Livelihood diversity, dietary diversity and resilience: Findings from rural households in the Bolivian Amazon

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Introduction

Pando (Bolivia)

- Rural area of low economic importance
- Low population density
- Dominated by tropical rainforests (Western Amazon Basin)
- Subsistence agriculture and extractive activities are widespread
- Region undergoing rapid change

Fig. 1: Impressions from rural communities (a & b) in Pando (Bolivia) (photos: M. Finckh).

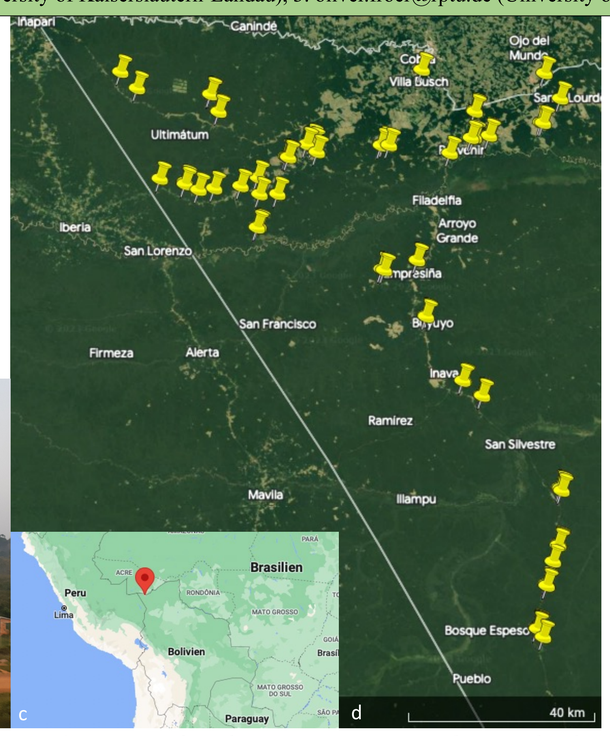

Fig. 2: Location of Pando (c – Google maps, 2023) and geographical distribution of the interviewed households (d - Google Earth, 2023).

Methods

Target group → rural households in Pando (Bolivia)

Data collection

- Two subsequent quantitative household surveys
  - PRODIGY-survey → socioeconomic (purposive sample n=300)
  - Household Dietary Diversity-survey → dietary diversity (24h recall), food production and resilience (randomized subsample n= 113)
- Personal interviews by local interviewers and author

Data analysis

- Descriptive quantitative analyses and regression analyses
- Calculation of indices
  → Household dietary diversity score (HDDS)
  → Livelihood diversity indices (Shannon-Wiener- and Simpson Index)
  → Production diversity score (PDS)

Results - Livelihood diversity

- Median annual household income ca. 6,756 US$
- Average land ownership = 304 ha/household
  → predominantly forest

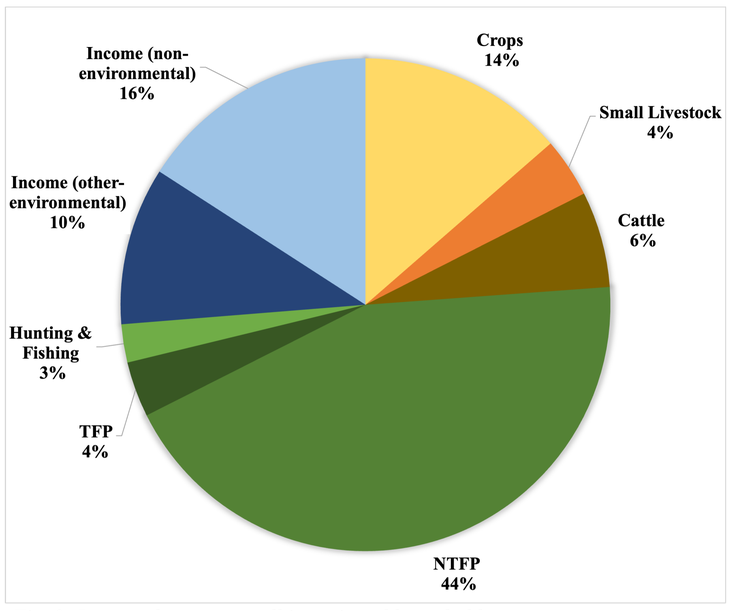

Fig. 3: Income share across all interviewed households (aggregated into eight activity classes).

- High importance of income from Non-timber forest products (NTFP)
  → Mainly Brazil nut collection
- Typically one main- and several side-activities
- Local characteristics and income levels influence the livelihood composition

Results - Dietary diversity

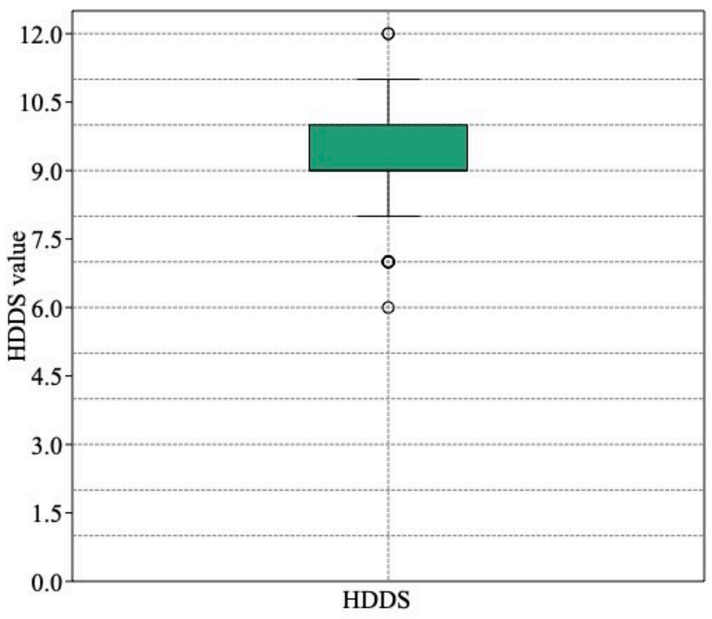

Fig. 4: Boxplot showing the distribution of the household dietary diversity scores (HDDS) in the household sample.

- Average HDDS → 9.25 out of 12 Food Groups
- No regional or income-based differences
- Main differentiation in the consumption of eggs, fish, legumes and dairy products
- High share of protein consumption from wild sources in 24h recall
  → 30% of all households consumed bushmeat
  → 30% of all households consumed local fish

Main Findings

- ➢ Outstanding share of income from NTFP
- ➢ High overall HDDS
- ➢ High share of bushmeat consumption
- ➢ Big potential for diversified diets based on subsistence agriculture, food gathering, hunting and fishing
- ➢ No statistical connection between HDDS and livelihood diversity, specific livelihood activities or socioeconomic status

Fig. 7: A typical meal in Pando covering the food groups 1; 2; 5; 10 & 12 (e) and an example of local bushmeat consumption (f -yellow-footed tortoise) (photos: M. Finckh).

Conclusion

- ➢ Livelihoods in Pando are rooted in environmental activities
- ➢ Big potential for yet underutilized NTFP e.g. Acai
- ➢ Food from agricultural and wild sources is key to household nutrition and strengthens resilience
- ➢ High share of wild-protein consumption and evidence of dwindling wildlife populations call for an acknowledgement of the importance to local livelihoods and nutrition and sustainable management
- ➢ Signs of a general level of well-being in the region based in the current access and availability of natural resources
- ➢ Rural household´s livelihood resilience is imbedded in land assets, environmental livelihood activities and environmental coping strategies
- ➢ The local resilience could be increased through diversification into non-environmental sectors, climate-smart agriculture and sustainable resource management

Results - Production diversity

- 70% of all households get at least 50% of their food from own activities
- widespread subsistence farming, food gathering, hunting and fishing
- Average production diversity score = 7.6 / 12
  → Potential to contribute significantly to a diversified diet

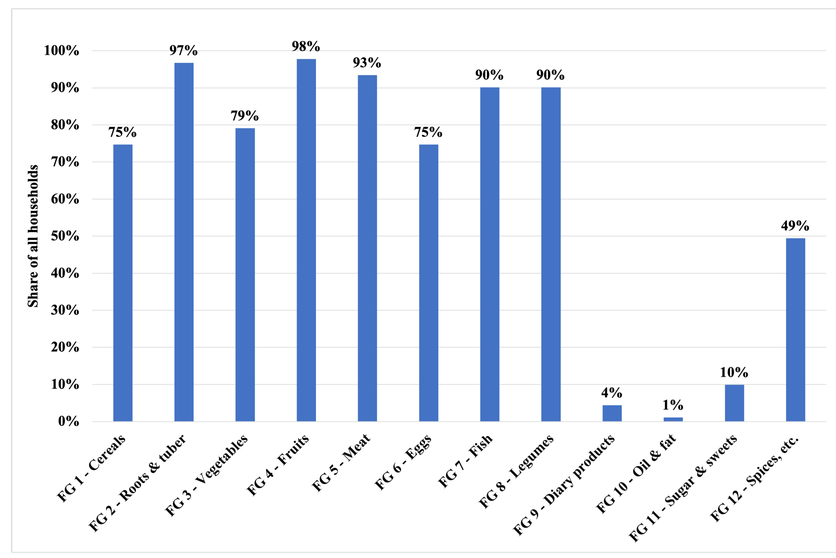

Fig. 5: Share of households contributing to each FAO-food group through own production, food collection, hunting and fishing.

Results - Resilience

- 89% of all households affected by at least one socioeconomic or environmental shock in the last 5 years
  → Affects rural livelihoods and diets

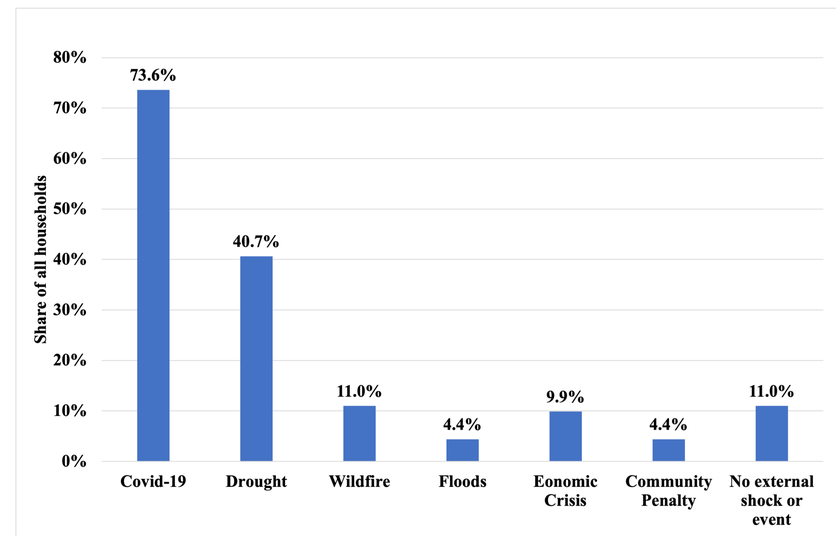

Fig. 6: Share of rural households affected by adverse socioeconomic and environmental events during the last 5 years.

- Impacts on income, food expenditures and / or food production

Household reaction:

- Consumption smoothing
- Socioeconomic shocks → increase in agricultural production, hunting, fishing, and food gathering
- Environmental shocks → System adaptation e.g., measures against droughts, fires.
- Both livelihoods and coping strategies have environmental focus
  → higher resilience against socioeconomic shocks
  → lower resilience against environmental shocks

Acknowledgement: This study was realized in the framework of the PRODIGY project, funded by the German Federal Ministry of Education and Research (BMBF), and supported by the chair for Environmental Economics at the University of Kaiserslautern-Landau.

Presented at Tropentag 2023 in Berlin