

The relative role of ecosystem services and disservices in rural livelihoods in the Eastern Cape, South Africa.

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ACES Conference, Dec 2018

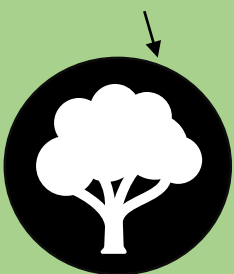
Introduction

- Surge in ES research
- Support central mantra – health and productive ecosystems underpin human wellbeing
- Positive framing of nature eclipsing effect

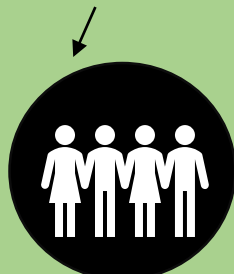
- EDS =

“the ecosystem generated functions, processes and attributes that result in perceived or actual negative impacts on human wellbeing”

Shackleton *et al.* (2016)*



Originate from:
environment



Impact on:
Human wellbeing

- Little debate, quantification or understanding of EDS and role in effecting human wellbeing not explored
- 0,6% of published ES recognise EDS (Campagne *et al.*, 2018)**
- Reality – in both rural and urban contexts
- Rural dwellers most vulnerable to EDS



- Yet a framework that contextualises both **+** and **—** not discussed

*Shackleton *et al.* 2016. Unpacking pandora’s box: Understanding and categorising ecosystem disservices for environmental management and human wellbeing. *Ecosystems* 19, 587-600.

**Campagne *et al.* 2018. Looking into pandora’s box” Ecosystem disservices assessment and correlations with ecosystem services. *Ecosystem Services* 30, 126-136.

Aim and Objectives

To investigate the relative roles of ES and EDS in rural livelihoods in the Eastern Cape province, South Africa

1

Identify ES and EDS that respondents recognise in more biodiverse and less biodiverse environments

2

Determine the perceived effects of ES and EDS and their relationship to respondents' wellbeing

3

Investigate trends in ES and EDS through time and why

4

Determine whether people modify their behaviours and livelihood strategies in preparation for or in response to EDS

Study Area

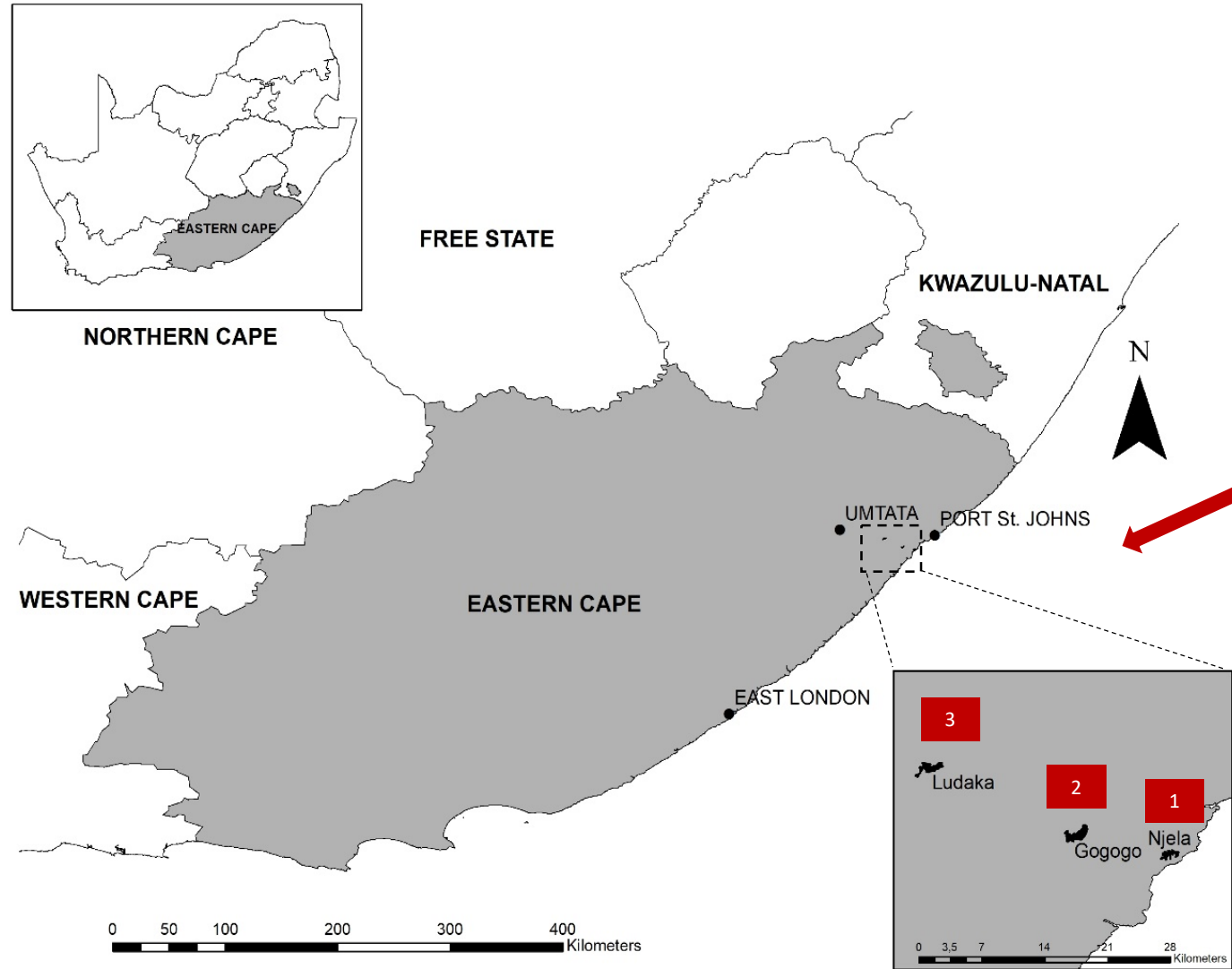


Figure 1: Location of Njela (1), Gogogo (2) and Ludaka (3) village (Source: ArcGIS 15/07/2016)



Figure 2a: Njela (Forest, grassland and marine)

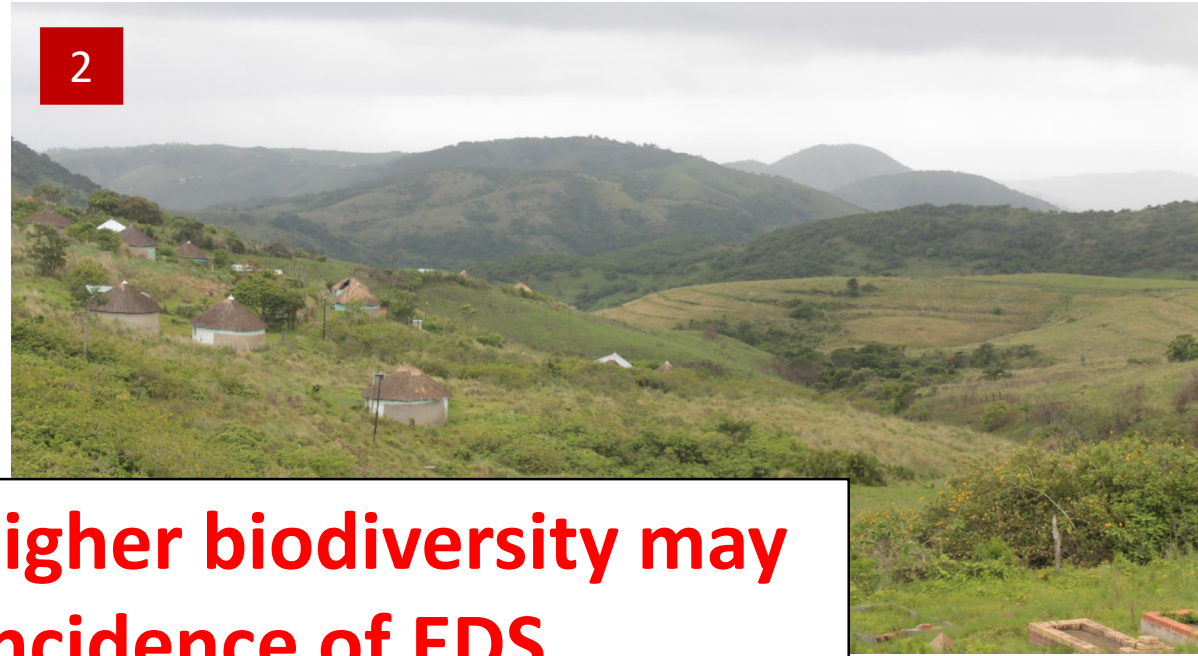


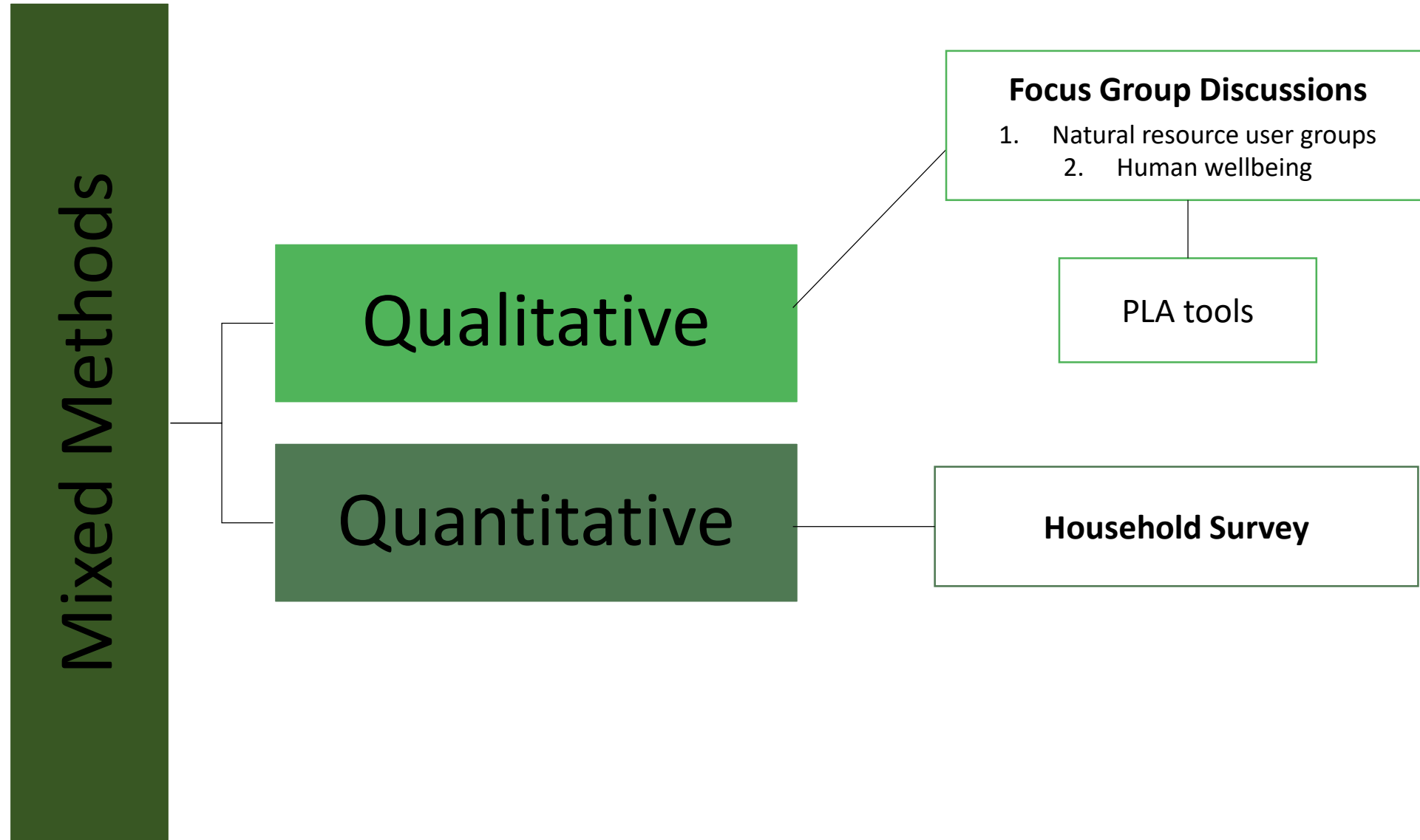
Figure 2b: Gogogo (Forest, grassland)

Dunn (2010) – areas of higher biodiversity may also have a high incidence of EDS



Figure 2c: Ludaka (Grassland)

Methods



Enduring dependency on ES



Home Garden

E.g. maize, beans, carrots, bananas, etc.

Mean economic value ranged from **\$322±335** in Ludaka to **\$684±564** per household per annum in Gogogo



Livestock

E.g. manure, sale, trade, milk, etc.

Mean economic value ranged from **\$191±243** in Njela to **\$716±1481** per household per annum in Ludaka



Non-Timber Forest Products

E.g. thatch grass, fuelwood, berries, honey, wild herbs, medicinal plants, etc.

Mean economic value ranged from **\$116±205** in Ludaka to **\$2926±2849** per household per annum in Njela

Real threat from EDS and need to outputs in a balance

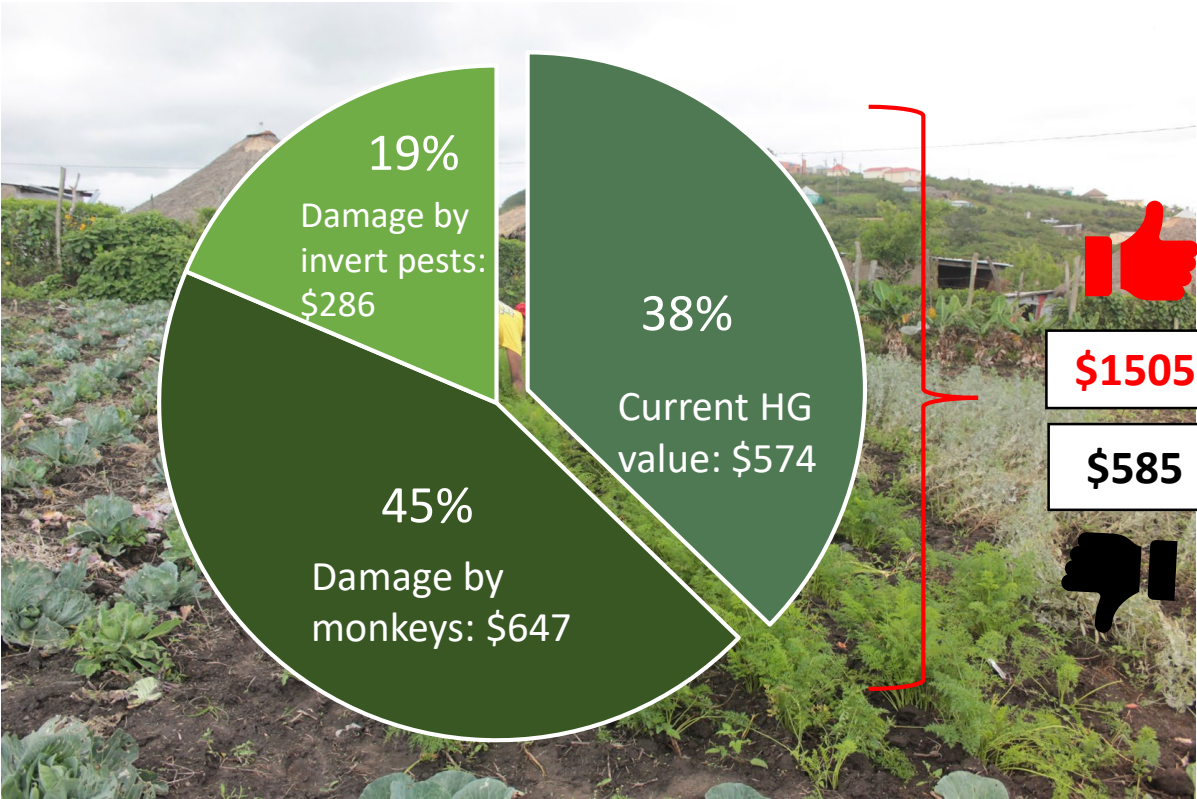


Figure 3a: Potential value of HG in Njela

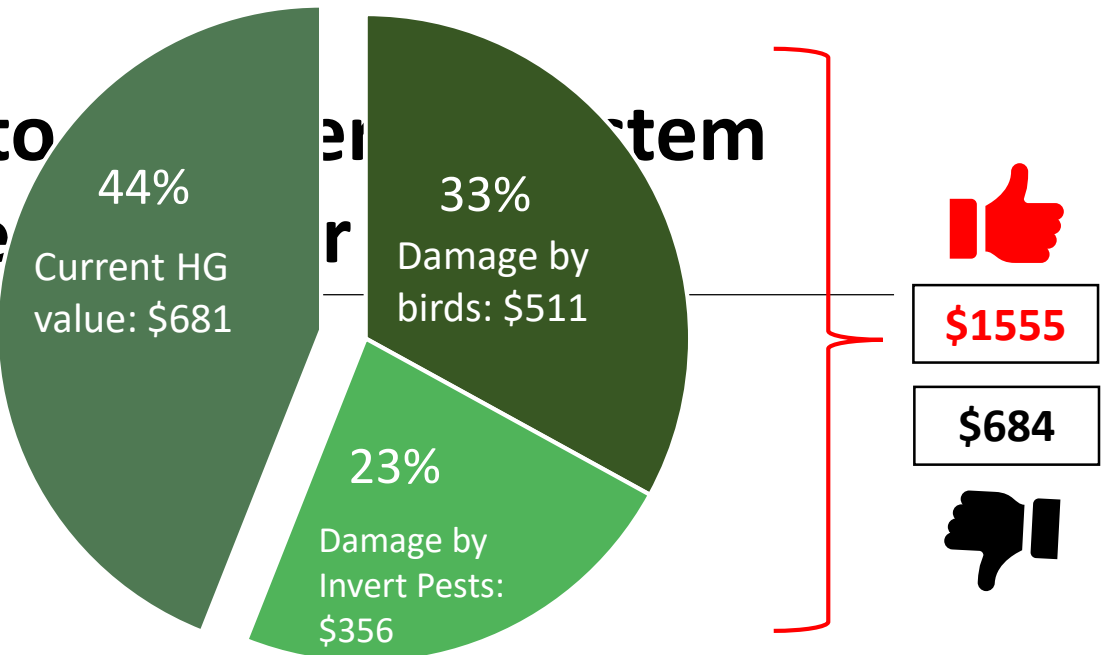


Figure 3b: Potential value of HG in Gogogo

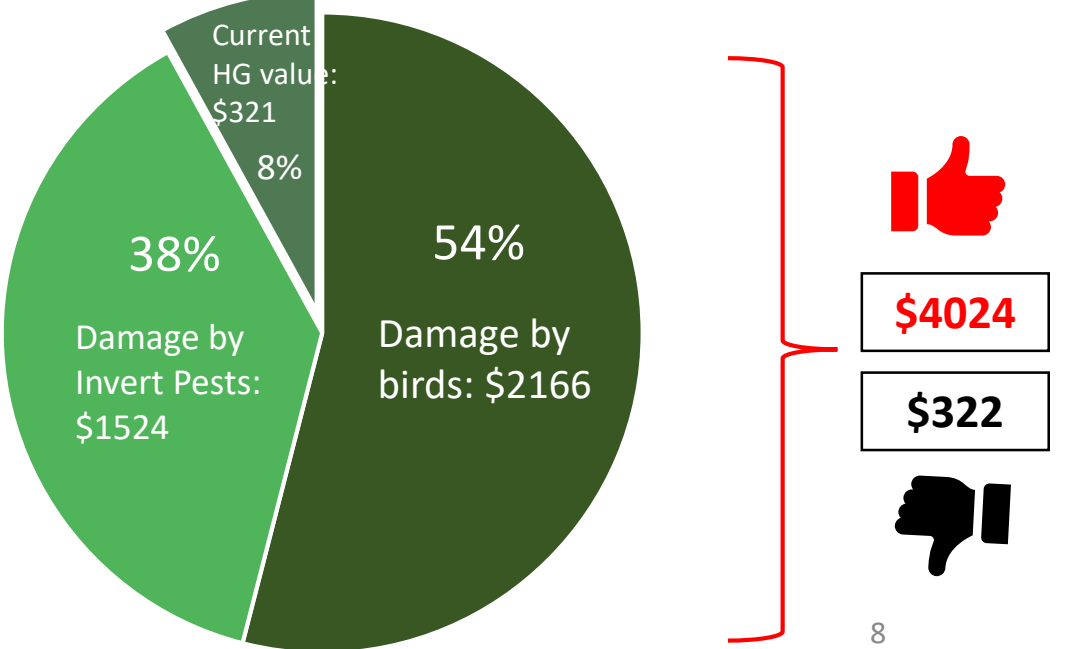


Figure 3c: Potential value of HG in Ludaka

👍
\$1555
\$684
👎

👍
\$4024
\$322
👎



Management of EDS may yield better rewards for ES and consequently for livelihoods.

E.g. Investment in dipping facilities or more technical measures to deter crop raiding. This may build overall resilience of livelihoods through asset building.



Figure 4: ES and EDS reflected as a percentage of the average potential household value of livestock consumptive outputs amongst owner households, economic values at the top of graph represent total potential values if not for disservices

Inclusion of ES and EDS for a fuller picture, responsiveness and duality

- Recognition of ES and EDS extend beyond economic figures
- Allow for identification of complex feedbacks between ES and EDS which inform local ways of doing things
- Paint a fuller picture which would better inform management strategies and development of policy
- Highlight responsiveness, adapting livelihoods to ensure positive outcome
- Perception as ES or EDS is subjective
Eg. *Lantana camara*



Links between ES, EDS and biodiversity

- Areas with greater habitat diversity not only had a greater number of ES, but also EDS, in comparison to areas with lower habitat diversity.
- Support Dunn (2010) who hypothesised that areas of higher biodiversity would also have a greater number of EDS.

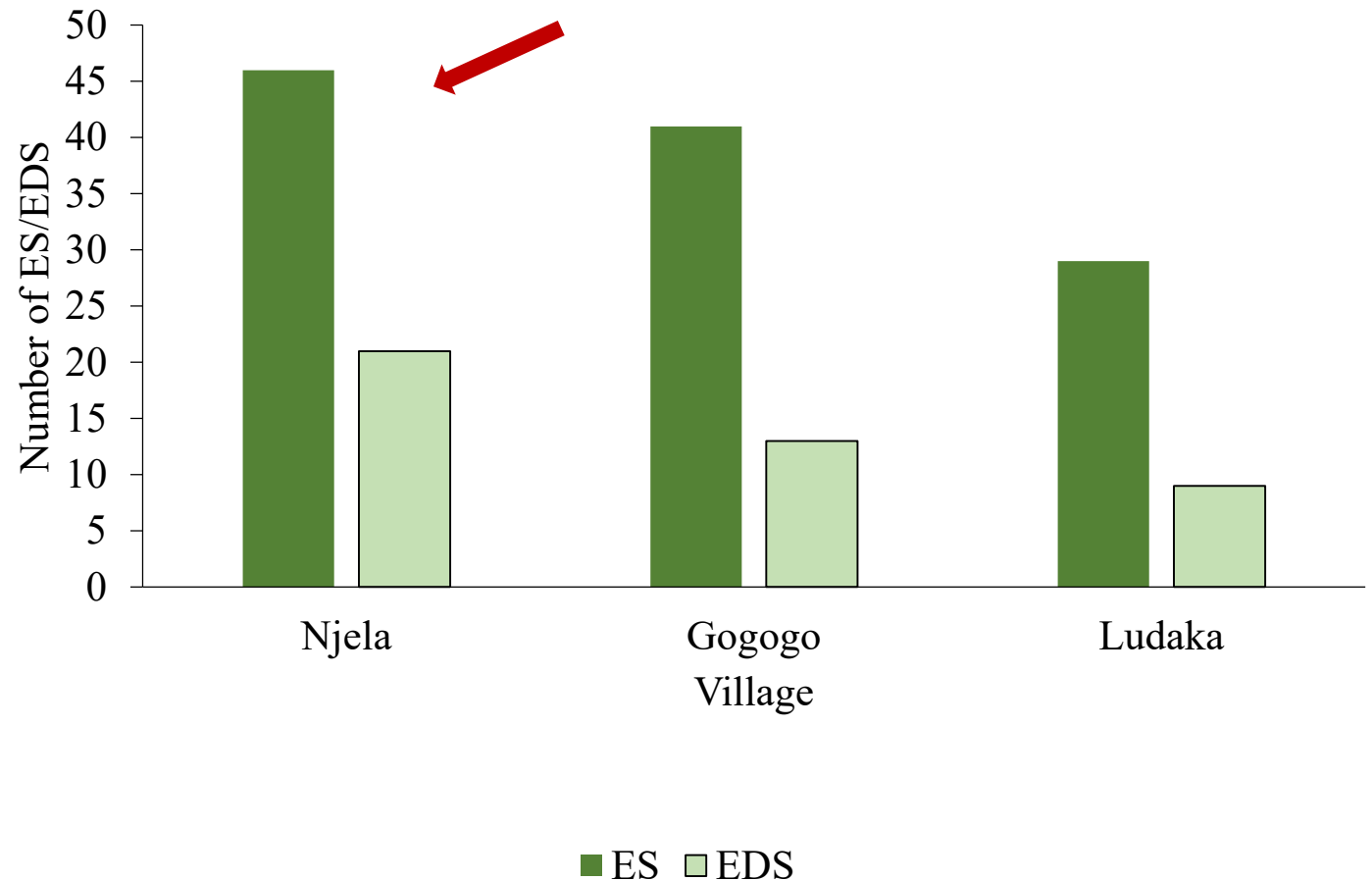


Figure 5: The total number of land-based livelihood ES and EDS in each village

SLF as a tool to frame ES and EDS

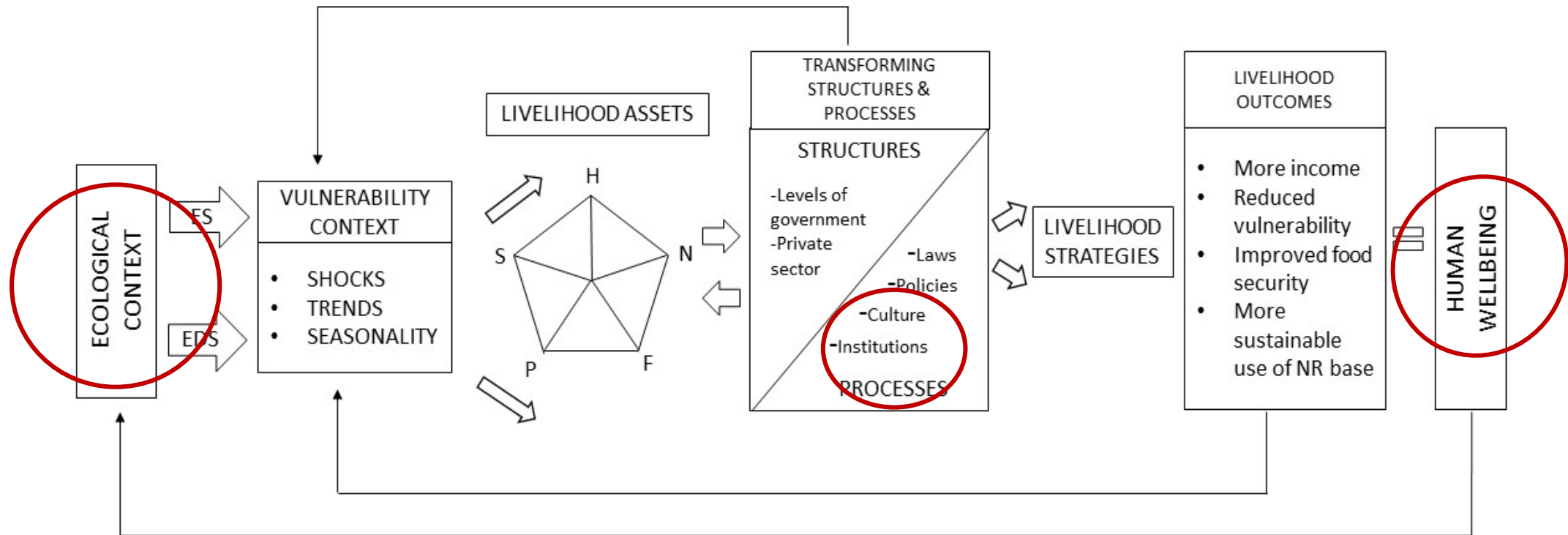


Figure 6: A modified sustainable livelihoods framework as a tool to frame ES and EDS

Summing it all up

1. EDS are real

2. Residents actively manage EDS to reduce losses

3. Integrated framework of ES and EDS is necessary

Thank you



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