Is Deforestation Interfering with Integration?
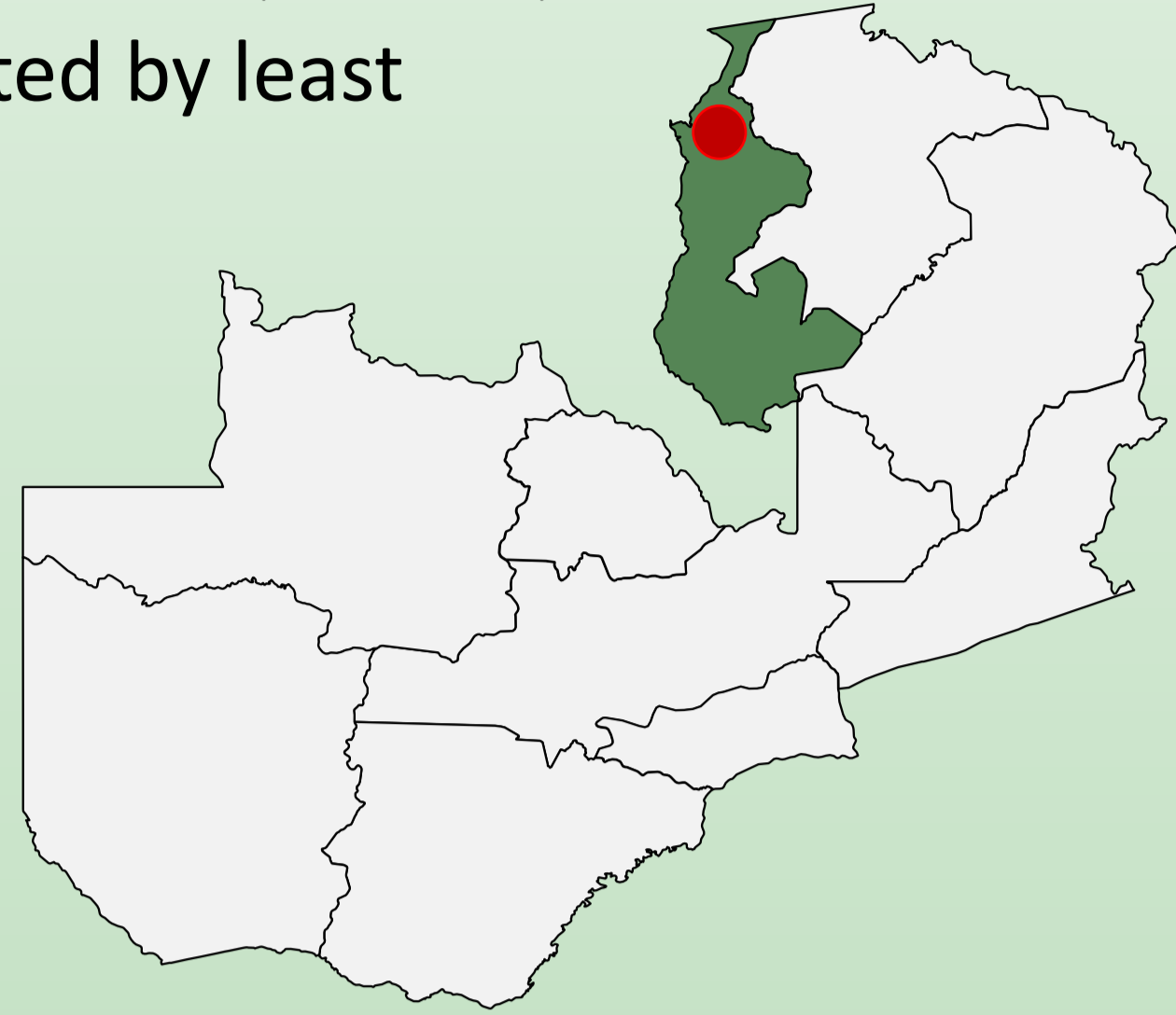## The Case of the Mantapala Settlement in Rural Zambia

IUW

Global Overview
- New high of forcibly displaced people in 2022 (UNHCR, 2022b)
- Around 22% of global refugees are hosted by least developed countries (UNHCR, 2022b)
- Numerous positive effects of refugees on their host community (health facilities / schooling / infrastructure / economy / ...) (d'Errico et al., 2022; Zhou et al., 2022)
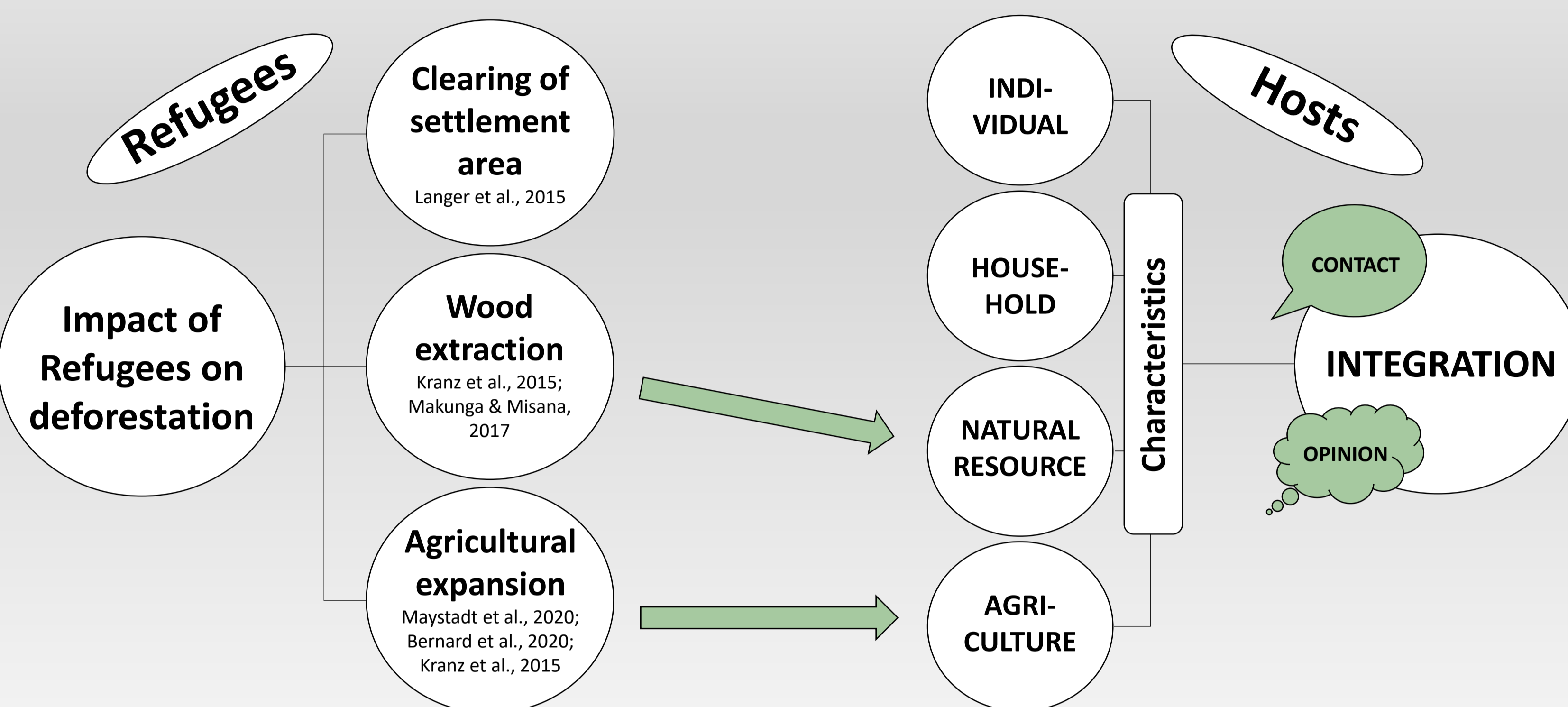
➡ Local integration of central importance

Zambia
- Zambia hosts 65,000 refugees in 3 settlements (UNHCR & WFP, 2020)
- Citizens as well as refugees need assistance to meet food requirements (WFP, 2023)
- Country depends on agriculture & shows high level of deforestation (Gronau et al., 2018)
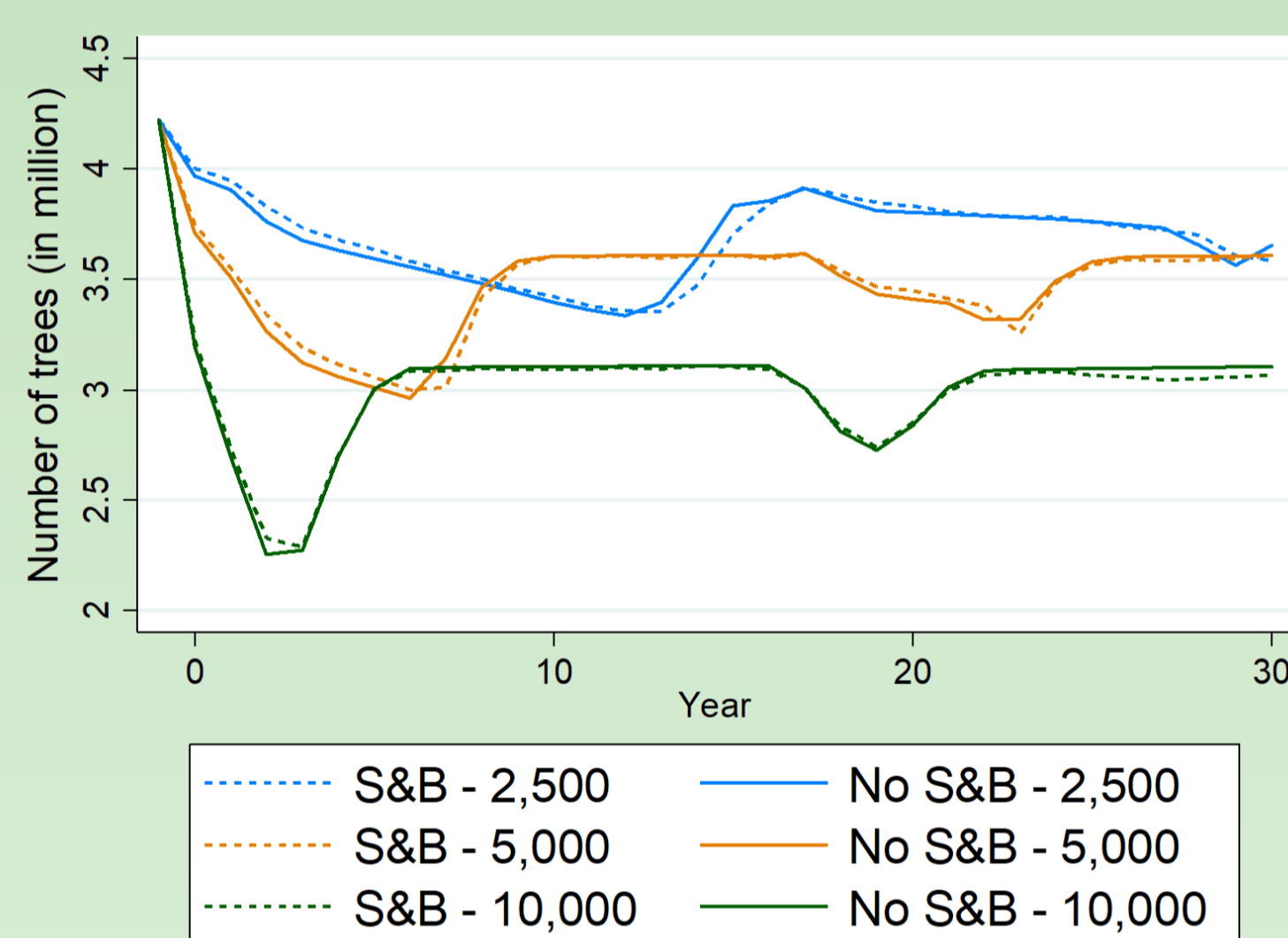
Mantapala refugee settlement established in 2018 (UNHCR, 2018)
- Refugees from Democratic Republic of Congo
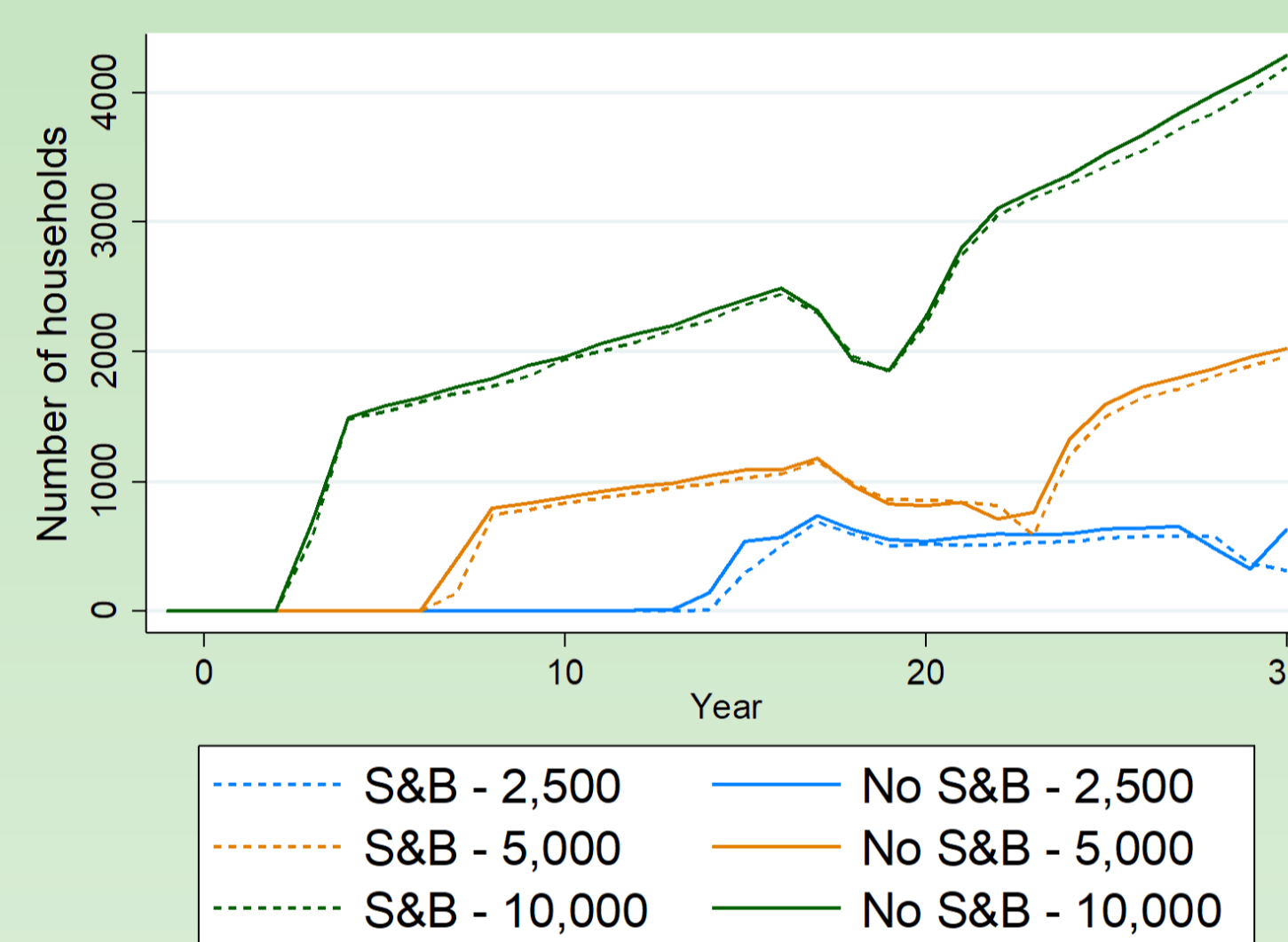- Census data of host community
- Host-refugee-ratio: 1 to 10

Refugees

- Impact of Refugees on deforestation
  - Clearing of settlement area (Langer et al., 2015)
  - Wood extraction (Kranz et al., 2015; Makunga & Misana, 2017)
  - Agricultural expansion (Maystadt et al., 2020; Bernard et al., 2020; Kranz et al., 2015)

Hosts

- INDI-VIDUAL
- HOUSE-HOLD
- NATURAL RESOURCE
- AGRI-CULTURE

Characteristics

CONTACT — INTEGRATION — OPINION

1 How are refugee settlements and host communities affecting forest resources in developing countries?

2 Which settlement capacity is sustainable in the forest context?

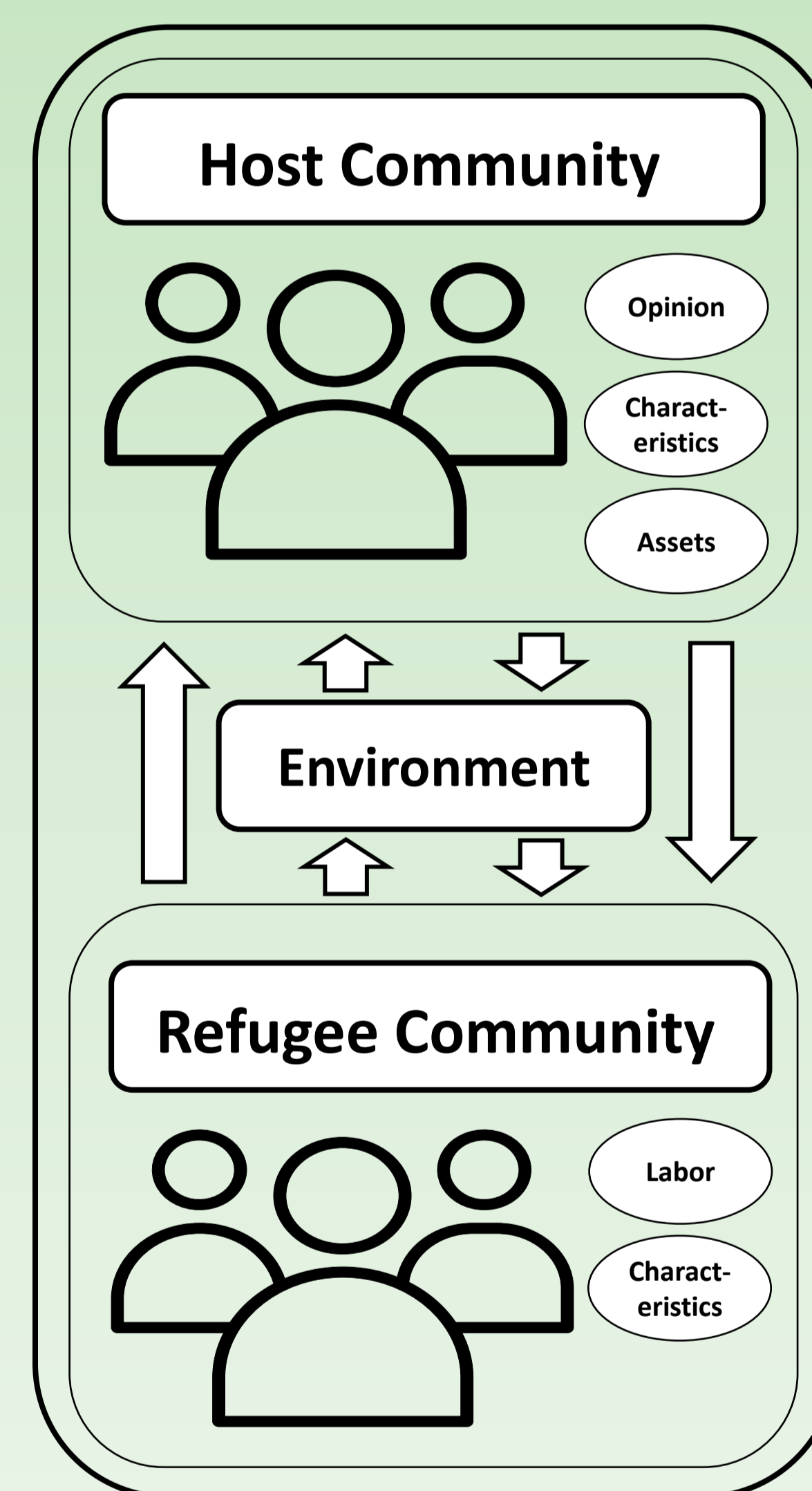**3** Are slash and burn activities intensifying or decreasing deforestation?

Number of trees in different slash and burn scenarios

Legend:
- S&B - 2,500 / No S&B - 2,500
- S&B - 5,000 / No S&B - 5,000
- S&B - 10,000 / No S&B - 10,000

Number of households with unmet needs

Legend:
- S&B - 2,500 / No S&B - 2,500
- S&B - 5,000 / No S&B - 5,000
- S&B - 10,000 / No S&B - 10,000

No Refugees
- Number of trees declining with and without settlement
- Slash and burn activities slow down deforestation without settlement

2,500 Refugees
- Refugees accelerate deforestation but settlement capacity seems still sustainable as most people are able to collect enough firewood
- Positive effects of slash and burn activities are not significant anymore

10,000 Refugees
- After only two years the first households are not able to fulfill demand for firewood
- Without external support successful integration is unlikely because of resource conflicts

Agent-based Modeling
(Wilensky & Rand, 2015)

Host Community
- Opinion
- Characteristics
- Assets

Environment

Refugee Community
- Labor
- Characteristics

- Agents exhibit certain characteristics and behavior rules
- Decisions while interacting with each other and environment
- Micro-level modeling can lead to emerging phenomena on macro level
- Predictions about future outcomes possible

Model is useful for prediction of future outcomes with different policy approaches

Labor cooperation and the corresponding increase in slash and burn activity is not able to slow down deforestation enough to ensure sustainable environment

The host community is not significantly affected by the forest resource shortage caused by the settlement, if land rights are clearly defined and enforced
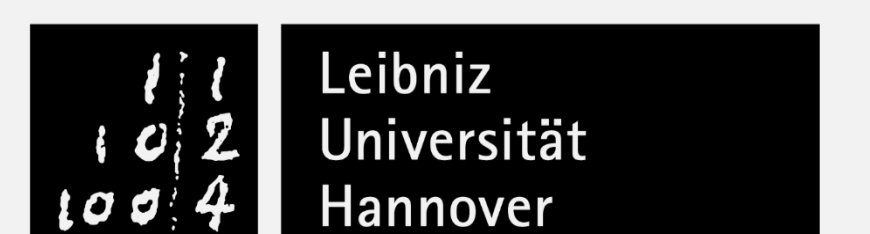
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