

# Trends in the Human Appropriation of Net Primary Production for Ethiopia between 1961 and 2013 and their Impacts from a National and Local Perspective

Mag. Harald Grabher

## Guiding research questions:

- What dynamics and drivers of land use change can be observed for Ethiopia between 1961 and 2013?
- Which long-term trajectories of the Human Appropriation of Net Primary Production (HANPP) can be observed for Ethiopia between 1961 and 2013?
- Are current patterns of land use and biomass extraction sustainable?
- To what degree do trends delineated by the HANPP for Ethiopia reflect ground realities within rural villages in the district of Siraro?

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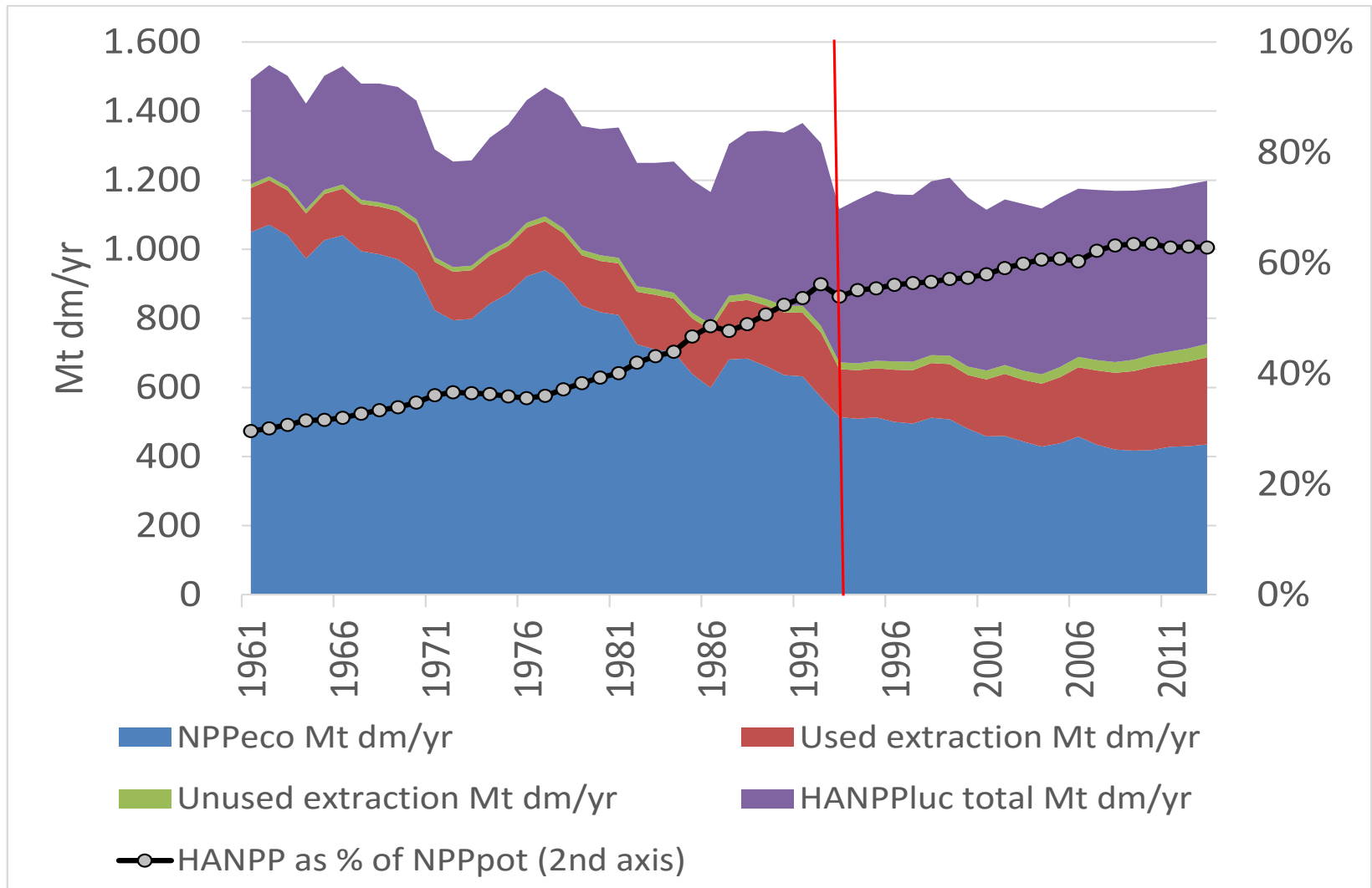
## Data used:

1. FAO sources for two distinct datasets: a) Ethiopia including Eritrea, from 1961 to 1992 and b) Ethiopia excluding Eritrea from 1993 to 2013; other data based on Krausmann et al. (2008)
2. Baseline household survey data from 2015 of a land management and social development project entitled “Siraro Integrated Livelihood Vulnerability Reduction Project (SILVR)” from 172 randomly selected HHs in a targeted watershed.

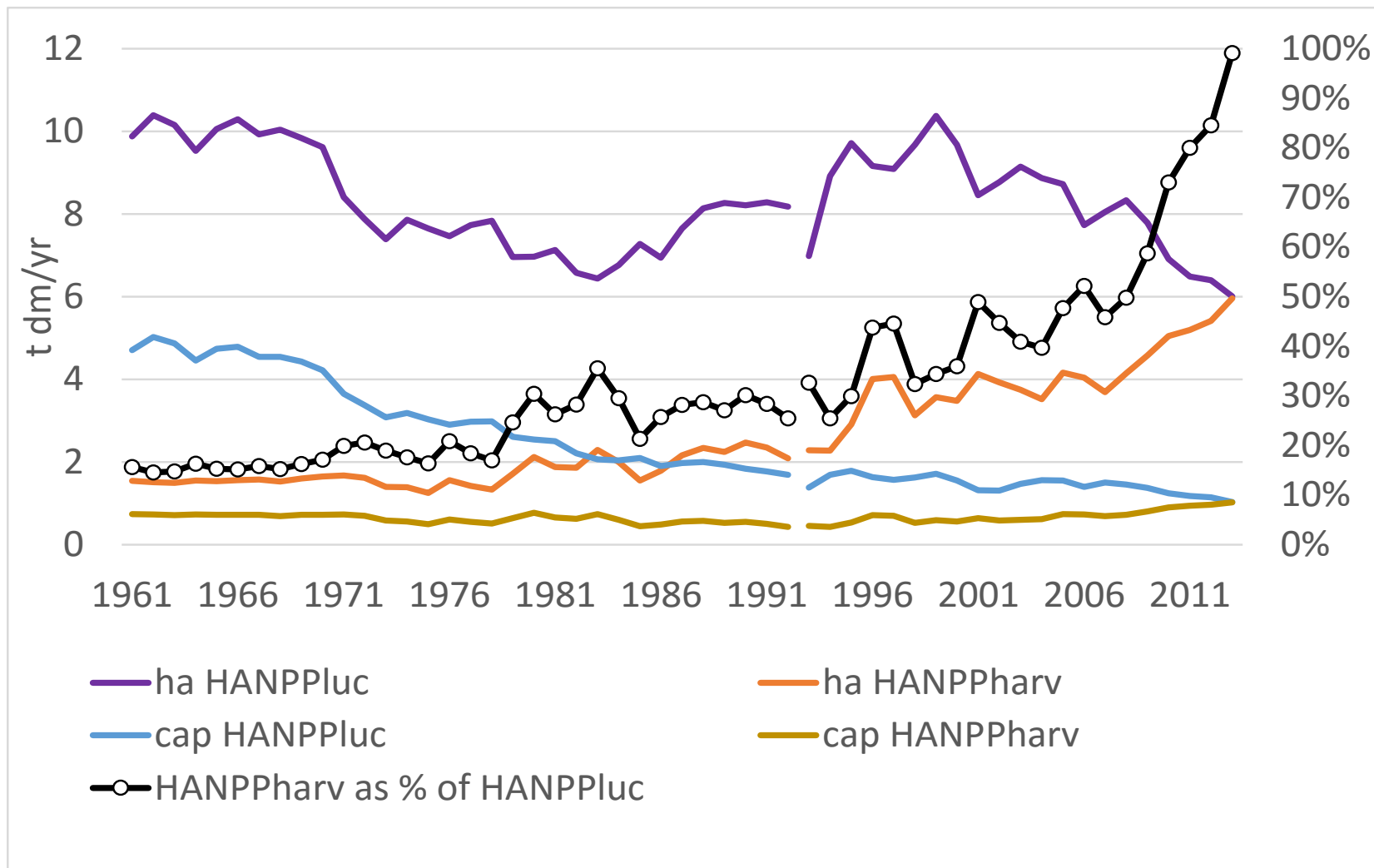
## Methods used:

- HANPP methodology and indicator set
- Analysis of structured interviews based on a questionnaire

# Trends for Ethiopian HANPP in % of NPPpot



# Trends of land use efficiency gains for cropland in Ethiopia between 1961 and 2013



# Siraro survey findings

- 75% of HHs own between 0.5 and 1 hectare of cultivable land, **10.5% less than 0.5 hectare**
- 87% of the respondents report that food shortage occurs in years with normal rainfall, 54% of report an average **“lean period” of 3-4 months.**
- 59% of identify a **shortage of available cultivable land**, 23% mention low production yields and 21% list a lack of capital as the main reason for food supply deficit
- 78.6% attribute low agricultural production to **decreasing rainfall amounts**, 62.5% to **reduced soil fertility**, 24.4% to a lack of farmland. Chemical fertilizers are used by 59%.
- 92% see land **degradation and deterioration of natural resources** as challenge; 46% of the respondents see **deforestation** as the main cause of soil erosion
  
- 74% of the households keep livestock, almost **50% holding cattle. 25% of all cattle are oxen**, but **only 5% have sufficient access to oxen** to prepare their cropland.
- 78% of all cattle-owning households prepare dairy products. The average milk yield in Siraro amounts to **only 1.7l/animal/day.**
- **66% do not sell livestock normally.** 71% rely on communal grazing land and 99% use crop residue to feed their animals.
- **77% use fuel wood** as their main source of energy for cooking while **13% also use crop residues.**

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## Target group for the research findings:

- Governmental/non-governmental development actors in Ethiopia
- Donor organizations in the global North and South
- The scientific community concerned with sustainable land management systems and soil degradation/erosion, especially in Ethiopia