis of benefit allocation, governance, and powers of upstream and downstream actors in matsutake mushroom trade in Shangri-La, Yunnan Province

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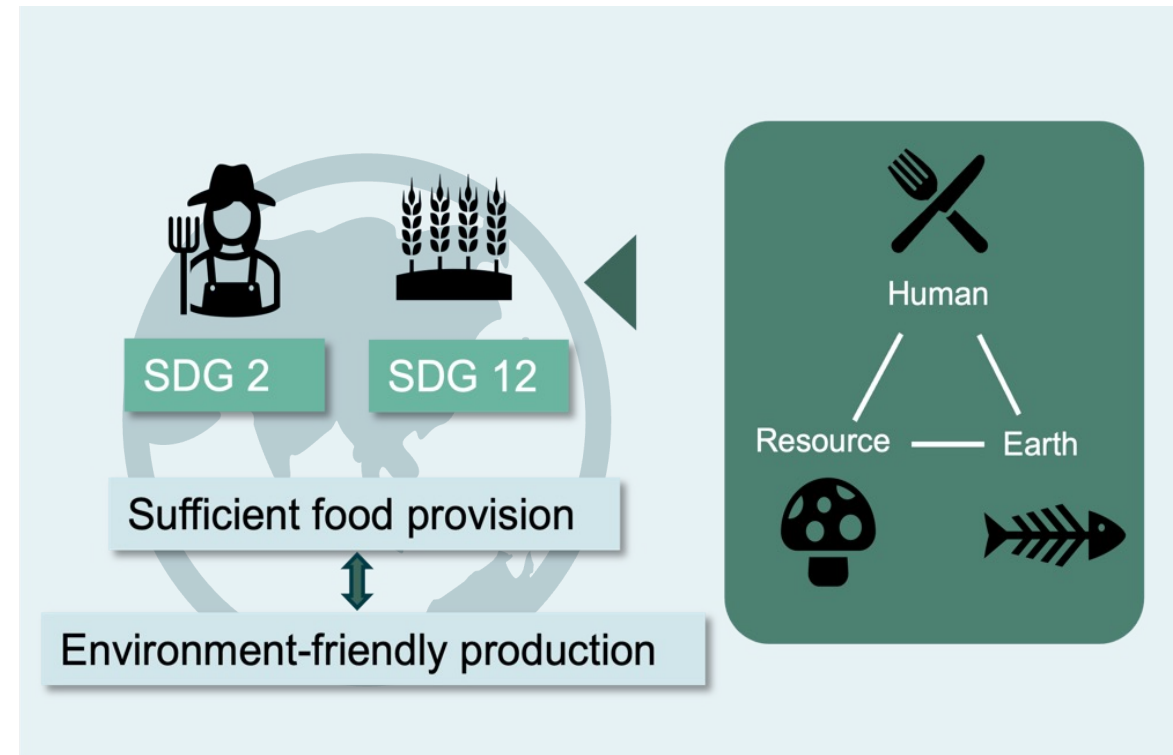
The high-quality matsutake mushrooms collected by local villagers.  
Photo in Yunnan Province. September 2024.

## Background

The need for advanced agricultural wild food production management (Le et al., 2022).

- Matsutake is a highly valued non-cultivable wild mushroom, **an important income source** for local people in rural areas in China. (commodity & “commons”)
- In 2023, China's exports of matsutake-related products to Japan were **435.24 tonnes** and the export value was US\$24.4213 million, accounting for **66.35%** and **76.18%** of the country's total exports respectively\*.
- Yunnan Province is one of the **main production places** of Matsutake in China. The 2023 exported amount of Matsutake in Yunnan was **397.75 tonnes**, US\$22,305,500 \*. (overhunting→regulation)
- Research on the commodity chain of non-timber forest products in China is still limited.

\*<https://www.weihengag.com/home/article/detail/id/24588>,. (In Chinese)



# Background

## • Objective

Identify the roles of various participants in the matsutake production and distribution process, illustrating the development of commodity chain construction.

## • Three research questions

- 1 **Who** are the main participants?
- 2 **How** do information, funds, and other factors, such as formal and informal institutions, circulate among different participants?
- 3 **What** impacts do institutional and sociocultural factors have on the matsutake commodity chain?

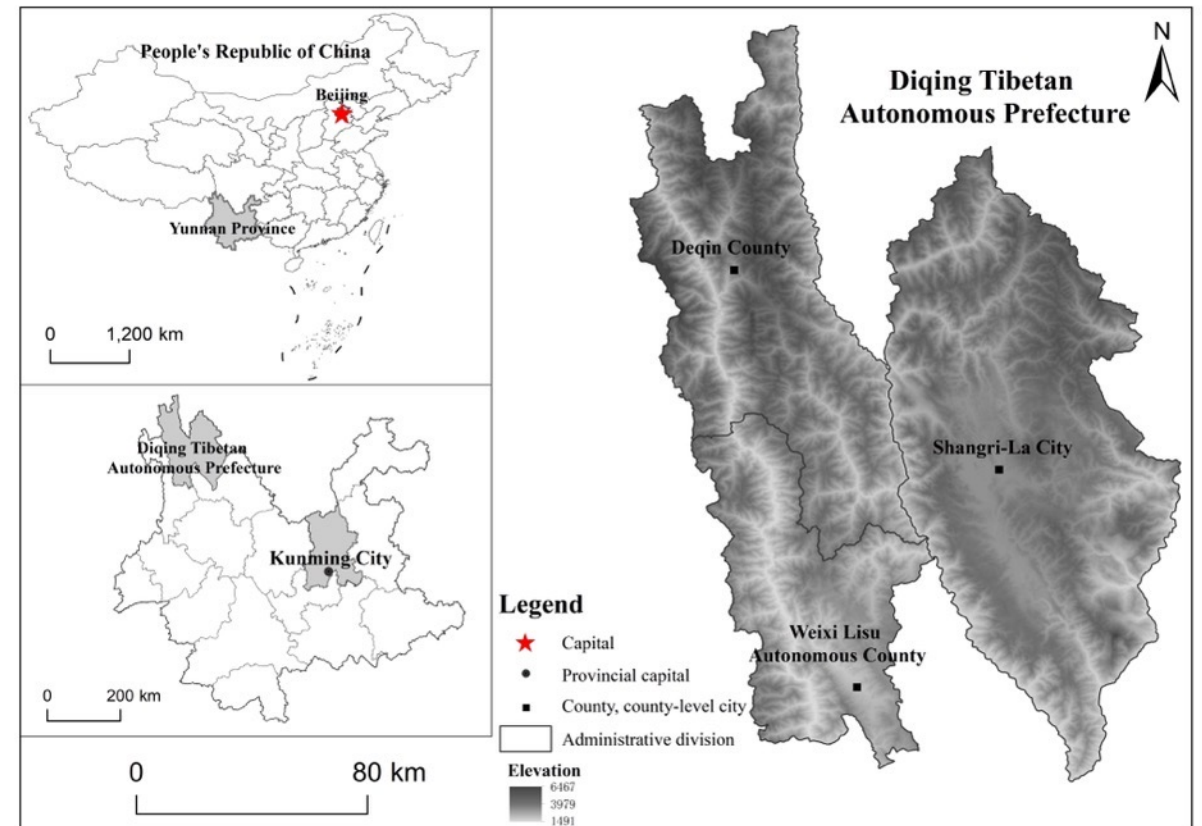
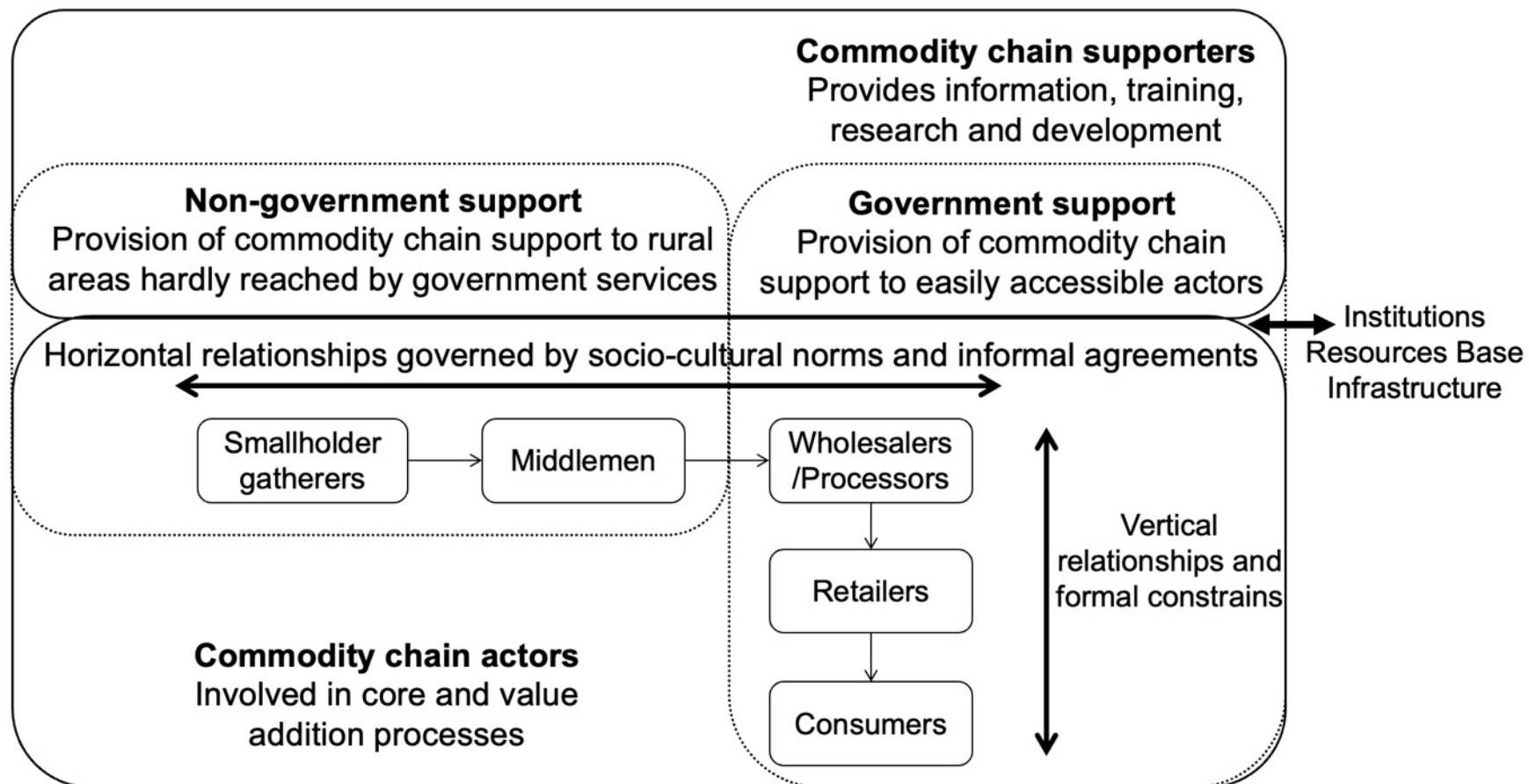


Fig.1. Study site, Shangri-la, Yunnan Province. (雲南省)

# Methodology

## • Framework



## • Interviews

54 interview transcripts.

**Data collection:** sub-structured questionnaire, observation. **Analysis:** context analysis, statistical analysis

In September 2024, supplementary research was conducted in Shangri-la.

Fig. 2. Commodity chain research framework Adapted from Matias et al. (2018).

# Results

## • A) Supply chain map

Five stages:

- ① Harvesting
- ② Transportation
- ③ Grading
- ④ Packaging
- ⑤ Sales (both domestic and global).

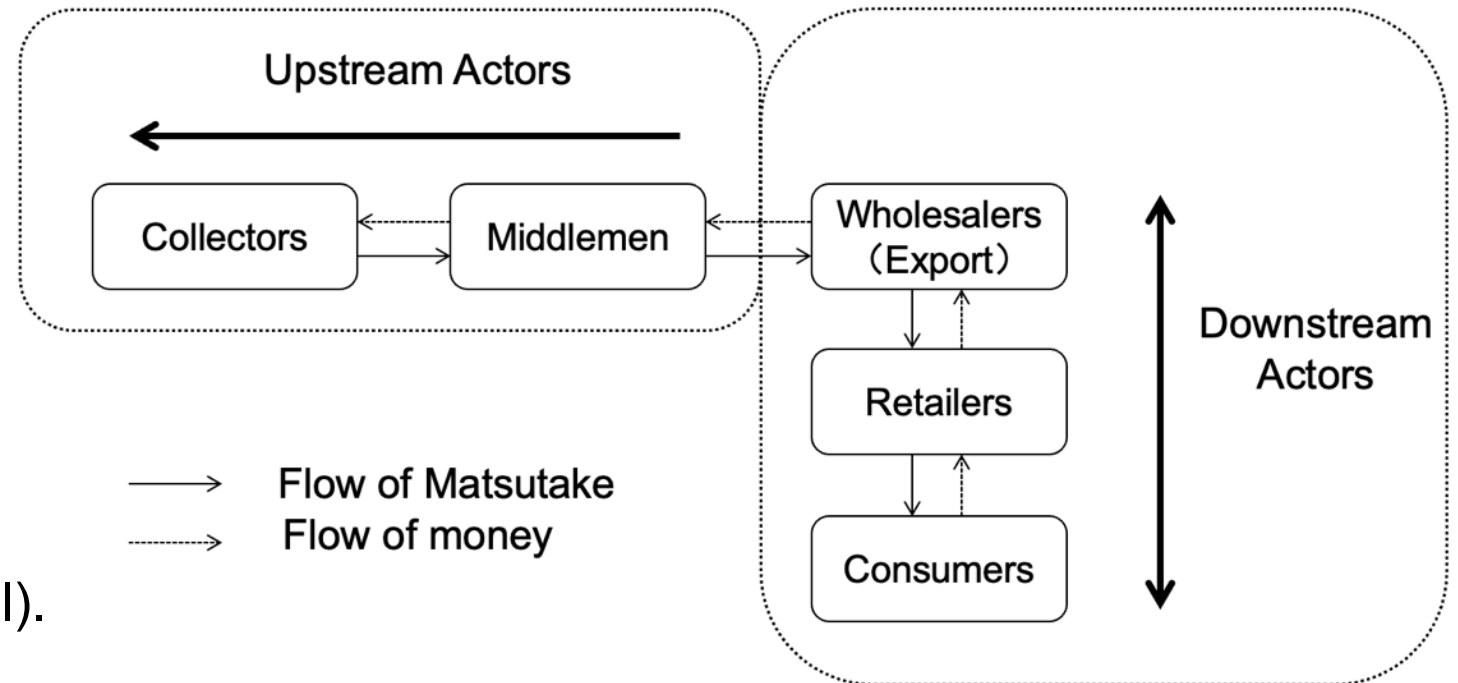


Fig. 3. Commodity chain of matsutake in the Yunnan Province.

# Results

## • B) Benefits allocation

The selling prices for retailers are higher than prices for collectors.

There are significant disparities in the income earned by participants at different stages.

Tab 1 Selling prices of matsutake for collectors and retailers.

Grade	Selling price of collector (CNY/kg)	Length/cm	Selling price of retailer (CNY/kg)
Exceptional	>400	3-5	300-320
Grade 1	200-300	5-7	400-550
Grade 2	100-200	7-9	600-680
Others	20	9-12	600-1000

Data source: Fieldwork in May 2022, selling prices are all for the year 2021.

## Results

- **C) Livelihoods analysis**
  - Resource-based industry

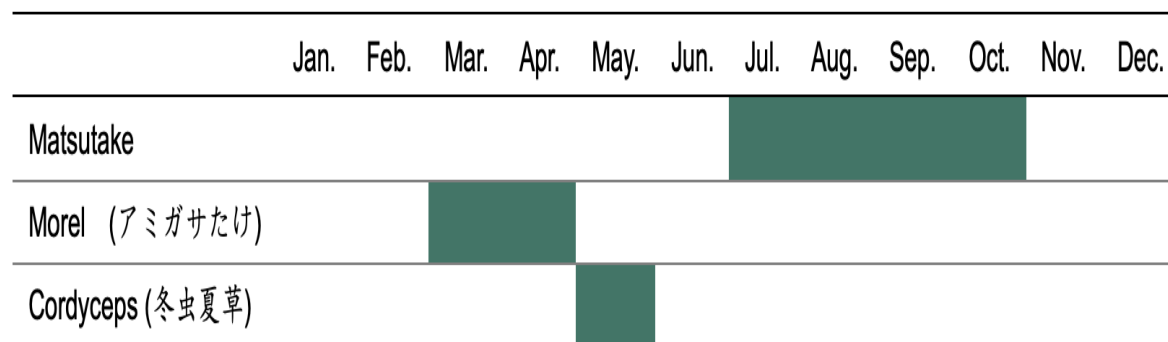
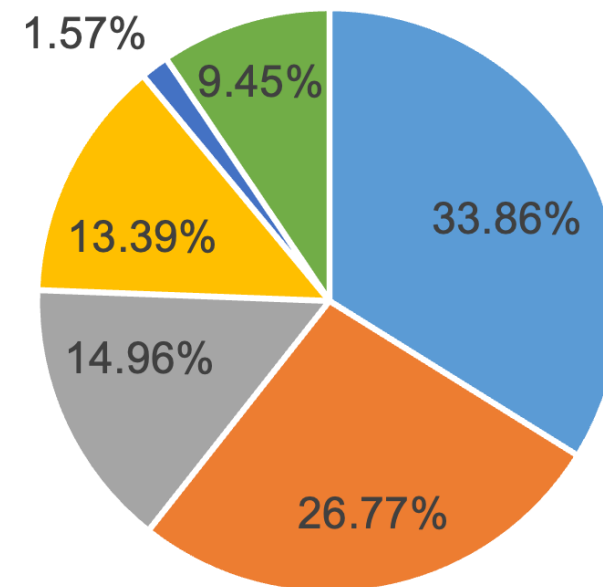


Fig. 4. Seasonal calendar for wild mushroom collection by local people.

Data source: Fieldwork in May 2022.



■ 0-20 ■ 20-40 ■ 40-60 ■ 60-80 ■ 80-100 ■ no answer

Fig. 5. Distribution of people of the proportion of household income from matsutake mushroom collection in annual household income (%) in villages X and Y.

Data source: Matsutake Habitat Conservation and Propagation Project 2021 Community Survey, provided by the Baima Snow Mountain Nature Reserve.



## Results

### • C) Livelihoods analysis

- The role of regulations and institutions

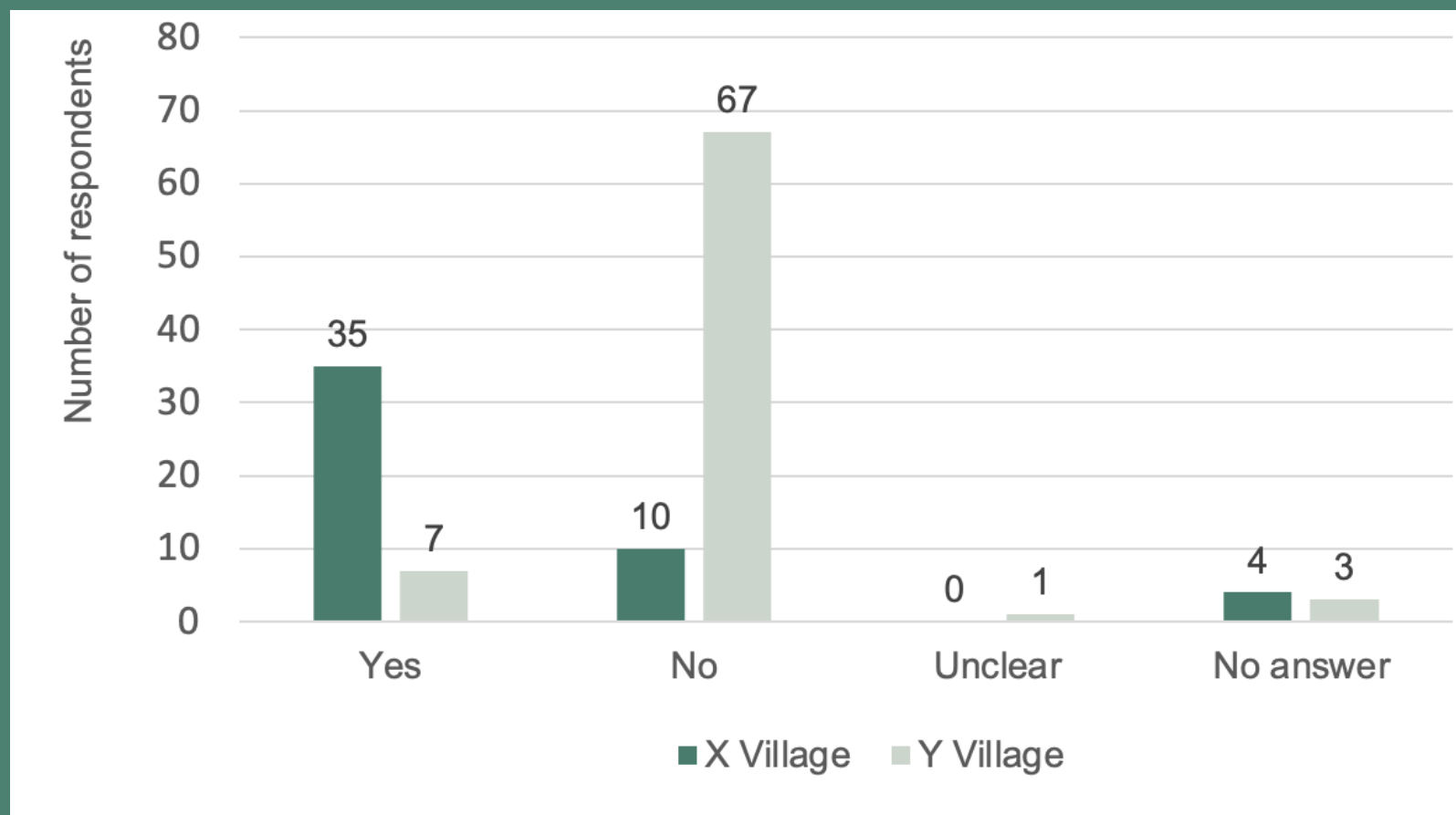
**X Village:** There are regulations

**Y Village:** No regulations

Fig. 6. Local regulations from villagers in villages X and Y.

Data source: Matsutake Habitat Conservation and Propagation Project 2021 Community Survey, provided by the Baima Snow Mountain Nature Reserve.

Q: In your village, are there any regulations to standardize the collection and sale of matsutake?



## Results

- **C) Livelihoods analysis**
  - Commercialization effect on matsutake participants

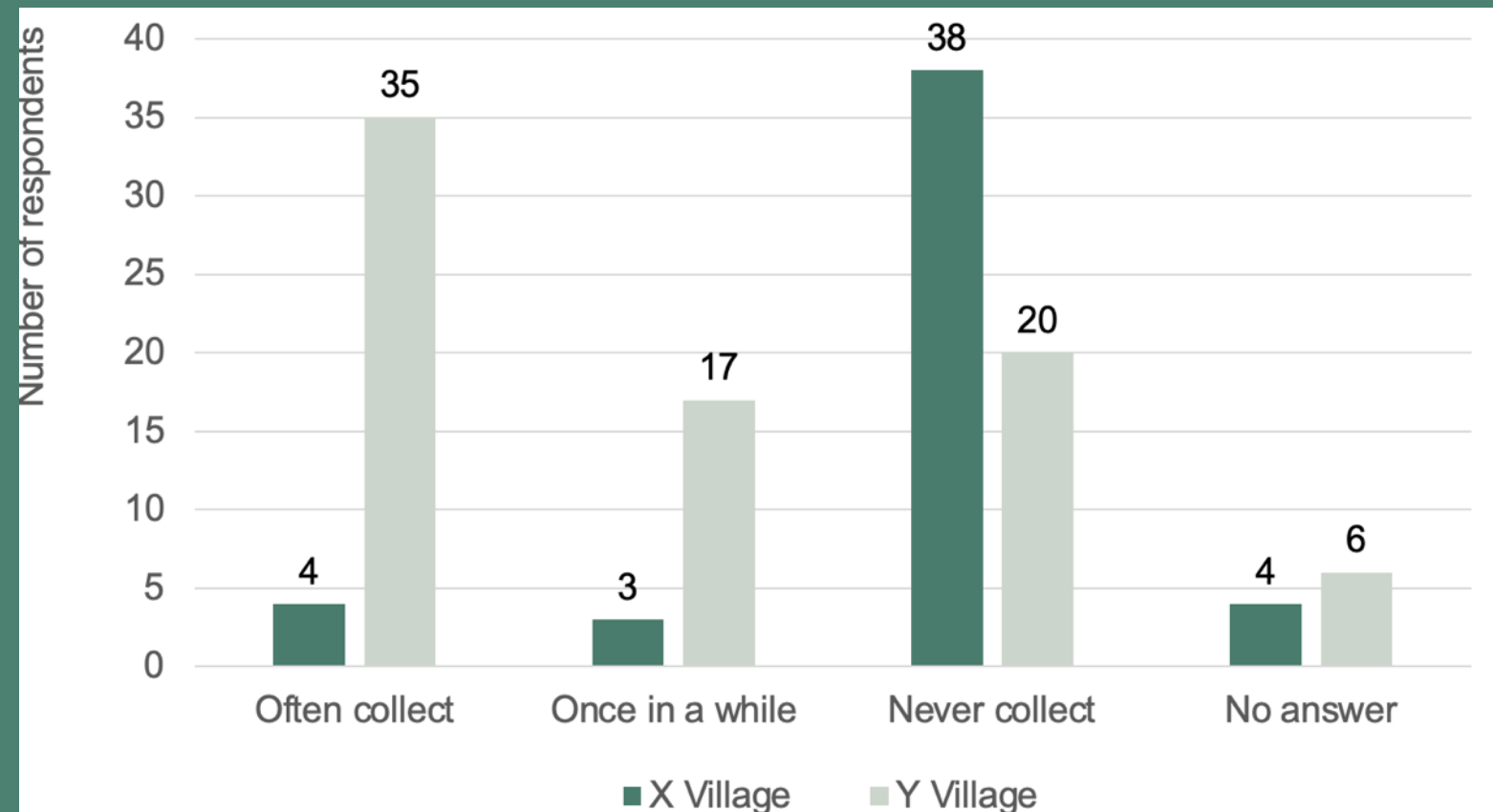
**X Village:** remote area

**Y Village:** transportation

Fig. 7. Collection of immature matsutake mushrooms from villagers in villages X and Y.

Data source: Matsutake Habitat Conservation and Propagation Project 2021 Community Survey, provided by the Baima Snow Mountain Nature Reserve.

Q: Do you collect matsutake which the length under 5cm?



## Discussion

- **A) Power, benefits and equity**

- Local mushroom pickers often have little knowledge of the subsequent distribution and sales process.
- Information is a major barrier to entry for participants in any NTFPs market (Alexander, et al., 2002).
- Two potential quality-selection mechanisms: natural geographical factors & needs for food safety and nutrition.

## Discussion

- **B) Traditional knowledge, culture and resource reservation**
  - Matsutake mushrooms cannot grow in forests that receive no human intervention and are under absolute protection (Tsing, 2015).
  - Current attempt to protect traditional knowledge: register the local matsutake as Geographical Indication (GI).
  - Other practice examples: mushroom tourism in China & Satoyama in Japan.

## Discussion

### • C) Possible supply chain

To ensure the sustainability

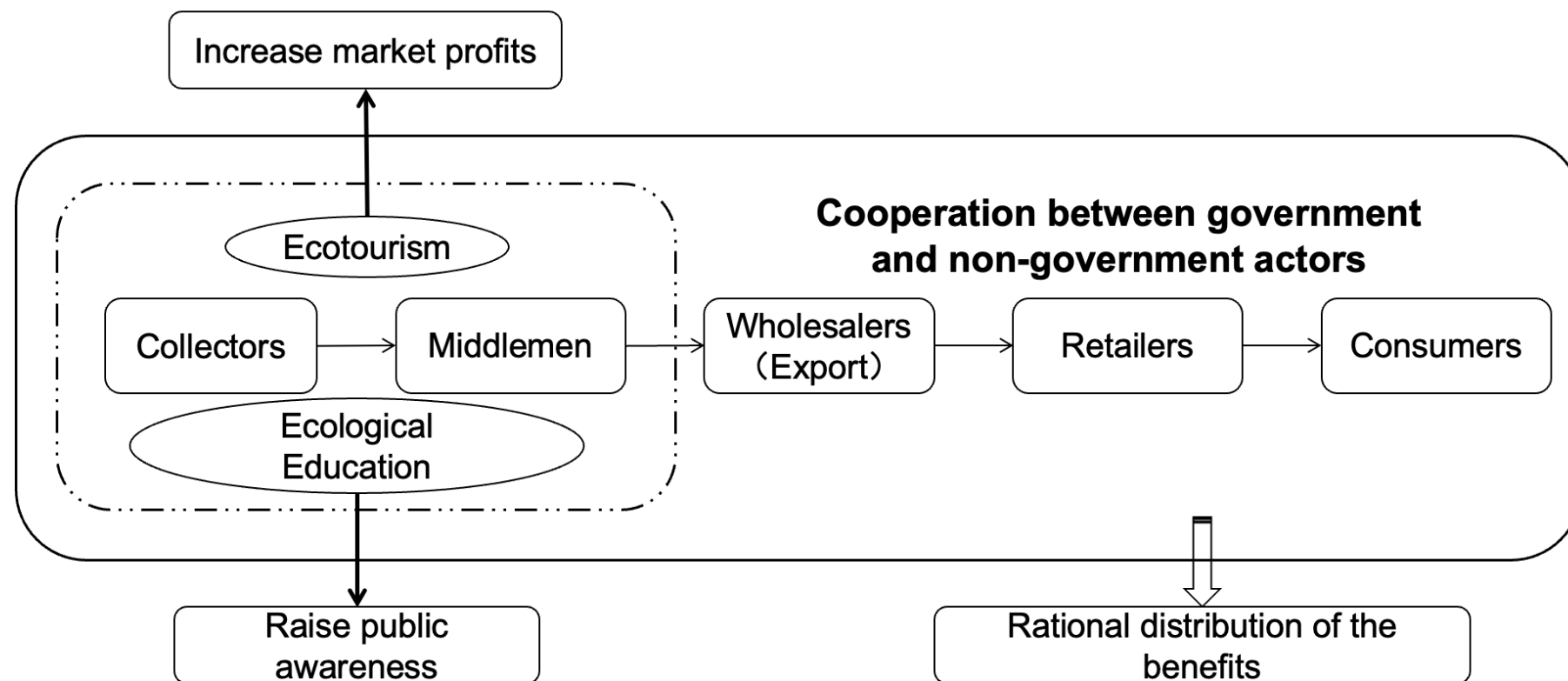


Fig. 8. Possible matsutake commodity chain pathways.

## Conclusion

- 1** Collectors are disadvantaged by the various profit margins along the matsutake commodity chain.
- 2** Government and NGOs impact the creation of a stable market order.
- 3** Equity and traditional knowledge should be emphasized in commodity chain management.

## Main references:

- Alexander, S., Pilz, D., Weber, N., Brown, E., Rockwell, V., 2002. Mushrooms, trees, and money: value estimates of commercial mushrooms and timber in the Pacific Northwest. *Environ. Manag.* 30, 129–141. <https://doi.org/10.1007/s00267-0022610-1>.
- Le, T. T., Kieu, X. H., Behl, A., & Pereira, V. 2022. Building up more sustainable food supply chains: Implications for sustainable development. *Journal of Cleaner Production*, 378, 134650.
- Matias, D.M.S., Tambo, J.A., Stellmacher, T., Borgemeister, C., von Wehrden, H., 2018. Commercializing traditional non-timber forest products: an integrated value chain analysis of honey from giant honey bees in Palawan, Philippines. *Forest Policy Econ.* 97, 223–231. <https://doi.org/10.1016/j.forpol.2018.10.009>.
- Tsing, A.L., 2015. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton University Press.

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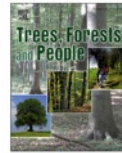
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Thank you very much!

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