CREATING CO-HABITATS

Designing a landscape where elephants and local inhabitants co-benefit from the connection between Tsavo East and Tsavo West National Park, Kenya



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A4 presentation

Nico Tillie
James Byng

“There are no walls between humans and the elephants except those we put up ourselves”

- Lawrence Anthony, the elephant whisperer

Introduction

PART I - INTRODUCTION
- Site context
- Problem statement
- Research approach
- Research question

PART II - UNDERSTANDING
- Site analysis
- Mapping the problem

PART III - FINDING SOLUTIONS
- Existing solutions
- Design solutions

PART IV - IMPLEMENTATION
- Design sites

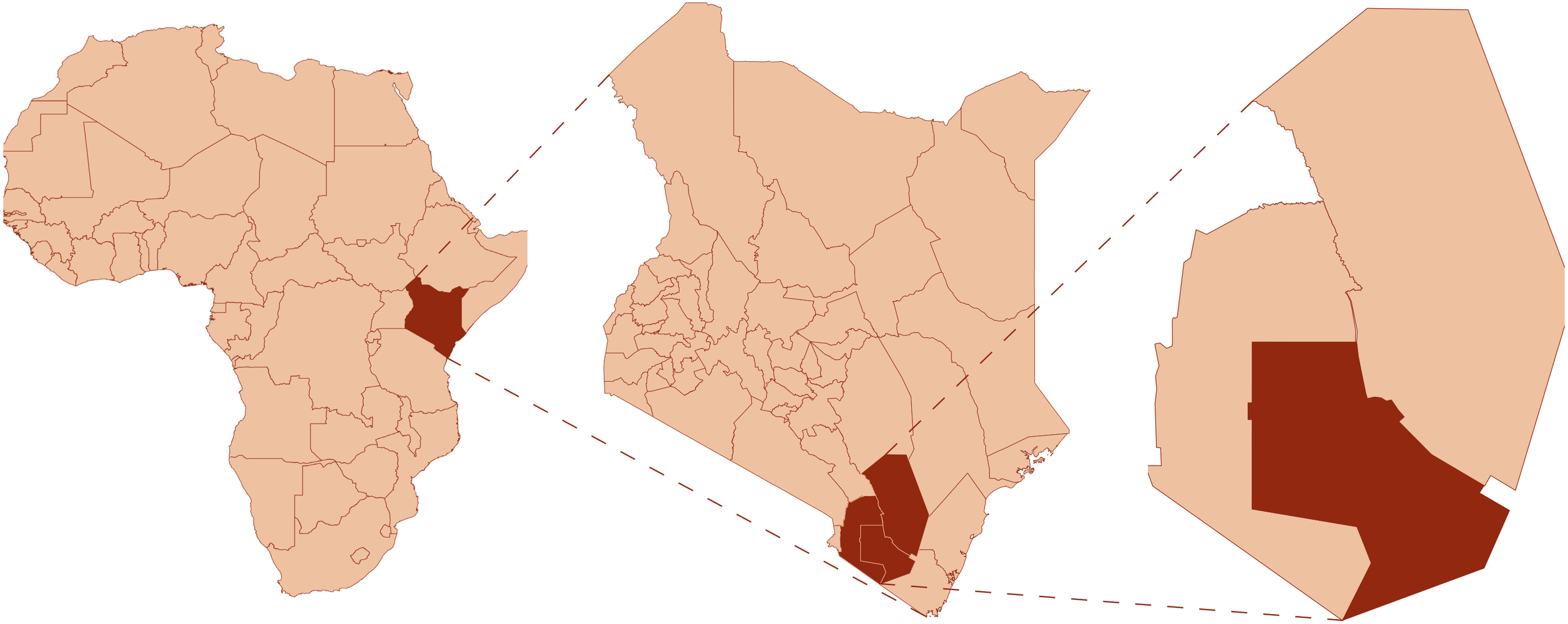
PART V - CONCLUSION





All images are made by author, unless said otherwise

Site context



Kenya

Tsavo National Park
& Kasiagau region

Kasigau region

Research approach

1. Orientation

2. Literature research

3. Research question

4. Site visit

5. Process information

6. Design

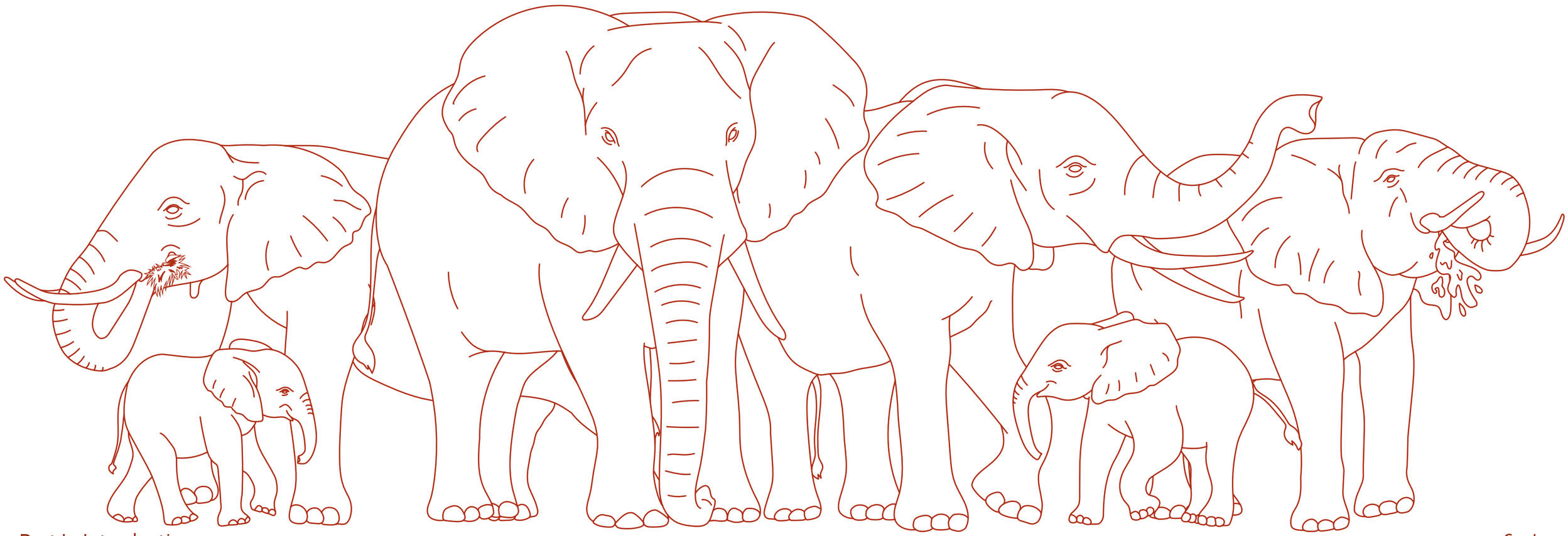
7. Solution

”109 Elephant killed by drought in Tsavo this year:
the initialising slide down a slippery slope?”
- Tsavo Trust 2022

“Poachers kill one of Africa’s last remaining
‘big tusker’ elephants”
- The Guardian 2017

“Ancient elephant migration routes are being blocked
off – can anything stop the rising death toll?”
- The Guardian 2025

”Elephant Poachers Kill Wildlife Works Conservation
Ranger and Critically Injure Another”
- Wildlifeworks 2012



"Even during the short dry season the water pan dries up."

"The elephants get mad when they encounter a fence, so they attack the first person they see."

"The elephants are the enemy!"

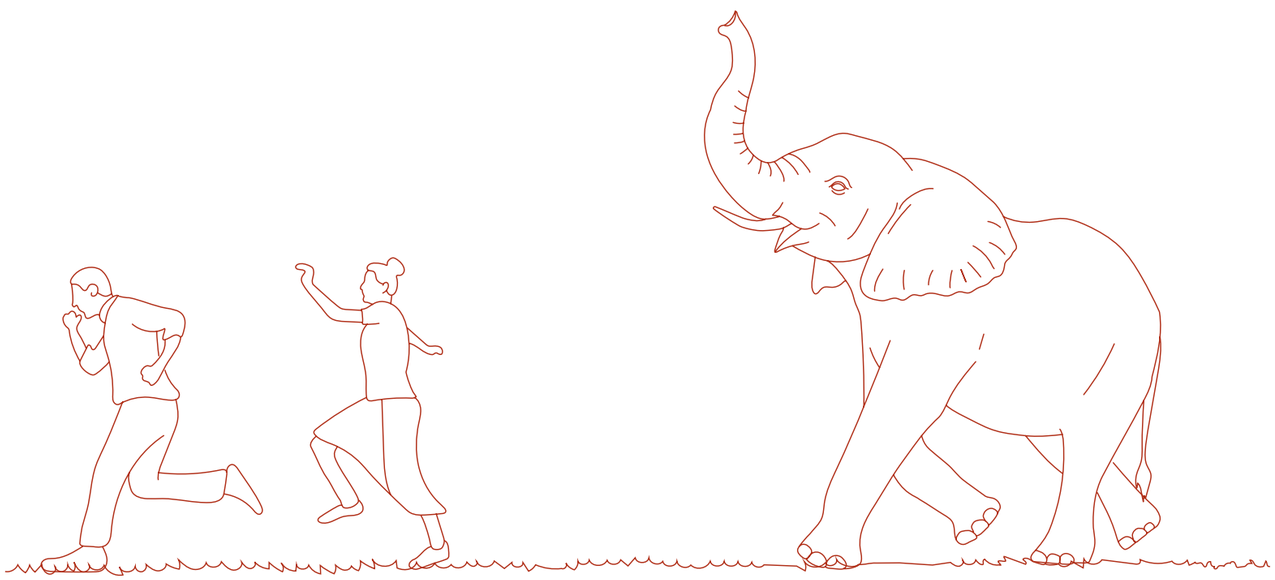
"I sleep in the field every night to guard the crops from elephants, it is very scary"

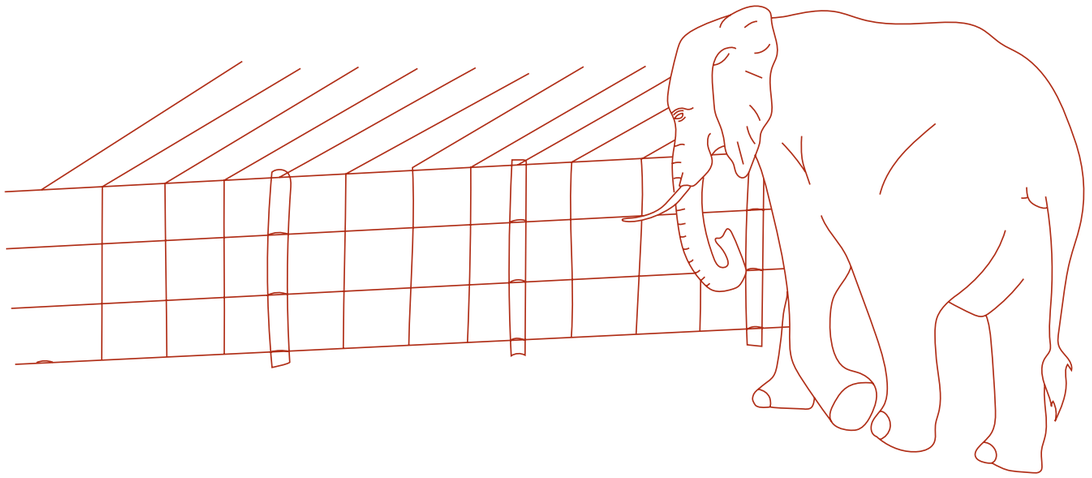
"Almost every year I lose my crops to the elephants"

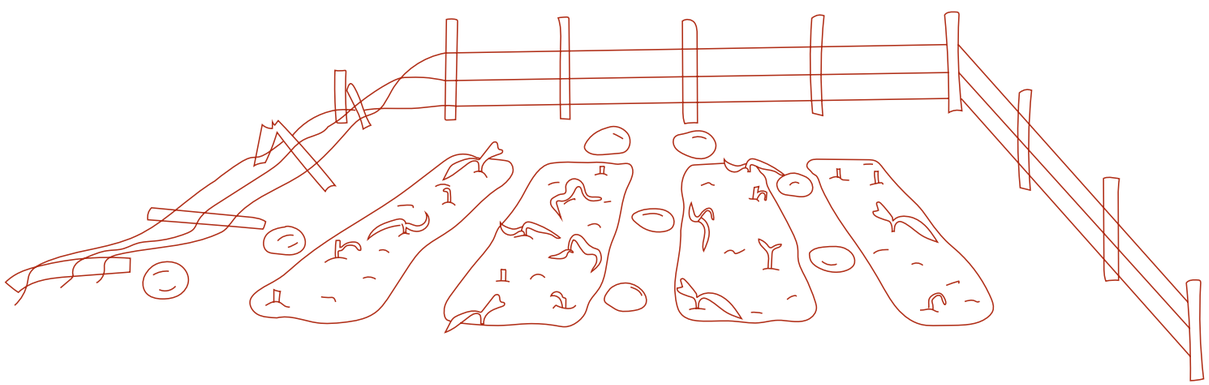


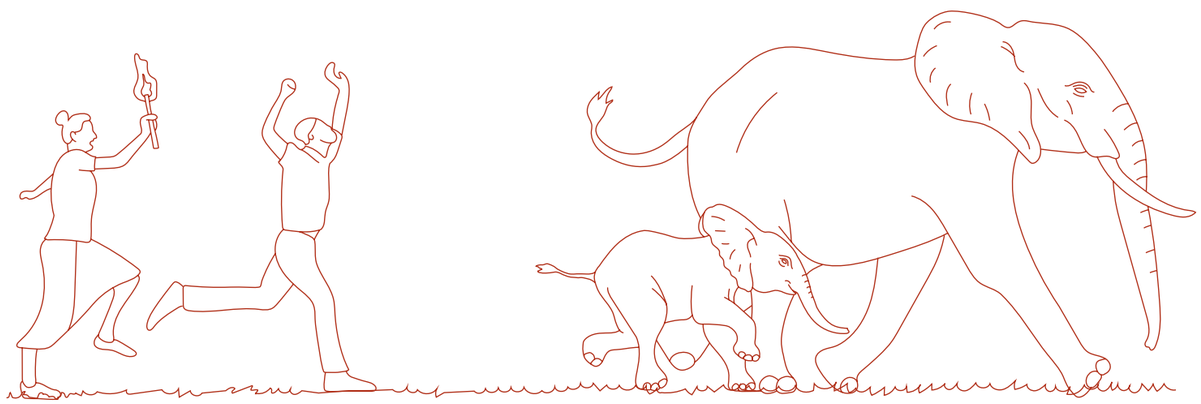
"The maize can't be harvested because of the drought."

HUMAN - ELEPHANT CONFLICT









How can a regenerative spatial landscape framework reduce human–elephant conflict in the area connecting Tsavo East and Tsavo West National Park, while creating co-benefits for both local inhabitants and elephants?

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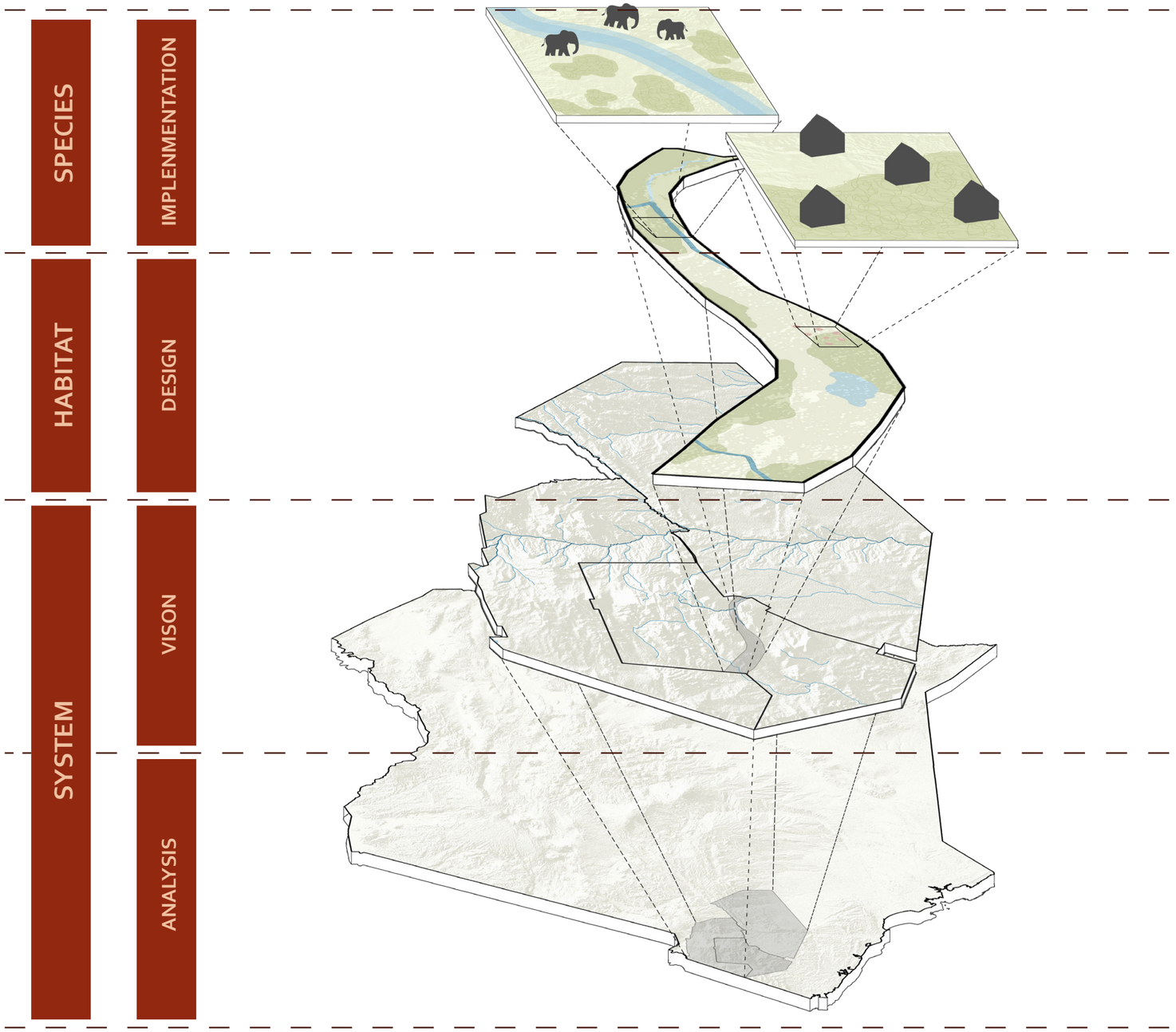


PART II - Understanding

Loxodonta africana












Pictures made by Ann Lo, Jelmer Veenstra and author

Inhabitants of Kasigau















Land use



Tsavo NP



Ranch



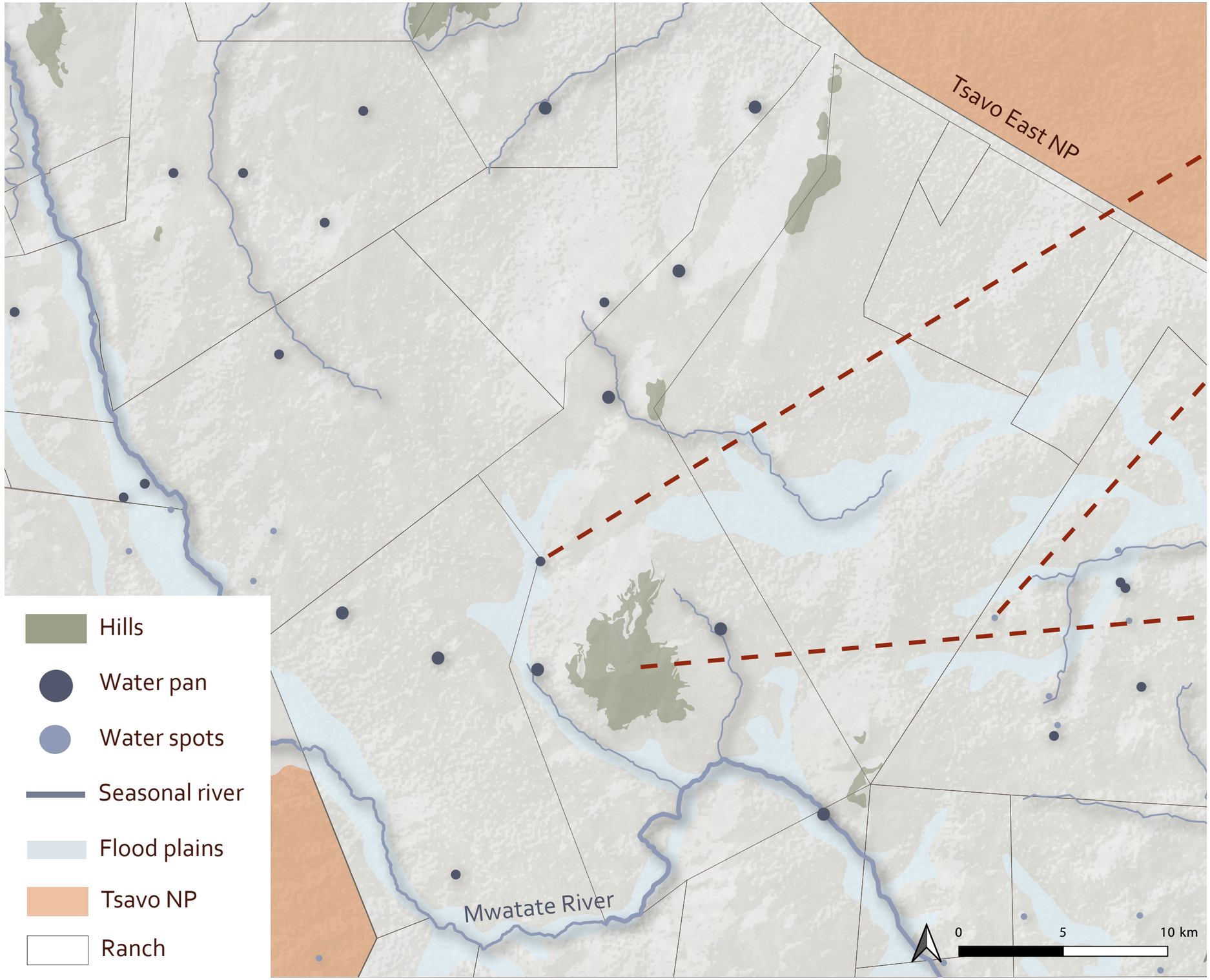
Farmland



Village



Water sources



Hills

Water pan

Water spots

Seasonal river

Flood plains

Tsavo NP

Ranch

Water pan



Borehole


(Marula Horizon Safaris, n.d.)

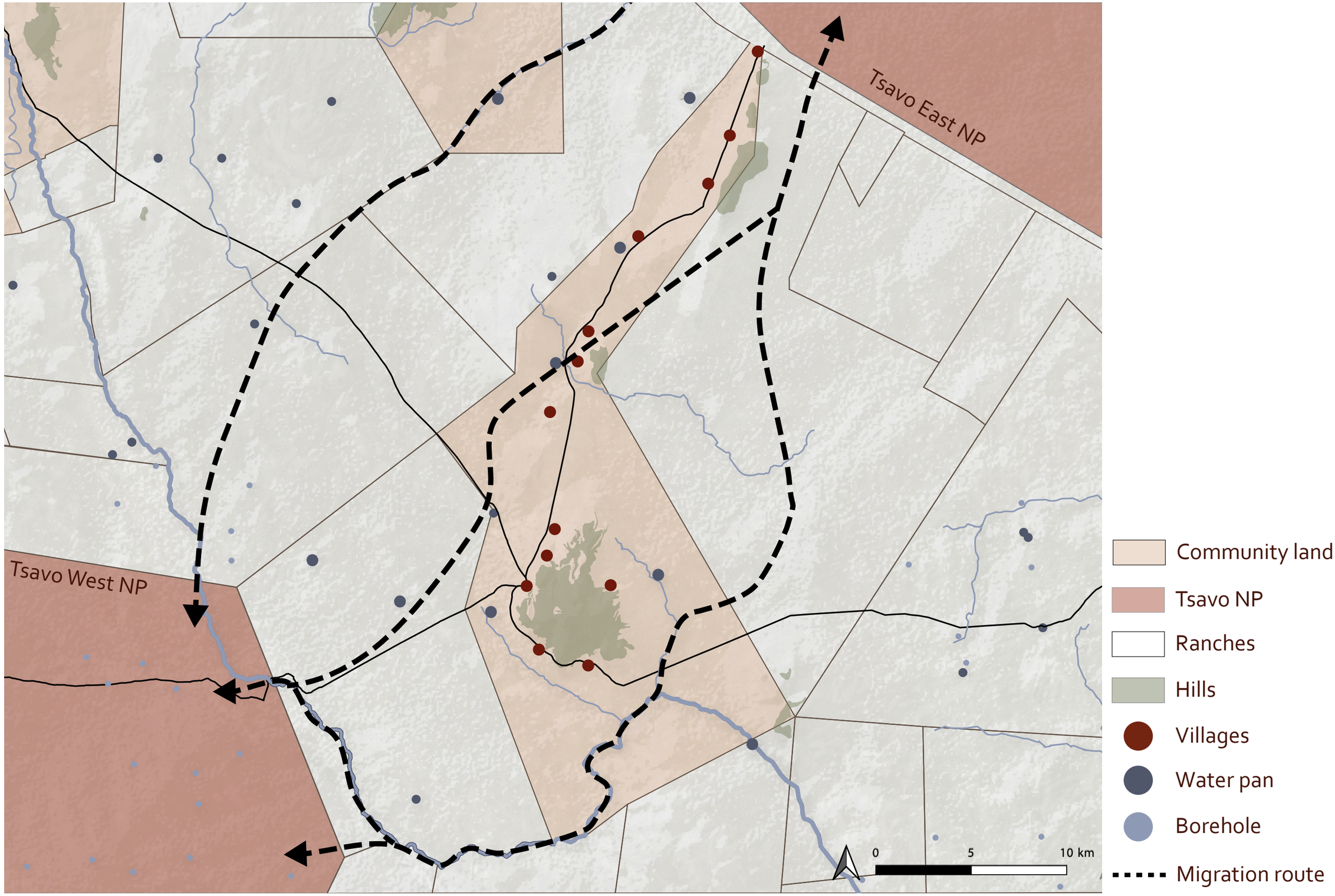
Moist cloud forest



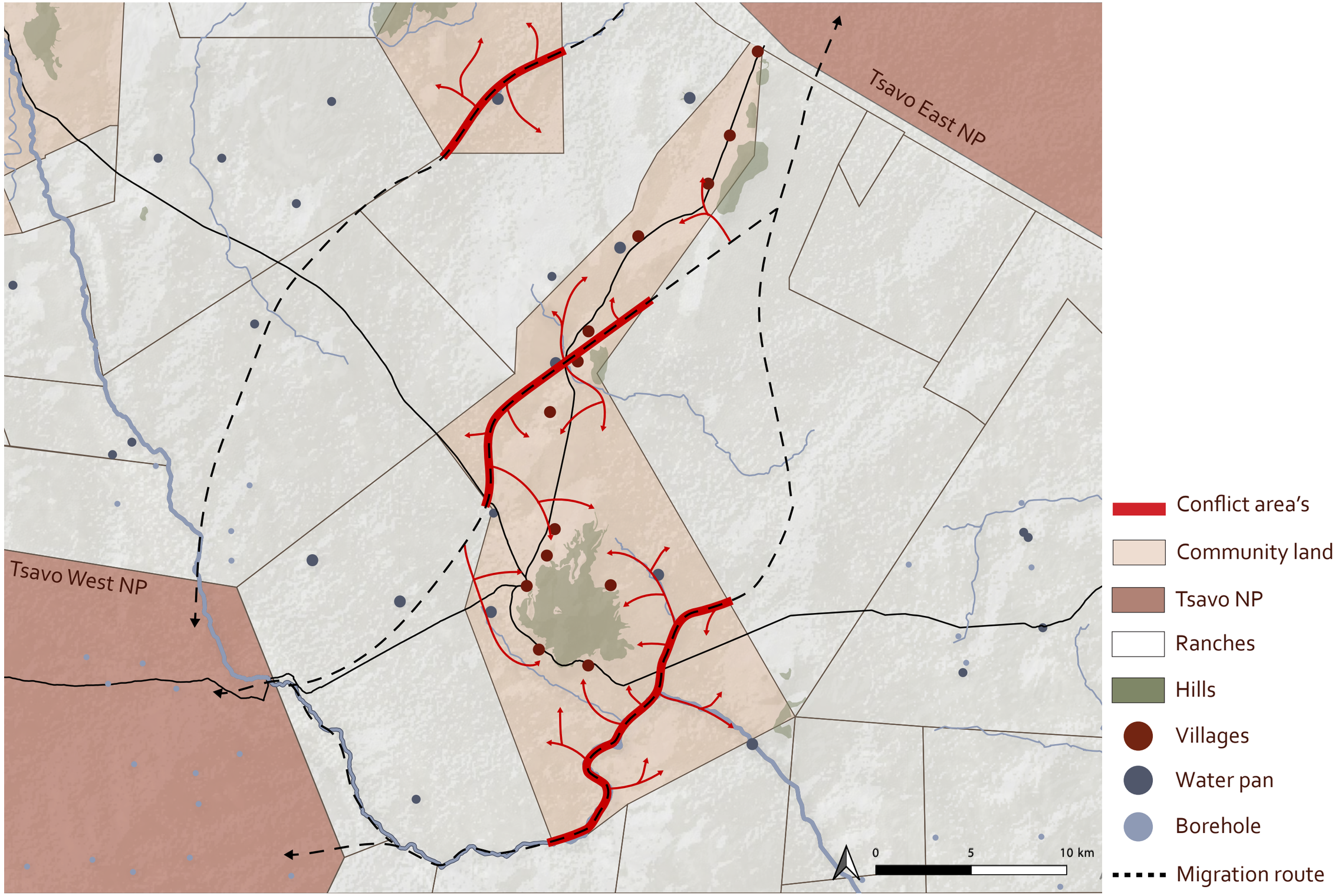
Tap point



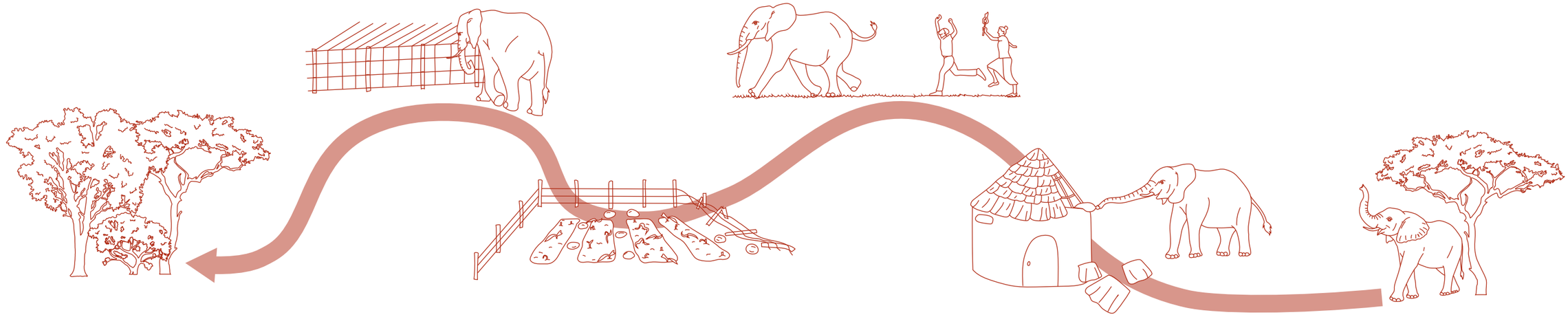
Historic migration routes

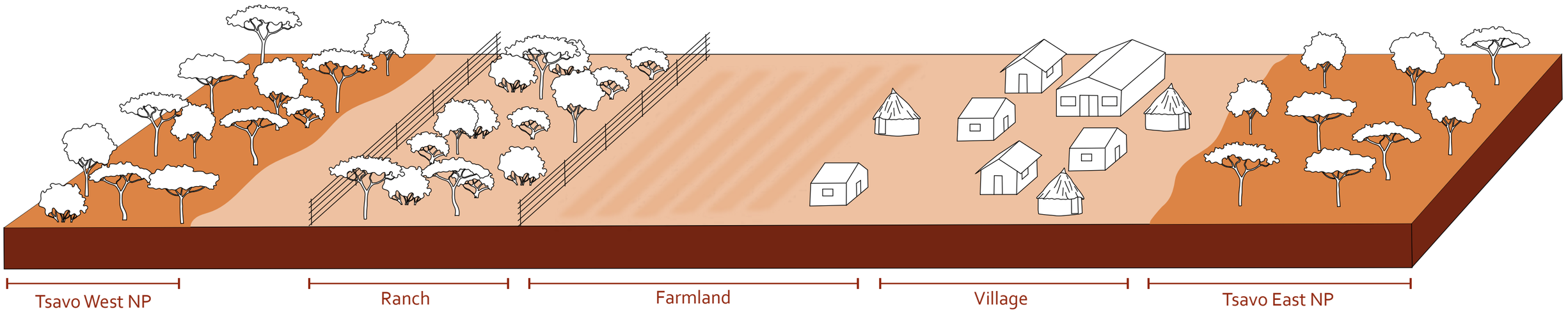


Conflict areas



Human - elephant conflict





Water scarcity











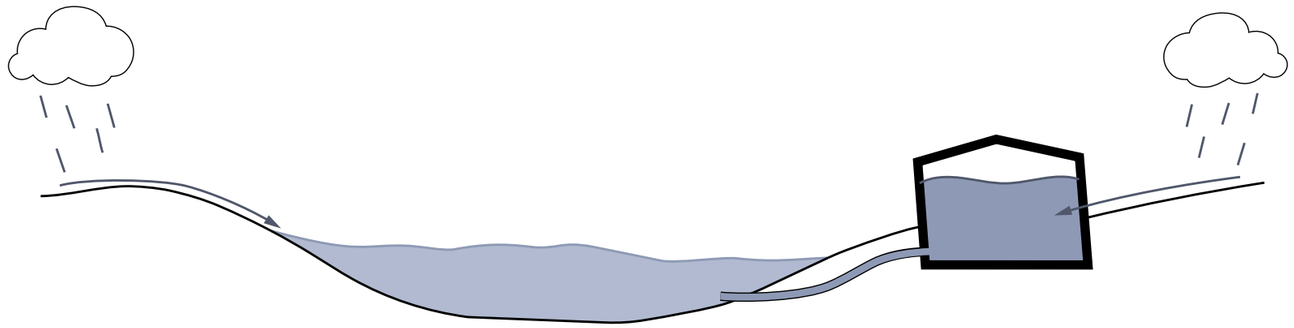


PART III - Finding solutions

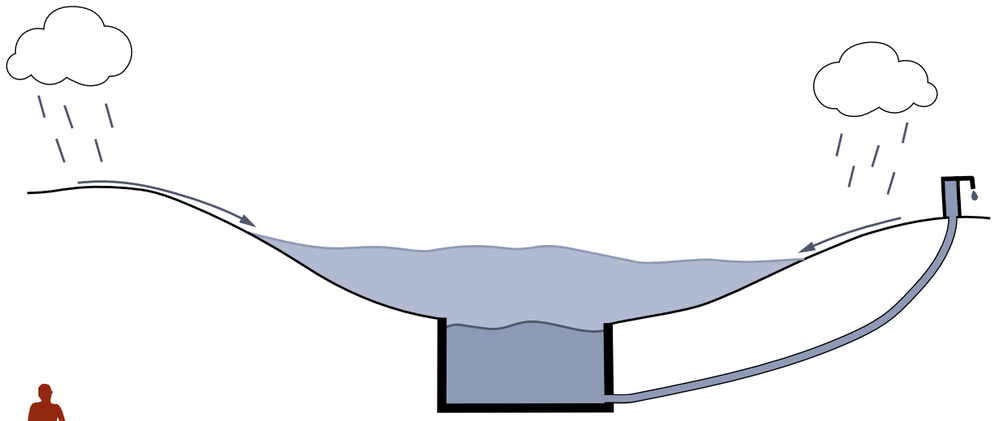
Existing solutions & Design solutions

EXISTING SOLUTIONS

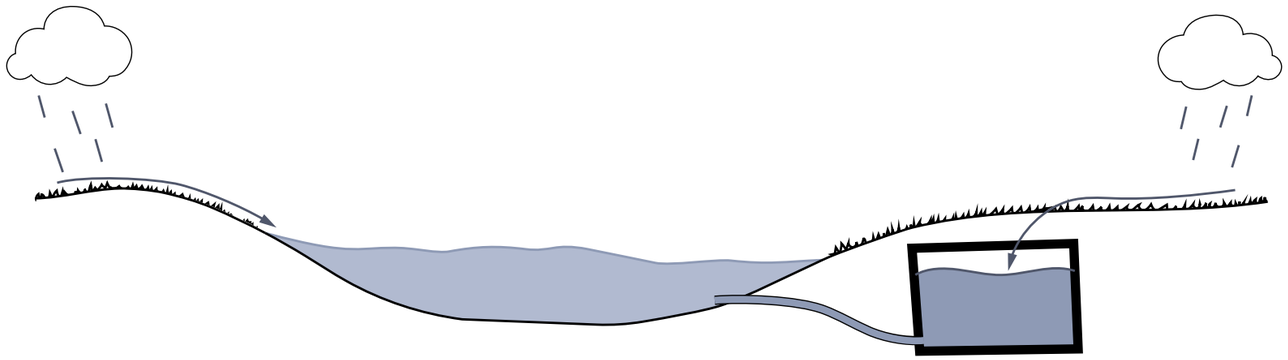
Improving water availability



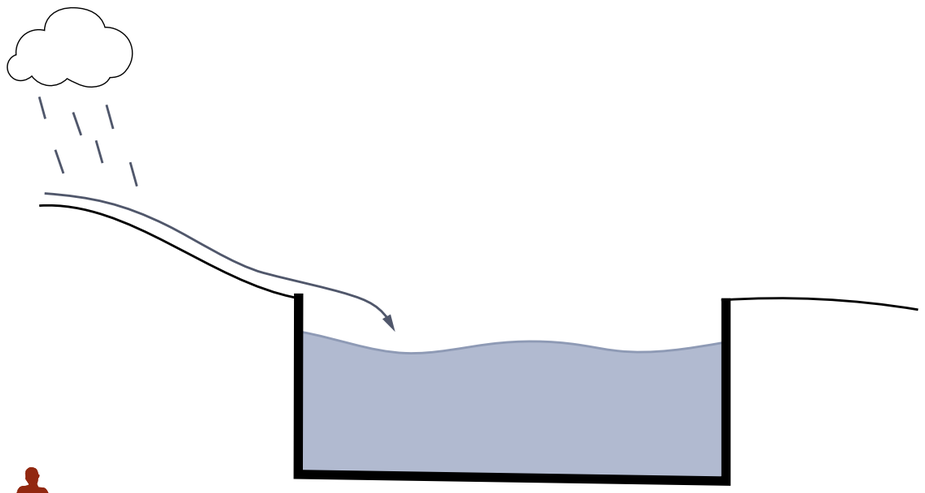
Water pan adaptation 1



Water pan adaptation 2



Wildife water pan adaptation 1



Somali Berkad system

Elephant use

Inhabitant use

Alternative livelihoods



Homestays



Cotton clothes



Basket weaving from sisal fibers



Leather shoes



Soap



Honey from beehive fences



Sustainable charcoal



Community banda's

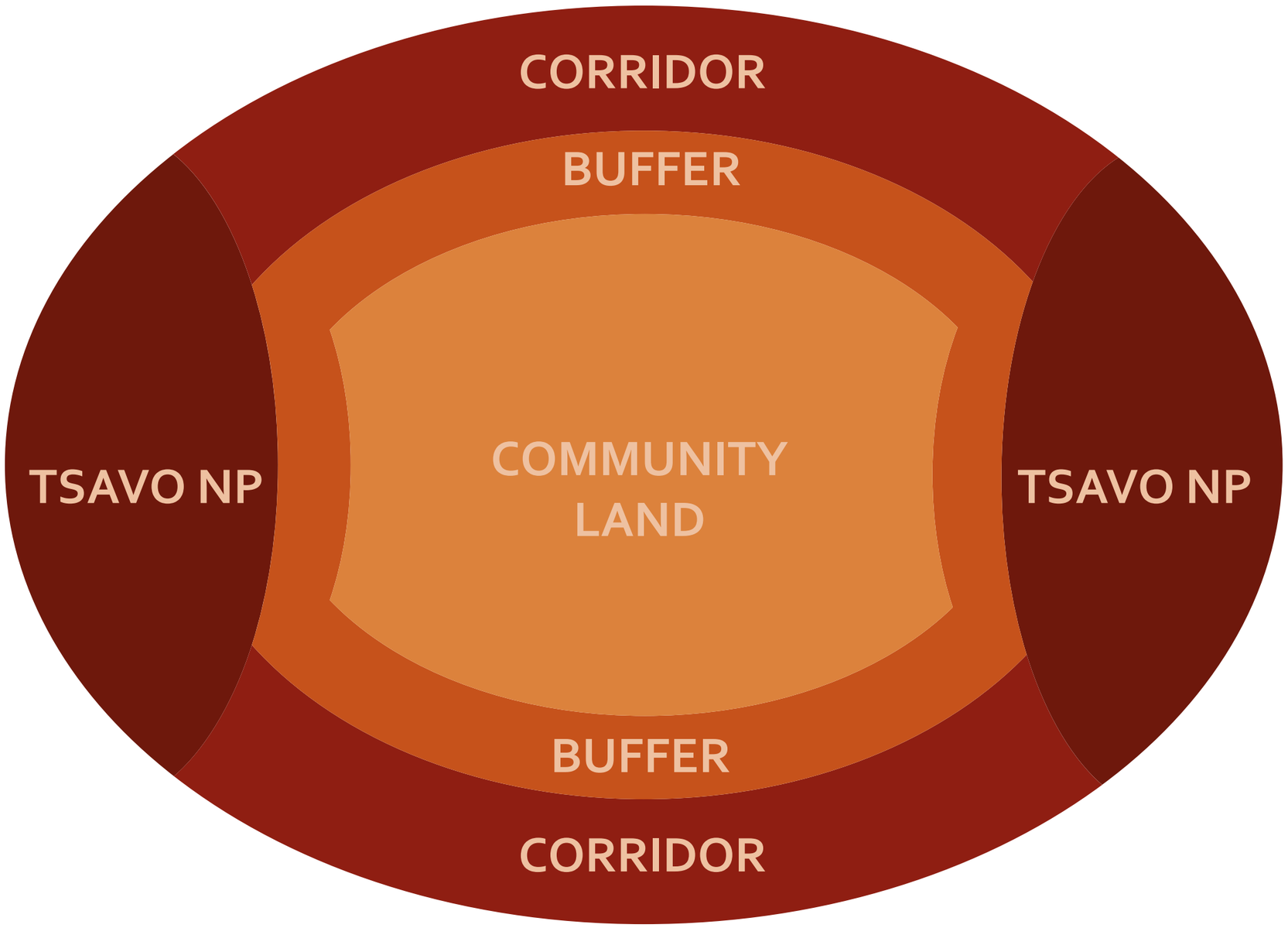


Elephant dung products

DESIGN SOLUTIONS

Design concept

Prevent contact
&
Reduce impact



Tsavo East NP

Tsavo West NP

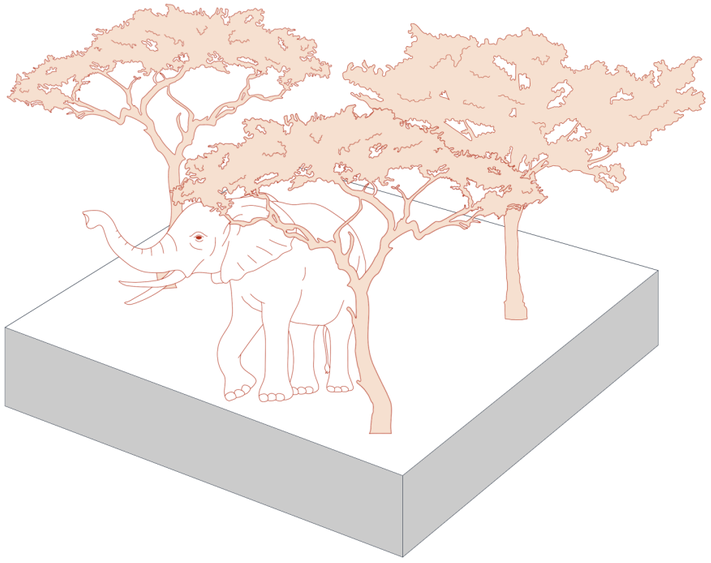
Elephant corridor
Buffer zone
Community land
Tsavo NP
Ranches
Hills
Villages
Water pan
Borehole
Migration route

0 5 10 km

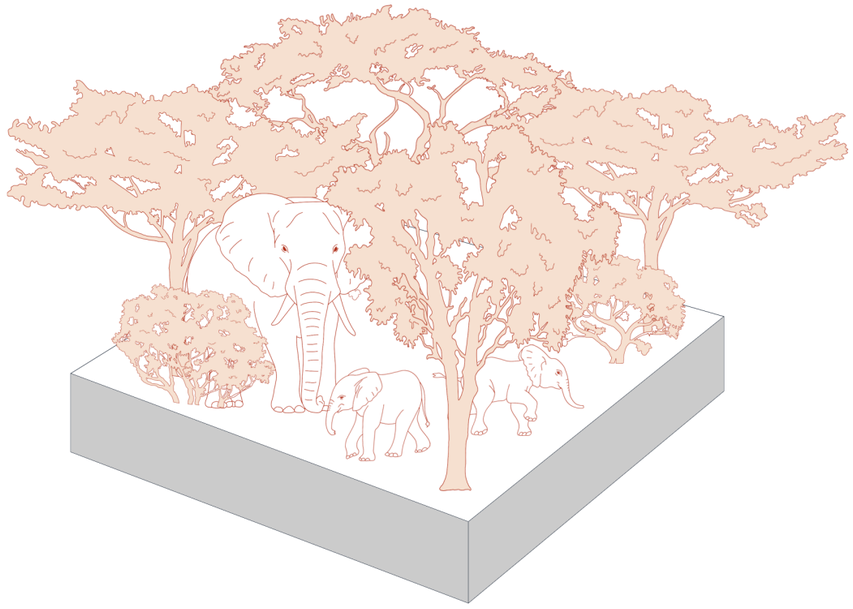
Corridor

0 5 10 km

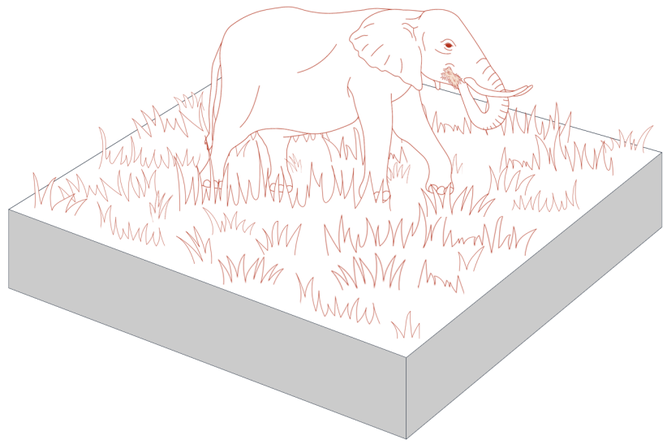
Corridor - design principles



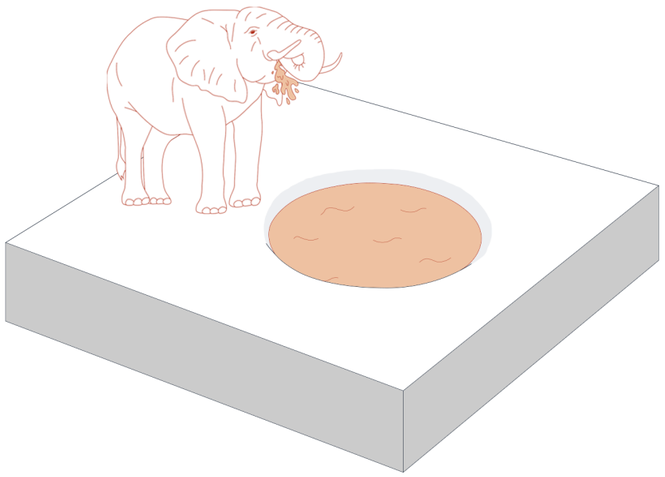
Half-open vegetation



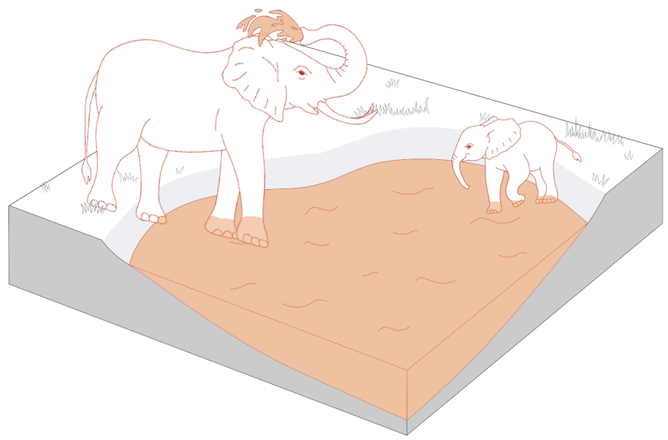
Dense vegetation



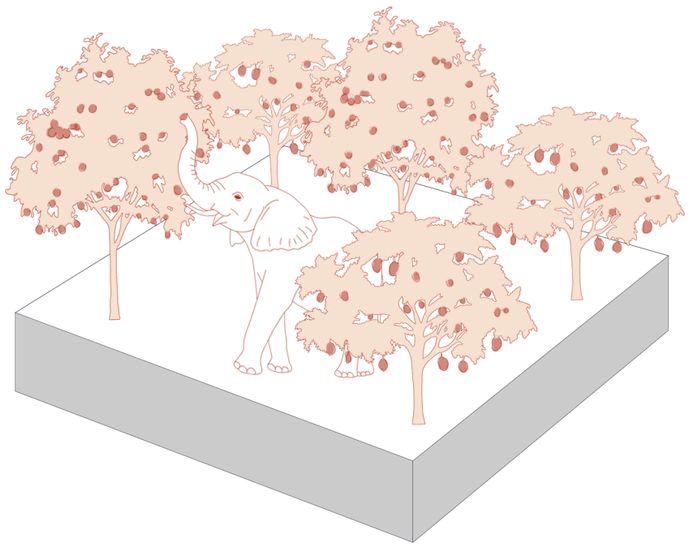
Open grasslands



Borehole



Waterpan



Fruit trees

Corridor vegetation

Fruit Foliage Pods Bark Twig Stem Grass



Sclerocarya birrea



Commiphora kua



Mangifera Indica



Balanites aegyptian



Syzygium cordatum



Tamarindus indica



Carica papaya



Grewia bicolor



Opuntia ficus-indica



Passiflora edulis



Vachellia abyssinica



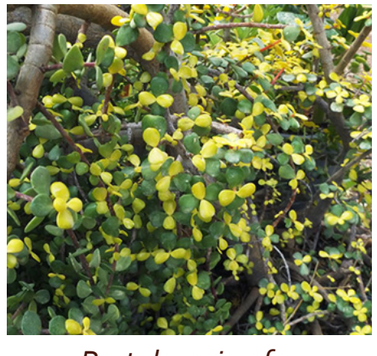
Vachellia tortilis



Vachellia nilotica



Senegalia mellifera



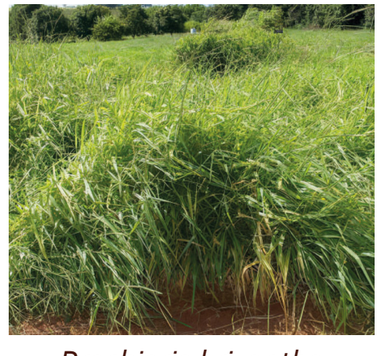
Portulacaria afra



Cenchrus ciliaris

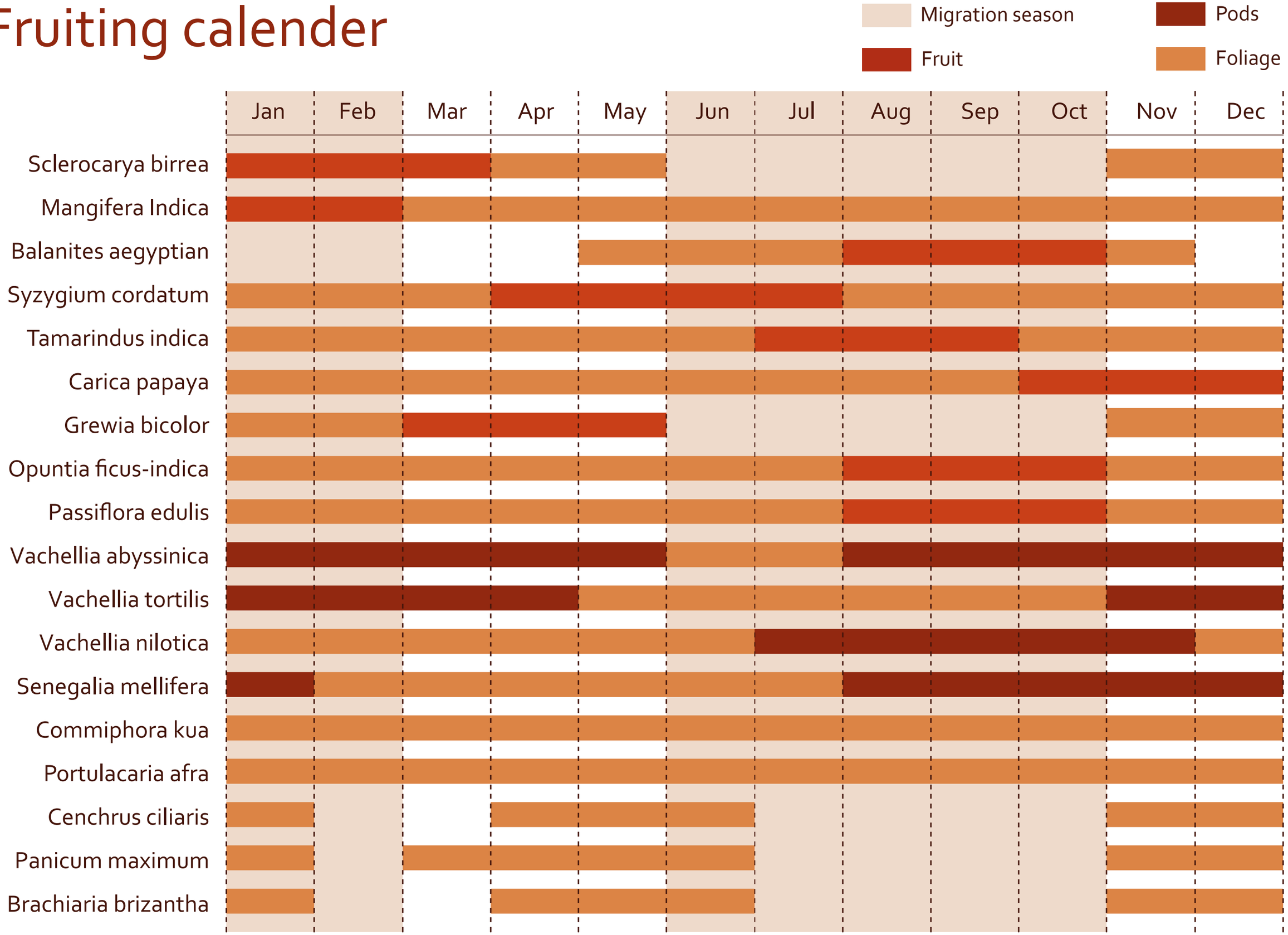


Panicum maximum

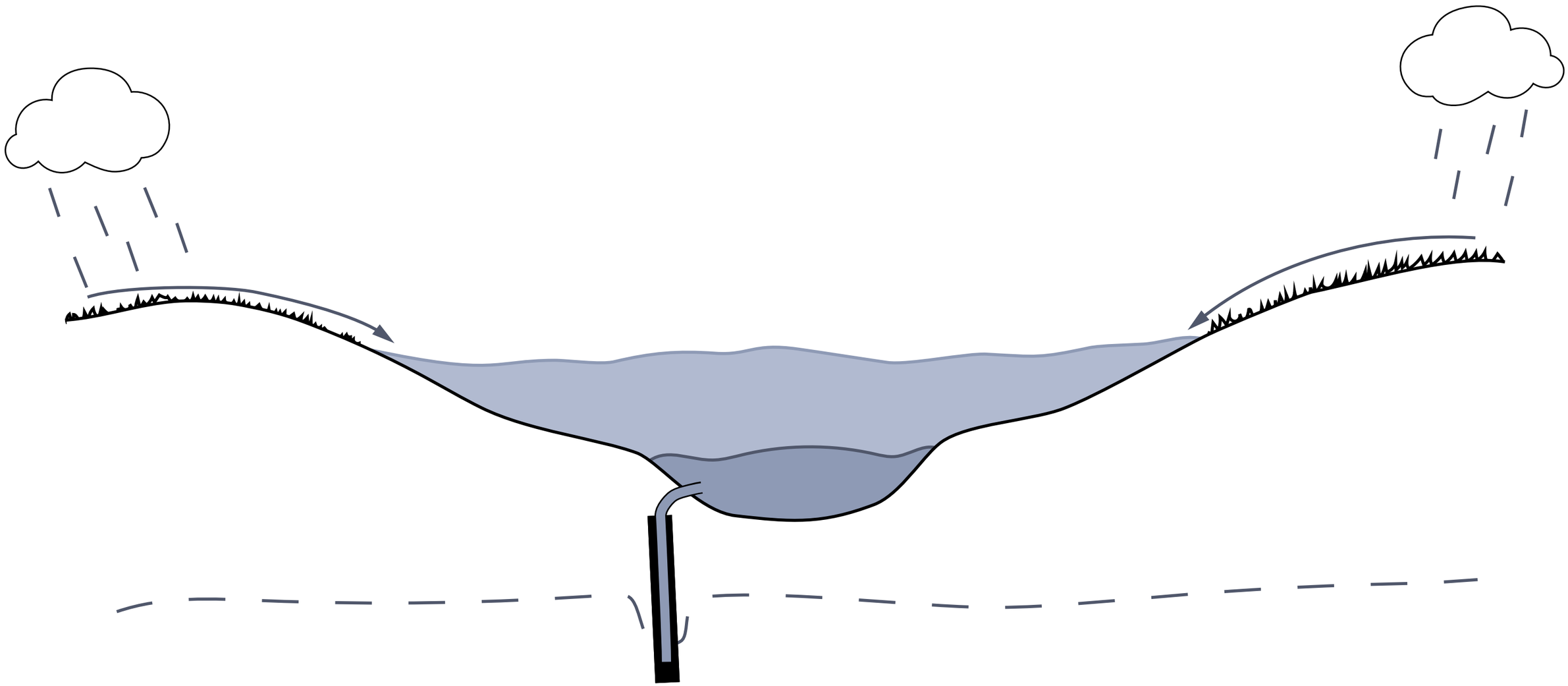


Brachiaria brizantha

Fruiting calender



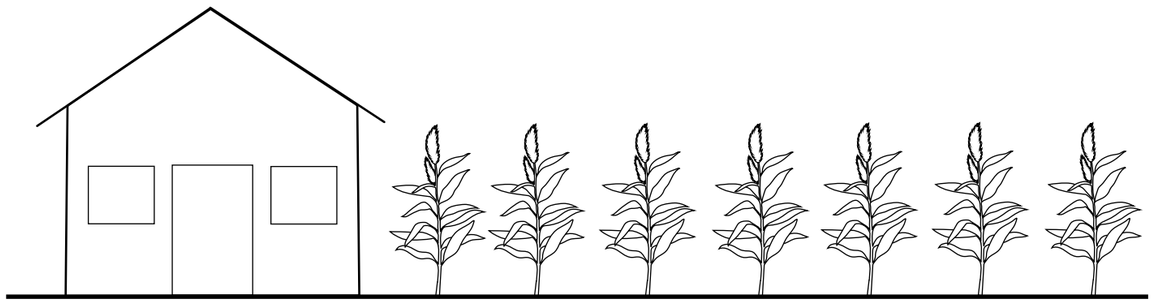
Drinking pool



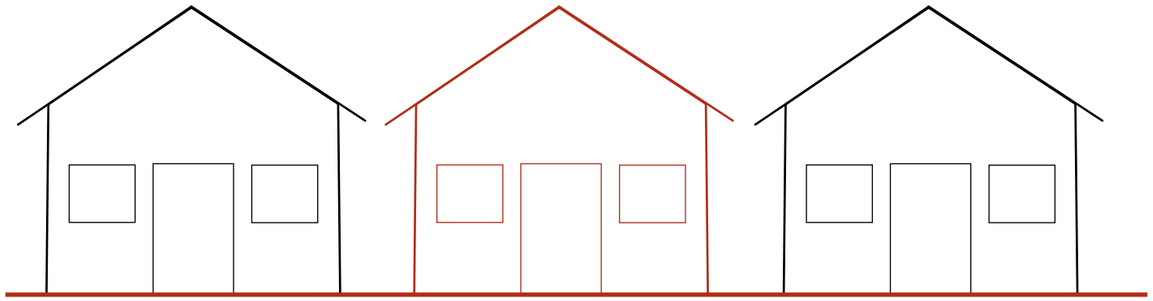
From farmland to corridor

0 5 10 km

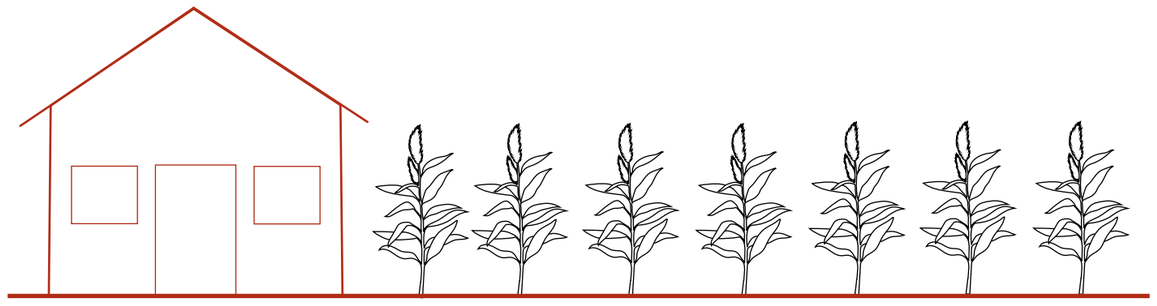
Farmers options



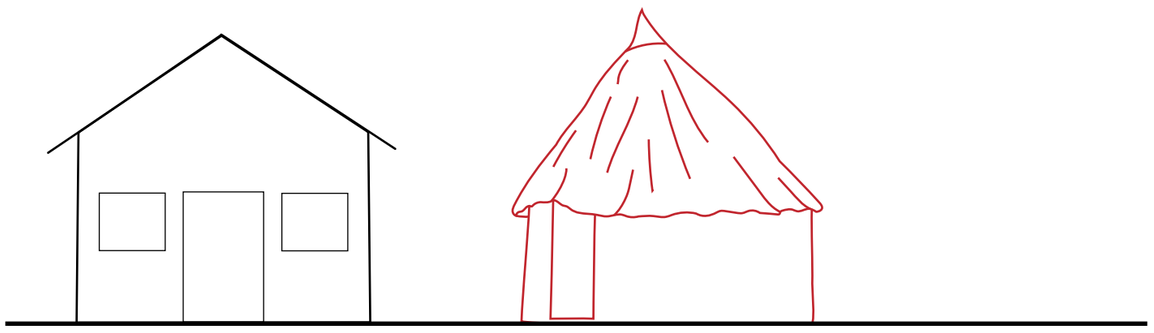
0. Current situation



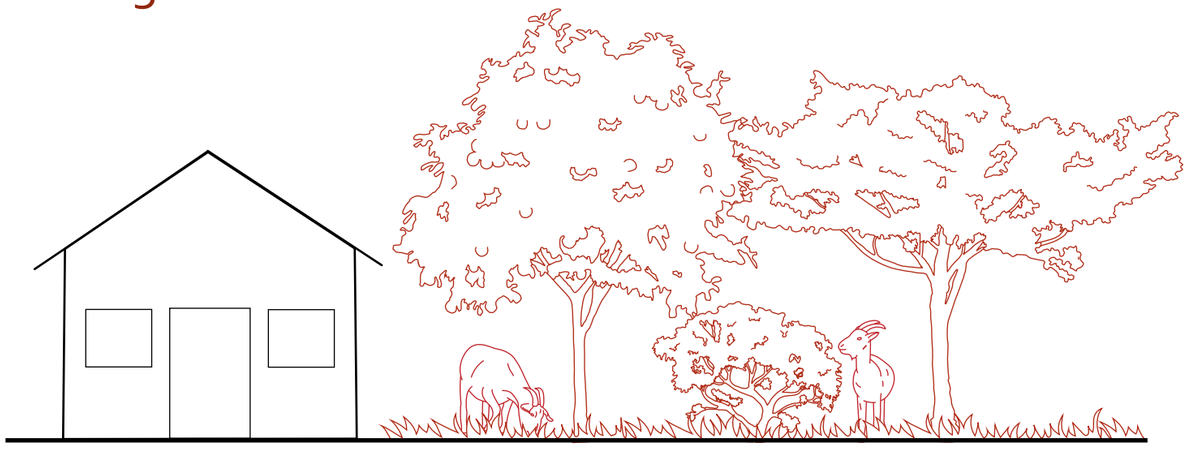
1. Moving to community land



2. Moving to ranch



3. Change to ecotourism

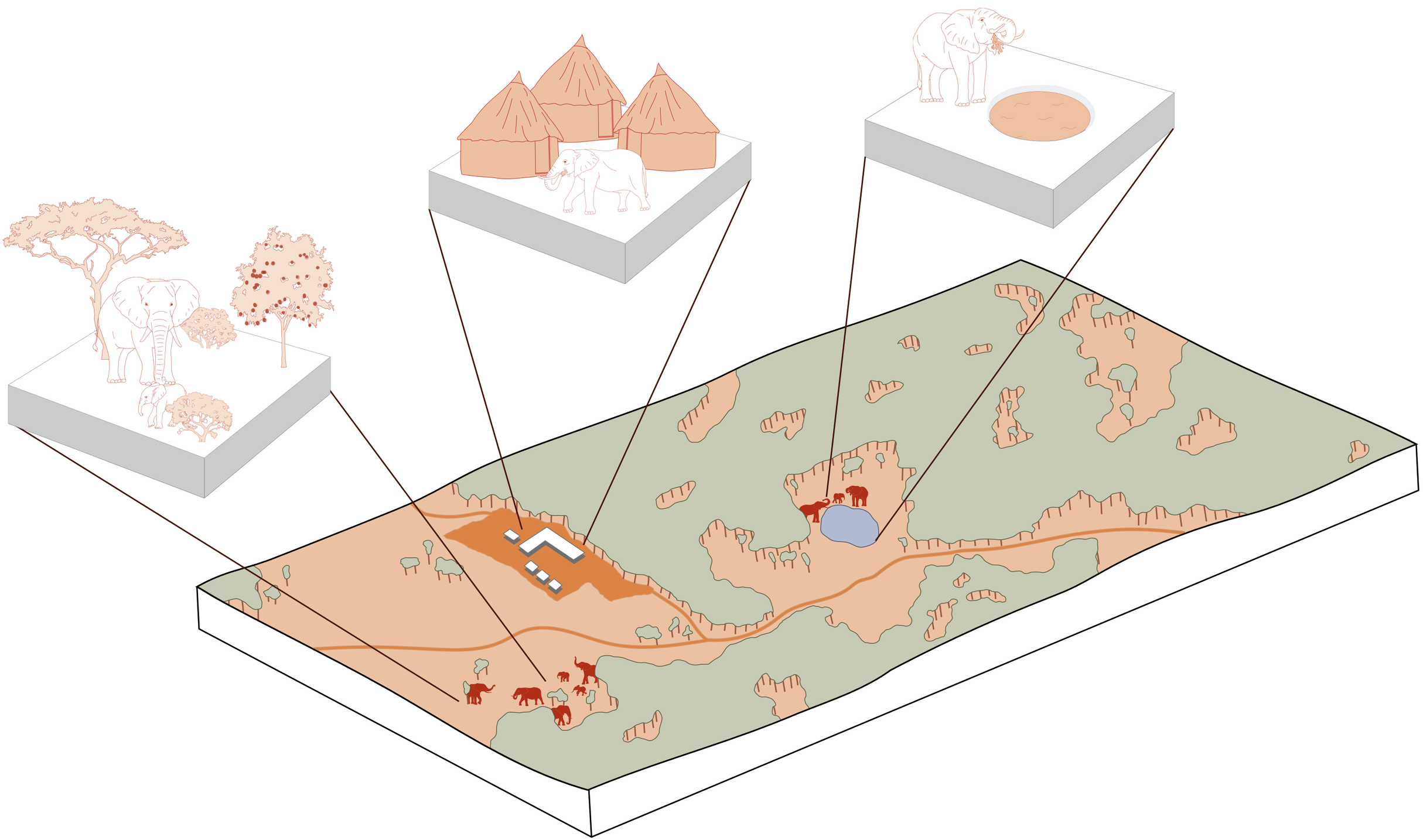


4. Change to livestock



5. Change to elephant compatible crops

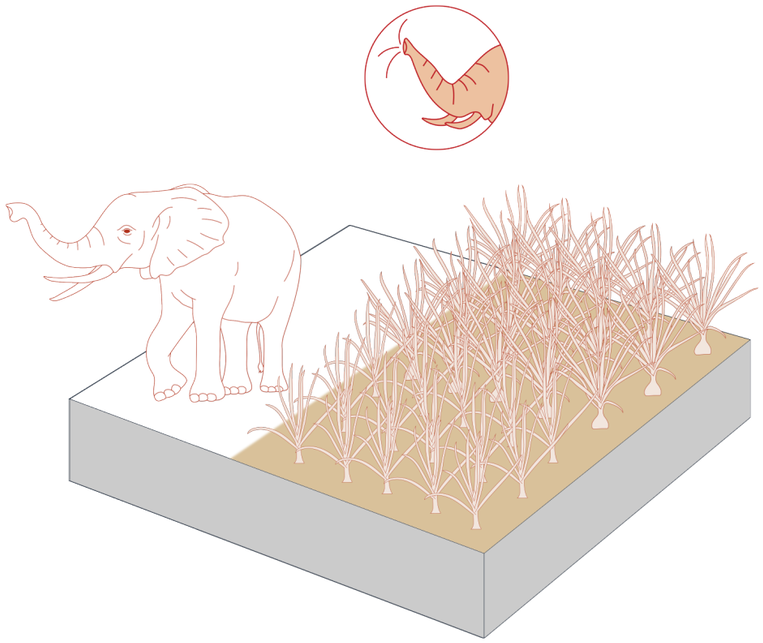
From farmland to corridor



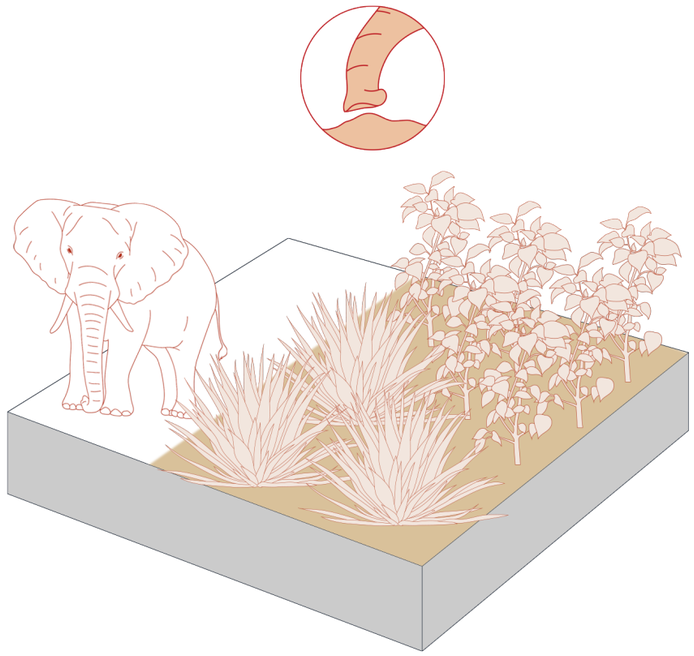
Buffer zone

0 5 10 km

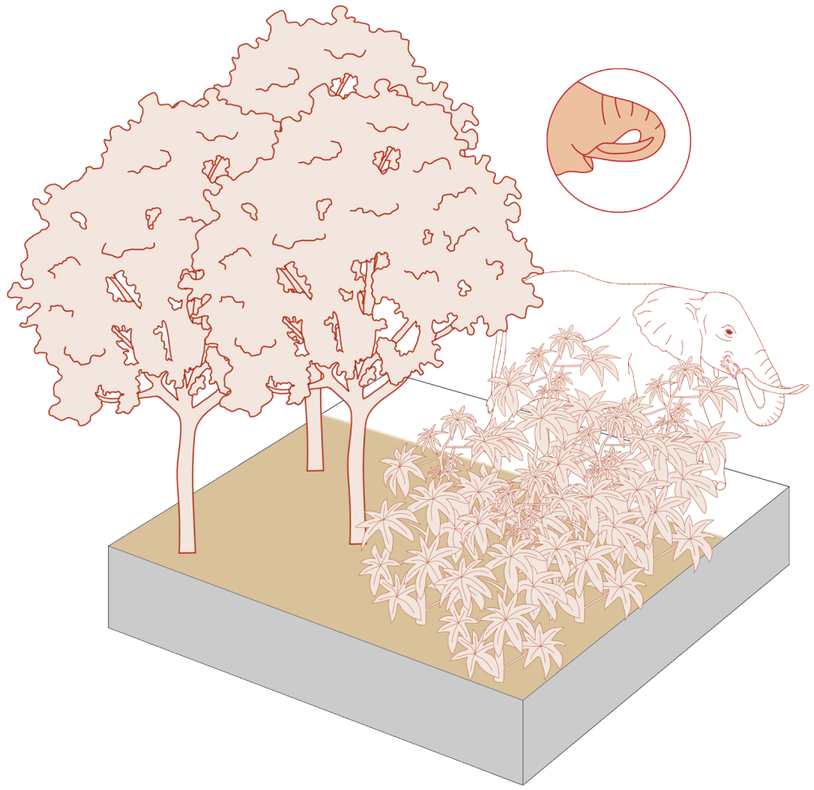
Buffer zone - design principles



Deterrent crops by smell



Deterrent crops by touch



Deterrent crops by taste

Buffer crops

Touch

Agave sisalana



Sharp, fibrous leaves make sisal physically painfull



Sisal rope

Smell

Capsicum frutescens



Capsaicin causes irritation in the trunk and eyes, strong smell is aversive



Edible chili peper

Allium cepa



Strong sulfur compounds give a pungent smell



Edibile onions

Allium sativum



Strong sulfur compounds give a pungent smell



Edible garlic

Azadirachta indica



Bitter, aromatic leaves



Medicinal leaves, oil and bark

Taste

Ricinus communis

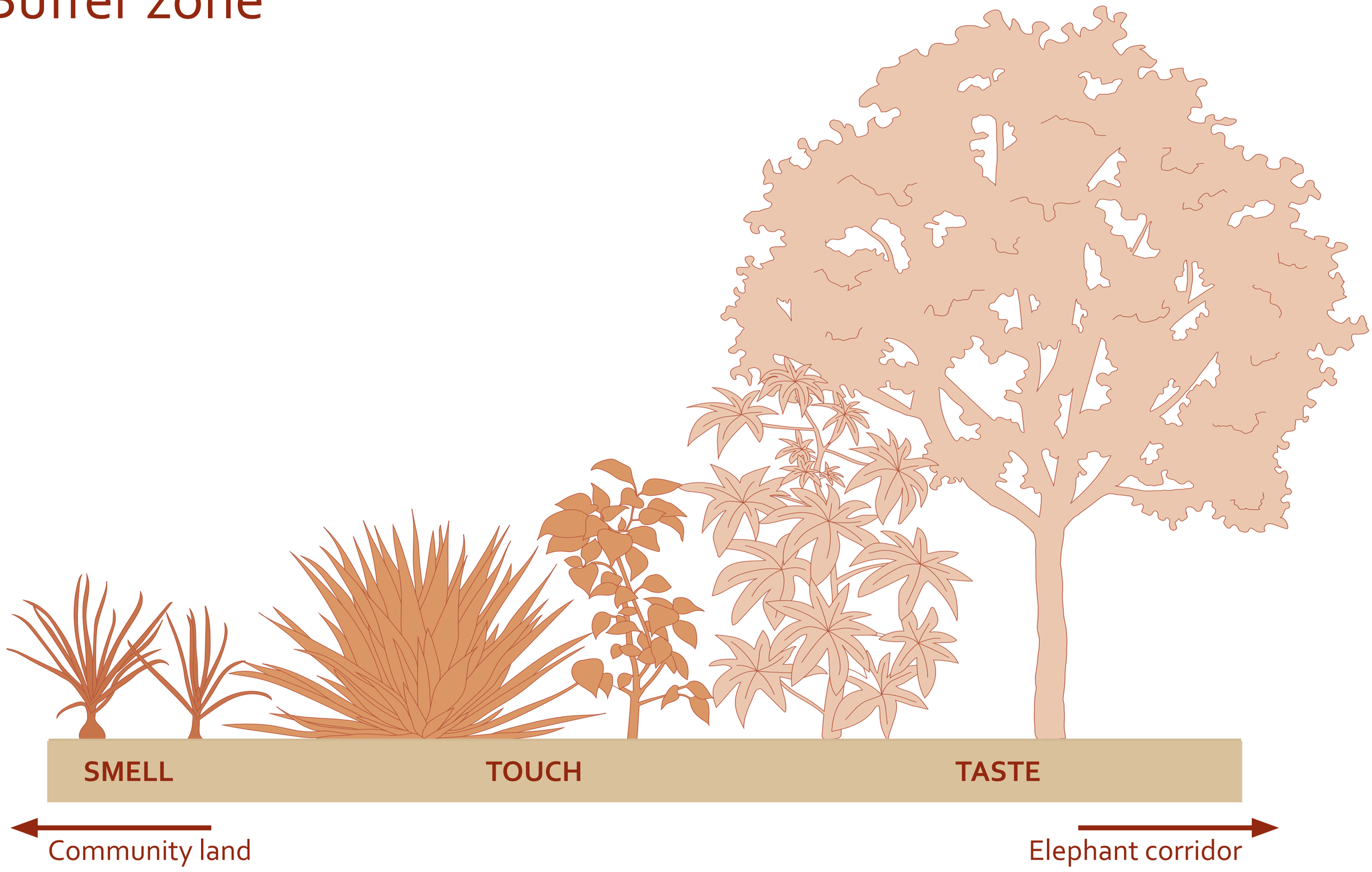


Leaves have an upleasant taste and seeds are toxic

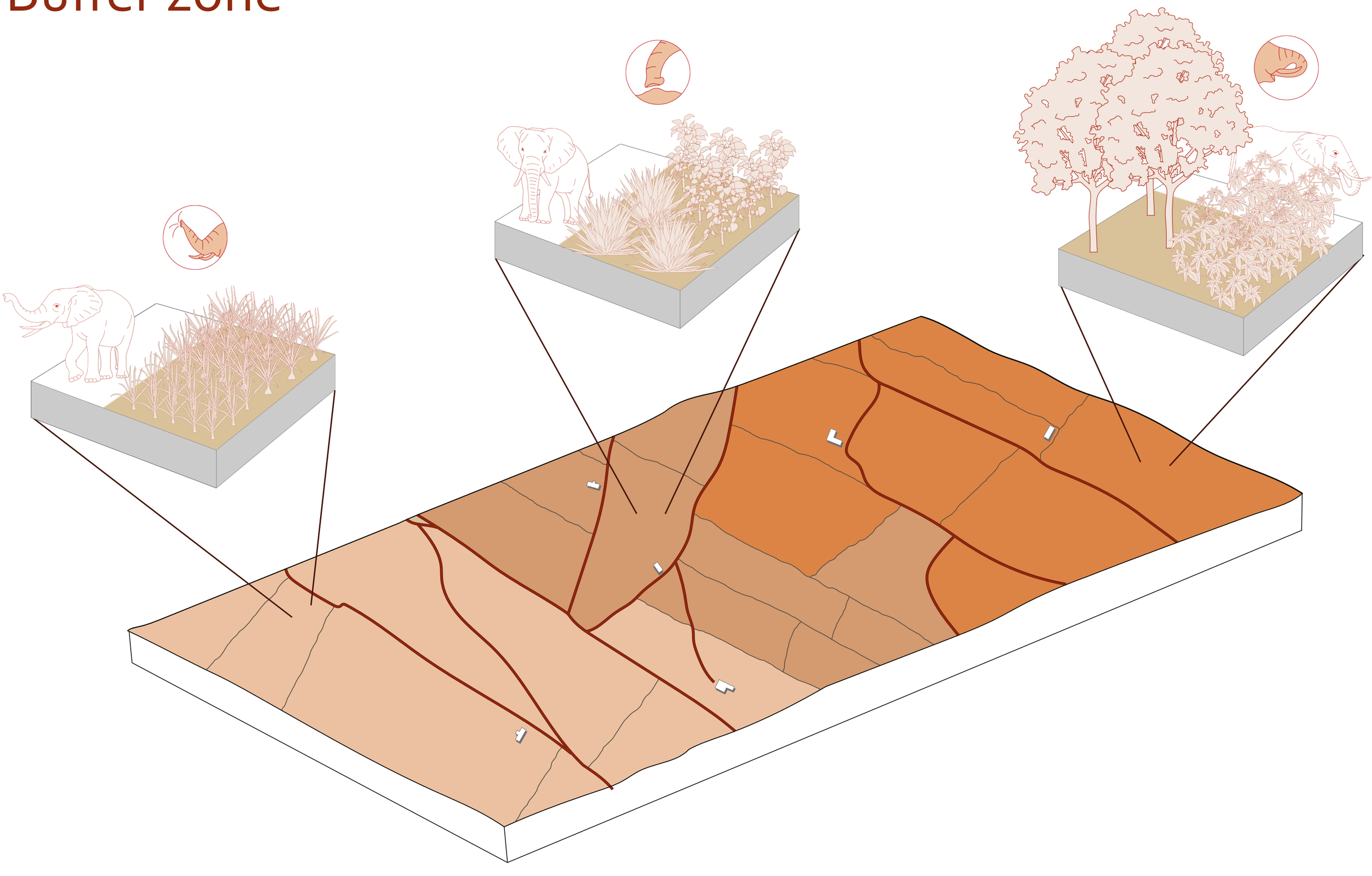


Castor oil

Buffer zone



Buffer zone

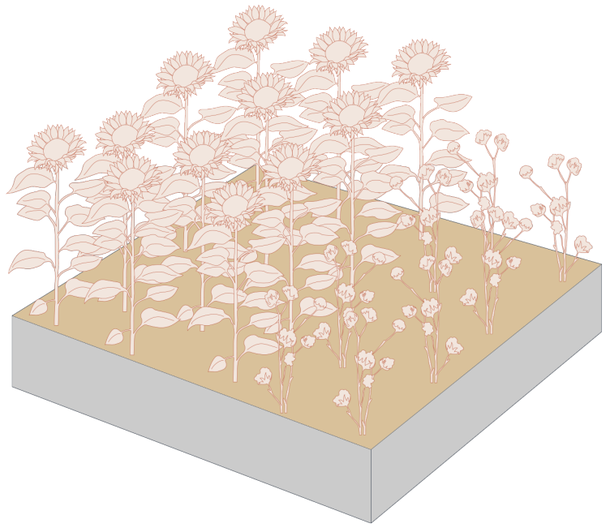


Community land

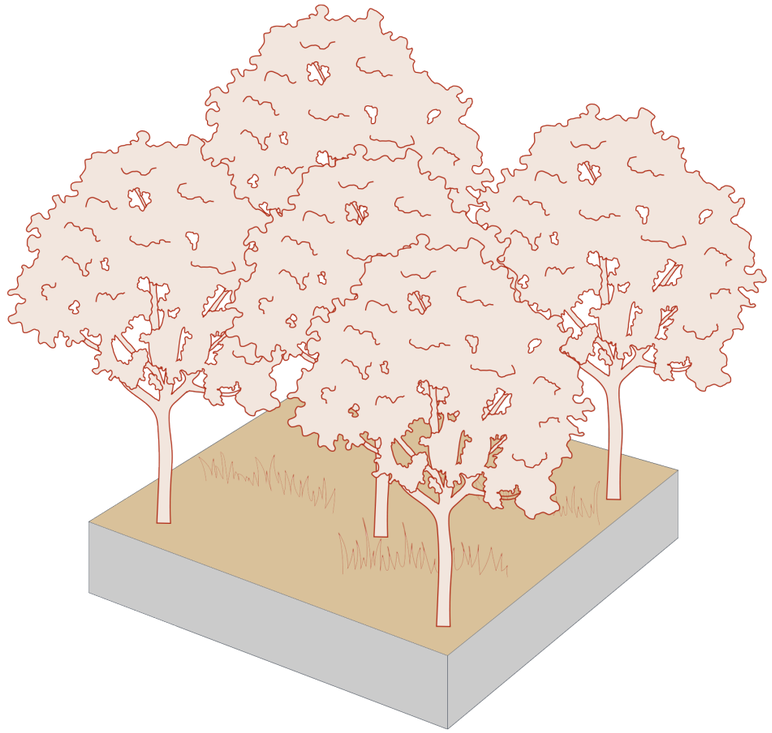
0 5 10 km

Community land - design principles

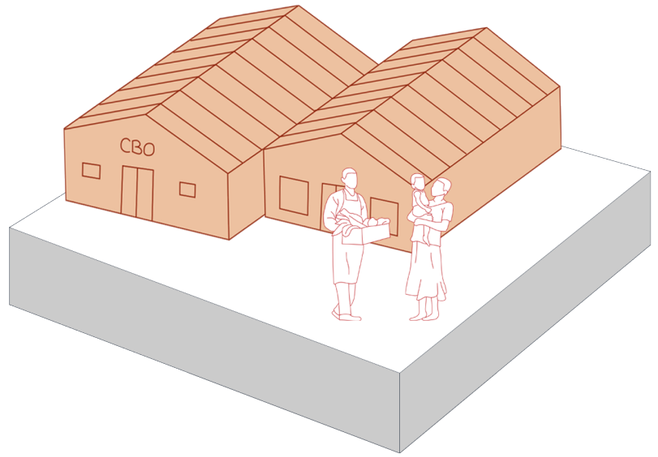
Income generating



Non-palatable crops

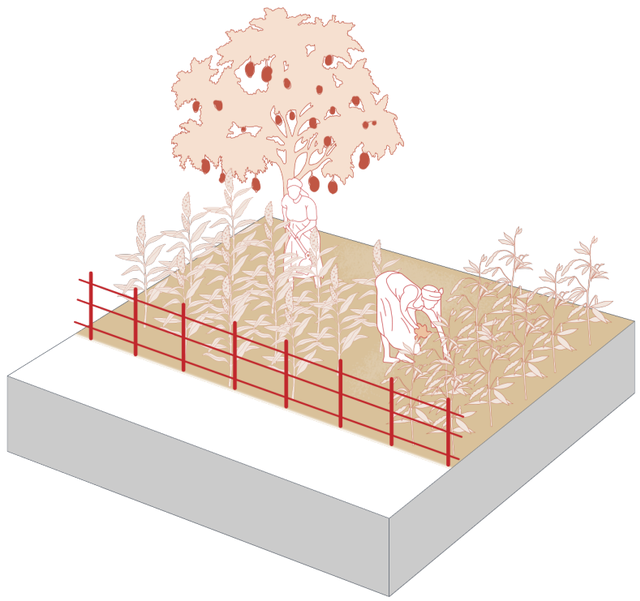


Agroforestry

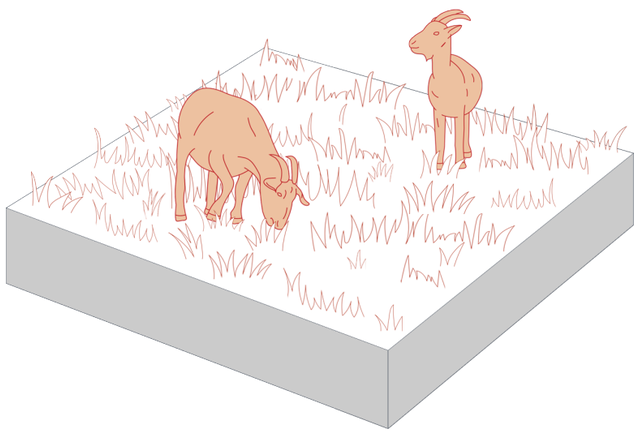


Community workplace

Inhabitants needs



Community farm



Livestock

Cash crops



Helianthus annuus



Sunflower oil and seeds



Simmondsia chinensis



Jojoba oil



Gossypium hirsutum



Cotton



Panicum miliaceum



Craft beer



Moringa oleifera



Medicinal leaves and bark



Melia volkensii



Timber



Sesamum indicum L.



Sesame seeds



Citrus limon



Lemons



Punica granatum



Pomgrenate fruit



Manihot esculenta



Cassava



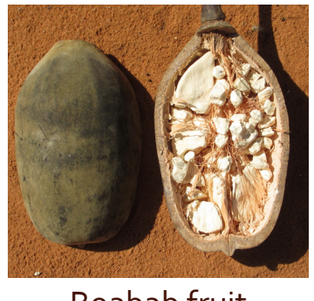
Cajanus cajan



Pigeon peas

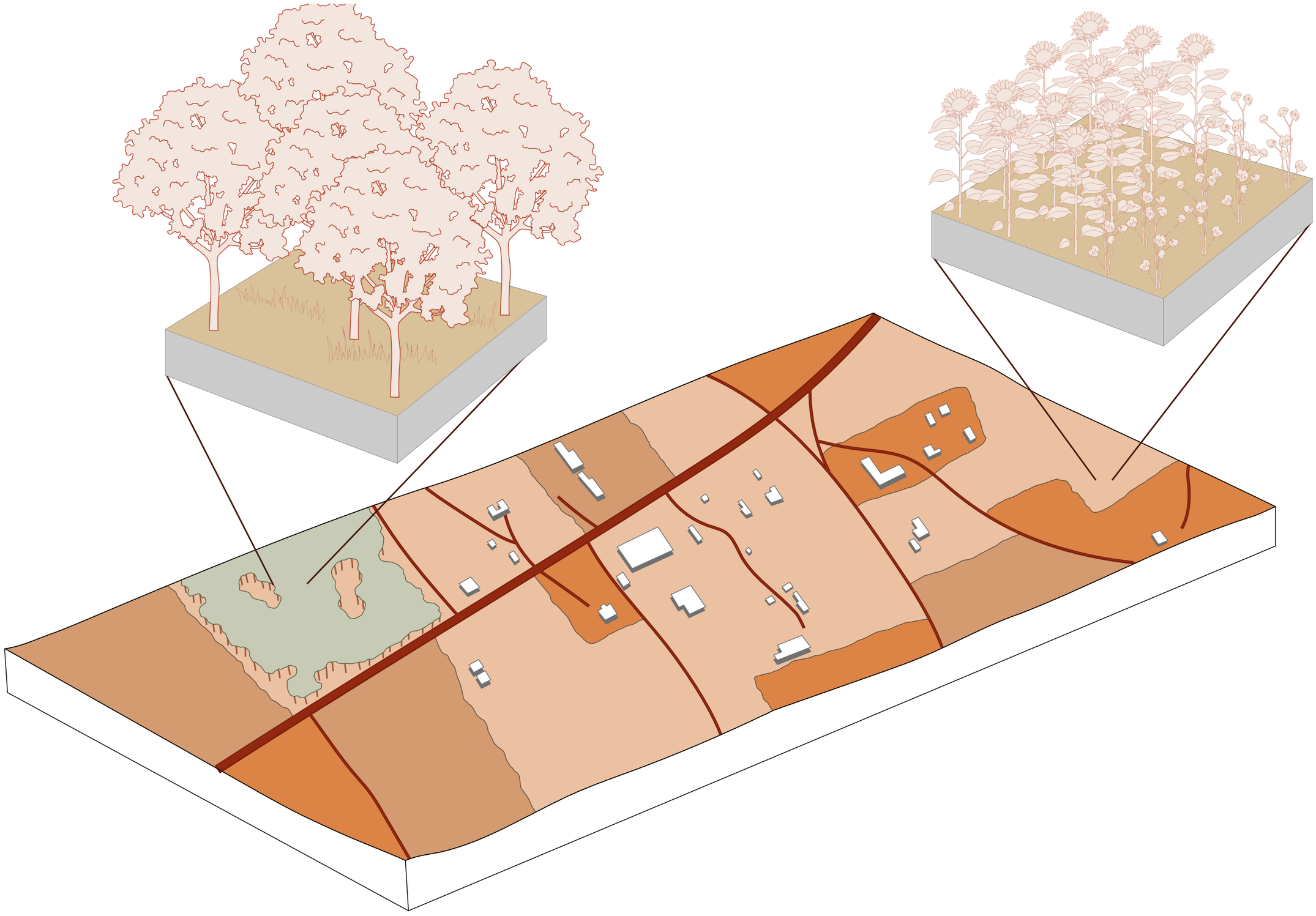


Adansonia digitata



Boabab fruit

Farmlands



Community farms

0 5 10 km

Community farm crops



Sclerocarya birrea



Vigna radiata



Dioscorea alata L.



Mangifera Indica



Annona reticulata



Carica papaya



Sorghum bicolor

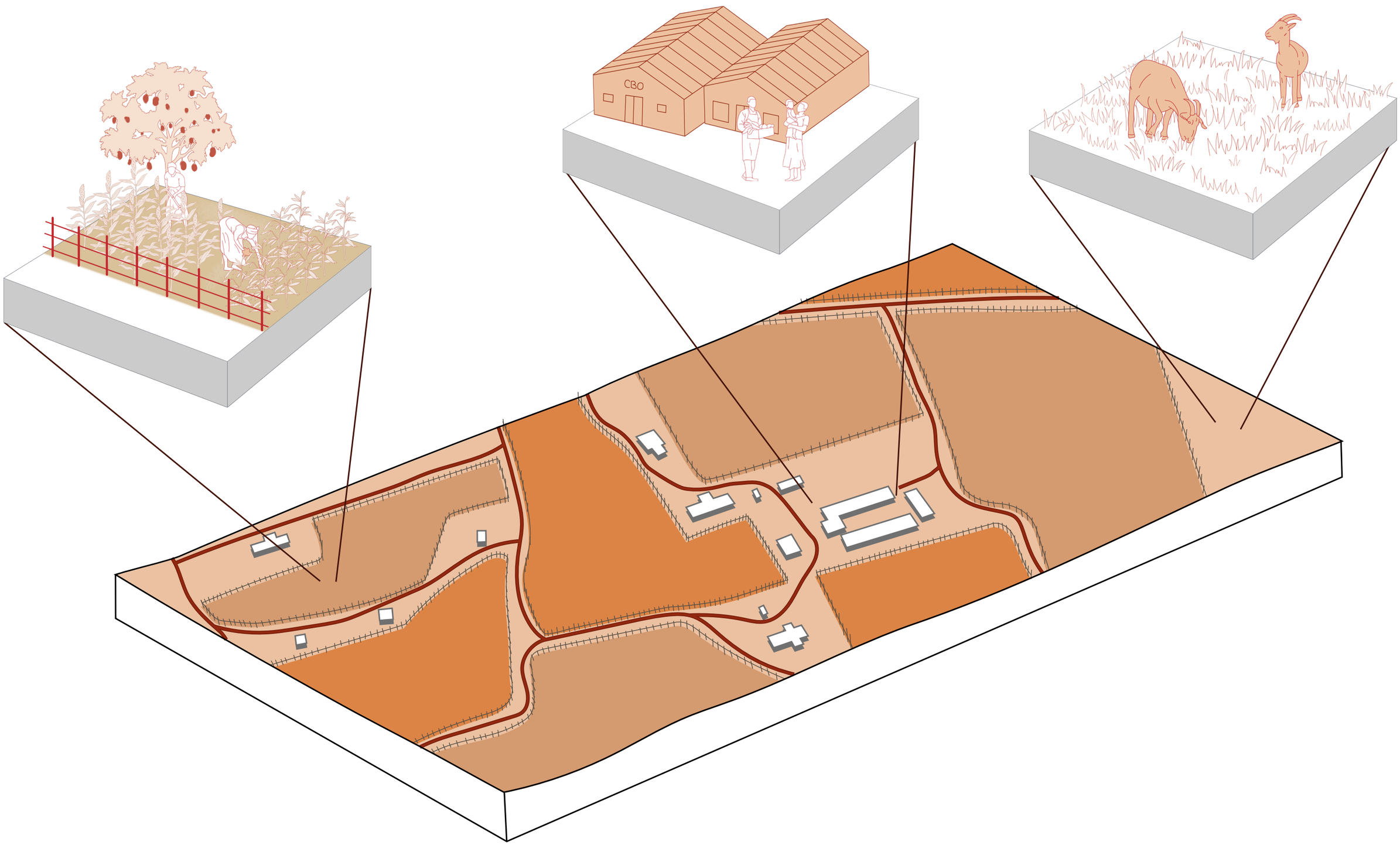


Eleusine coracana



Cymbopogon citratus

Community farms





PART IV - IMPLEMENTING

Design site 1

Design site 2

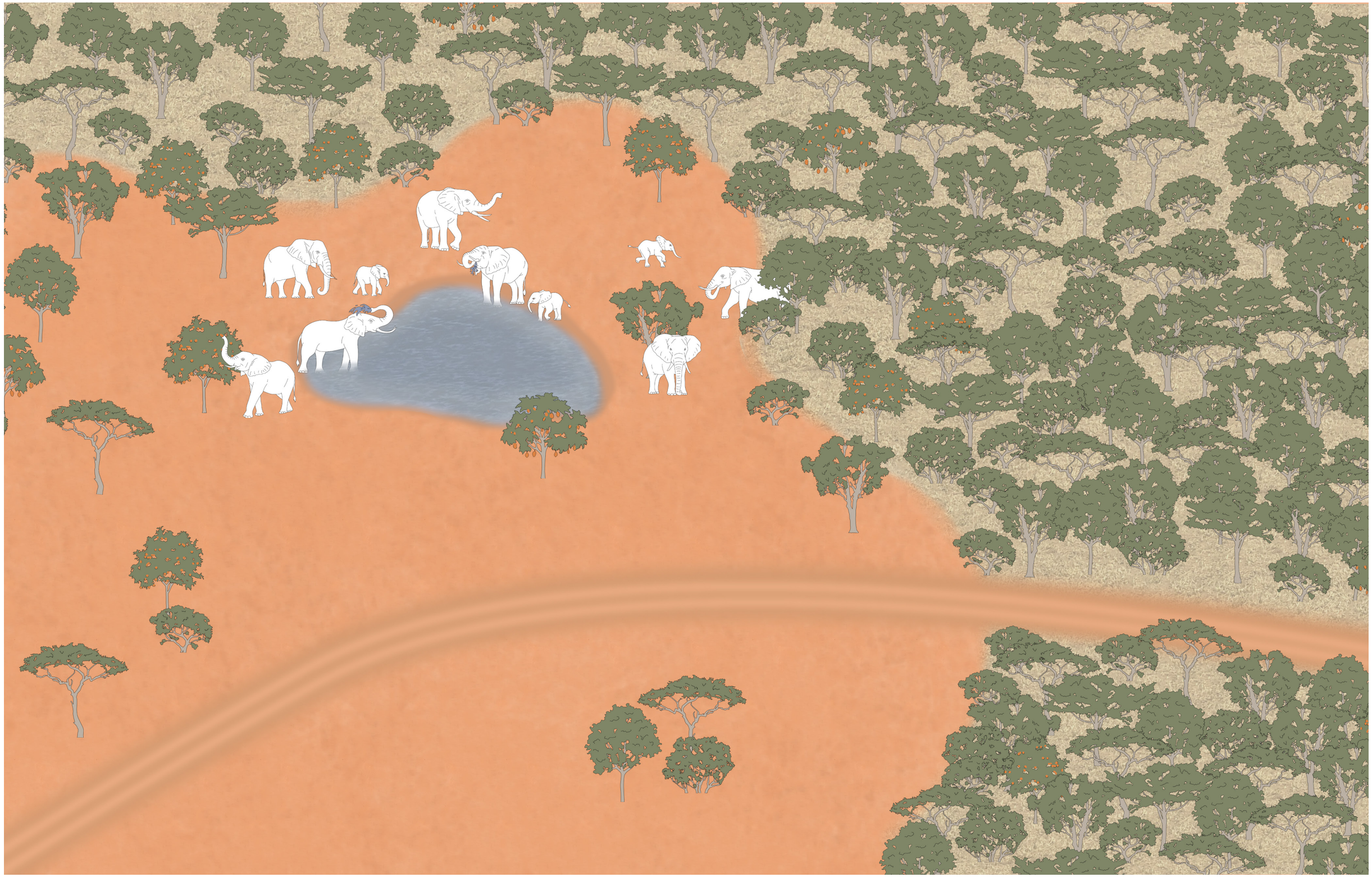
0

5 km

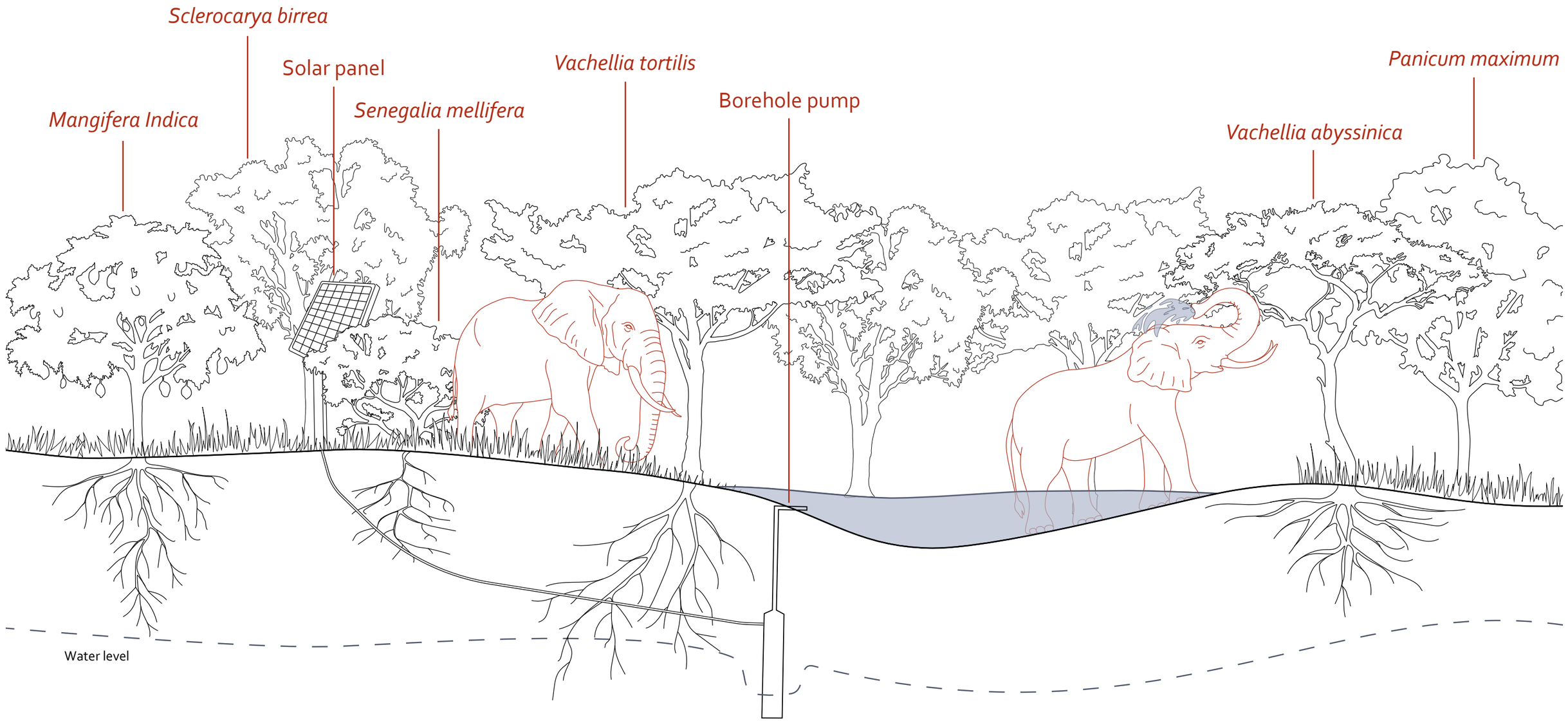
Site 1: existing situation



Site 1: elephant corridor



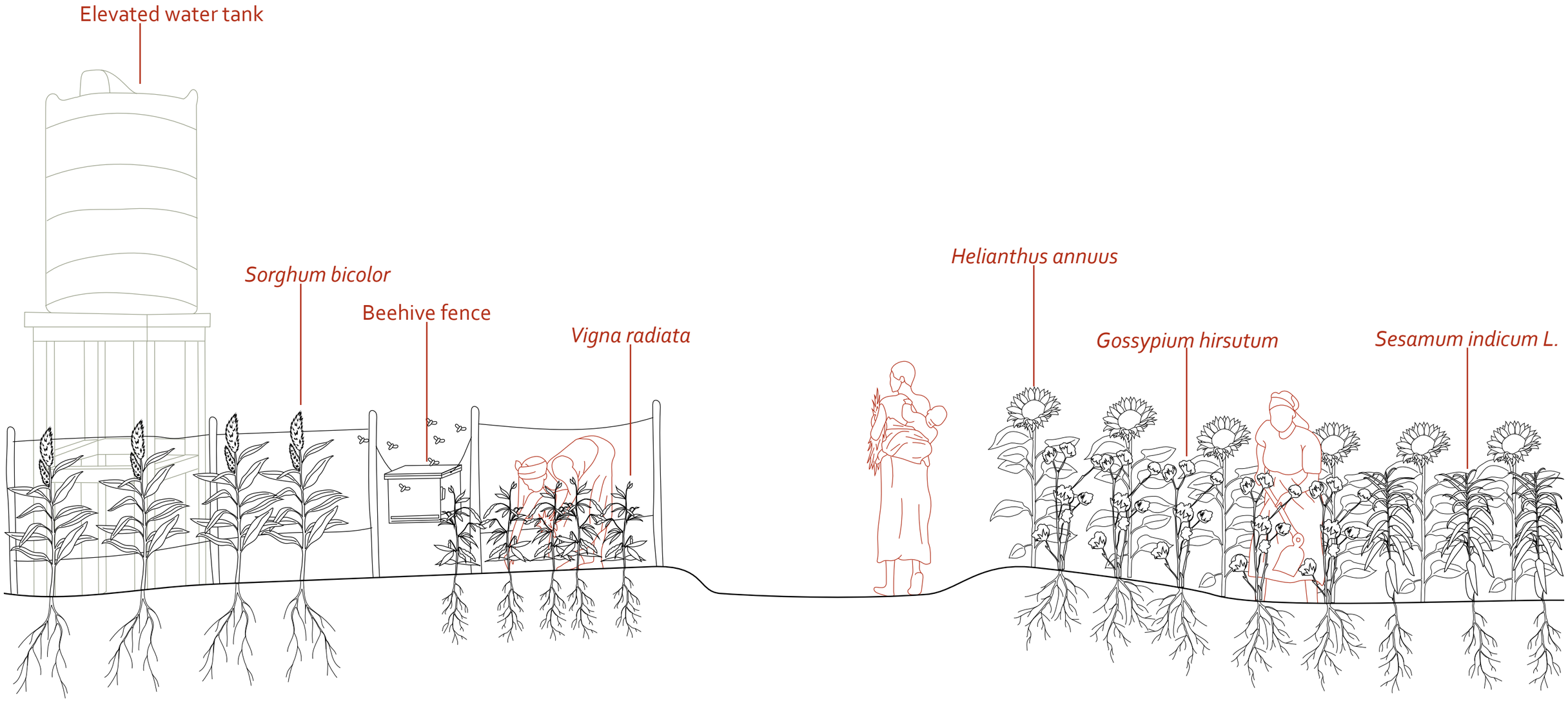
Site 1: elephant corridor



Site 2: existing situation

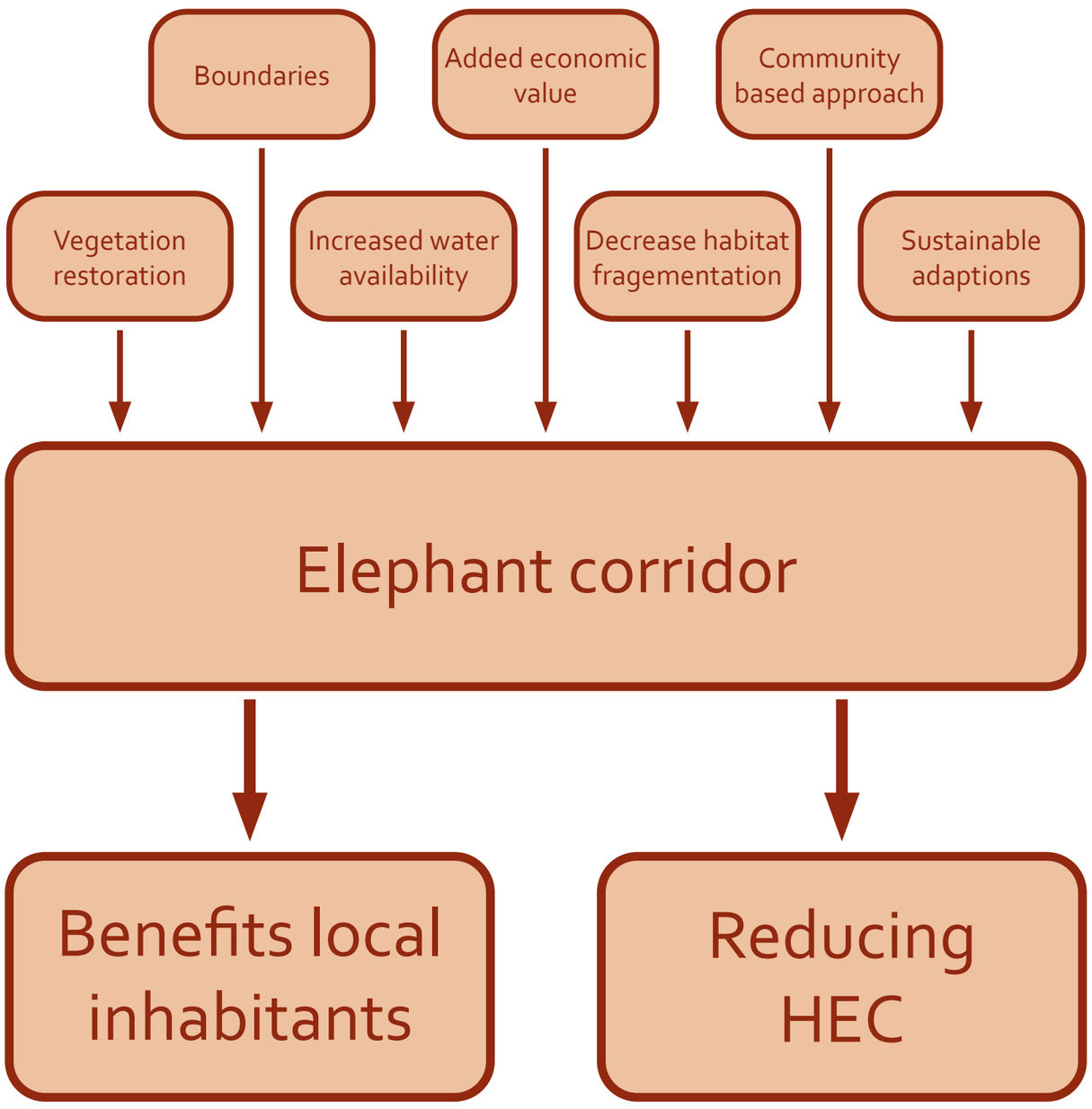


Site 2: community farm

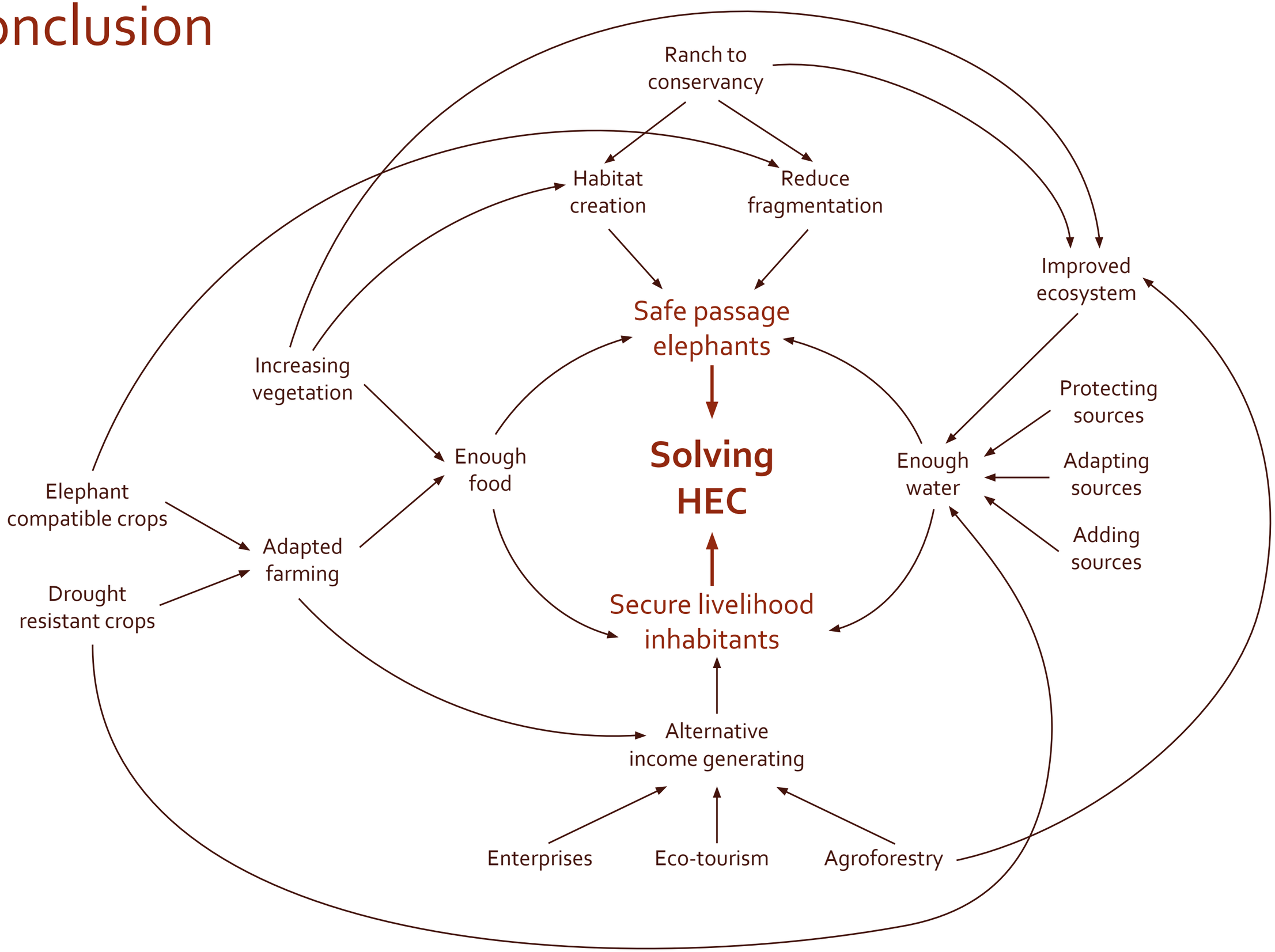


PART V - CONCLUSION

Conclusion


Boundaries
Added economic value
Community based approach
Vegetation restoration
Increased water availability
Decrease habitat fragementation
Sustainable adaptions
Elephant corridor
Benefits local inhabitants
Reducing HEC

Conclusion


Ranch to conservancy
Habitat creation
Reduce fragmentation
Improved ecosystem
Safe passage elephants
Increasing vegetation
Protecting sources
Enough food
Solving HEC
Enough water
Adapting sources
Adding sources
Elephant compatible crops
Adapted farming
Drought resistant crops
Secure livelihood inhabitants
Alternative income generating
Enterprises
Eco-tourism
Agroforestry


IKONGE BASKET
WEAVERS
KITECHE

Asante sana!

