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An aerial photograph of a rural landscape, likely in a developing country. The terrain is hilly and covered in green vegetation, with numerous terraced agricultural fields. A small village with several buildings and a dirt road is visible in the center. The sky is overcast with grey clouds.

Close N-counters: Visualizing nutrient flows to assist decision-making at local scales

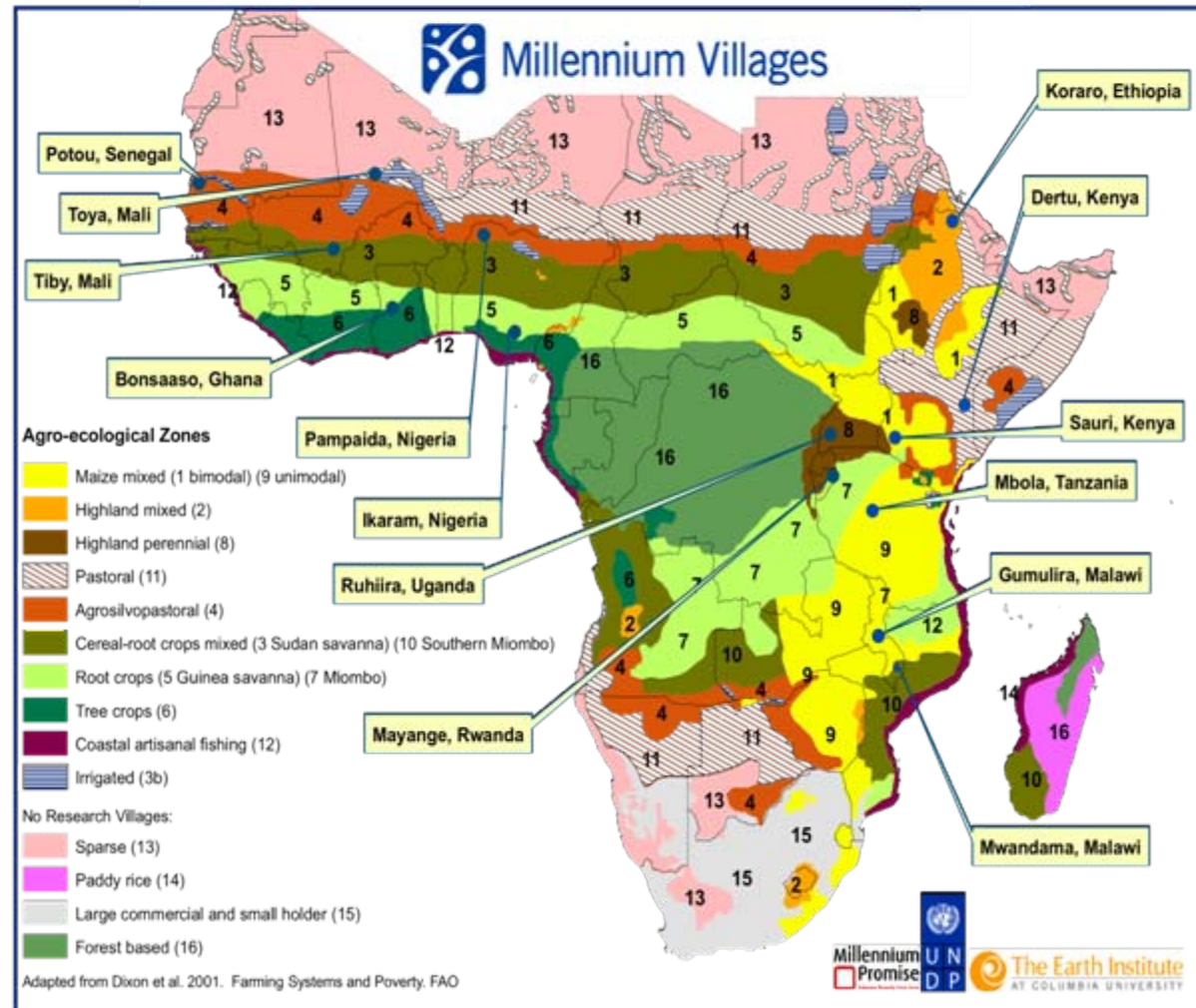
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Center for Environmental Research and Conservation
Columbia University

Nov. 3, 2010

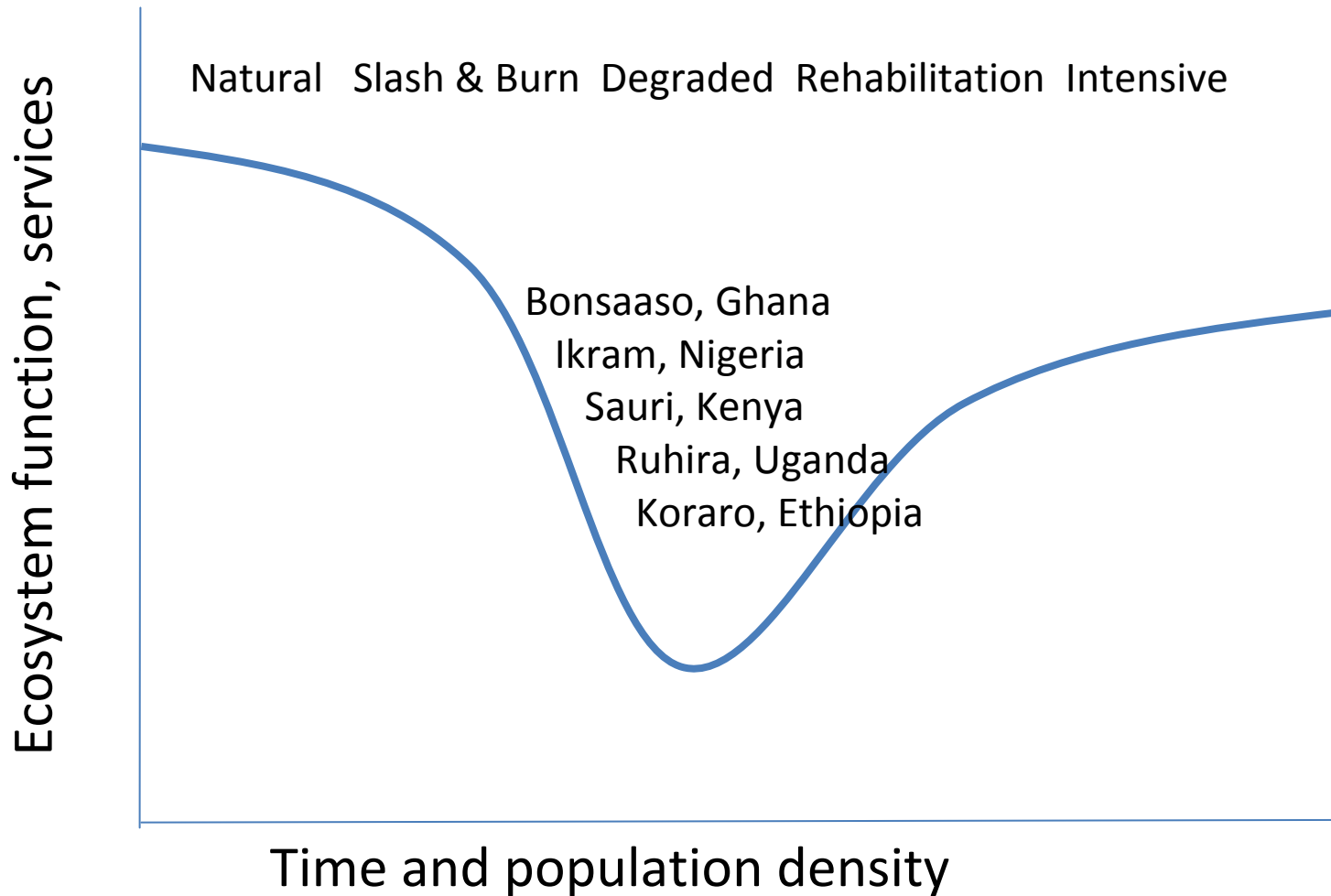
AMNH
SCCS-NY

Millennium Villages Project

- MDG 7: Ensuring Environmental Sustainability
- Half way point in 2010, limited success with cross cutting sectors including environment



Ecosystem Services Over Time



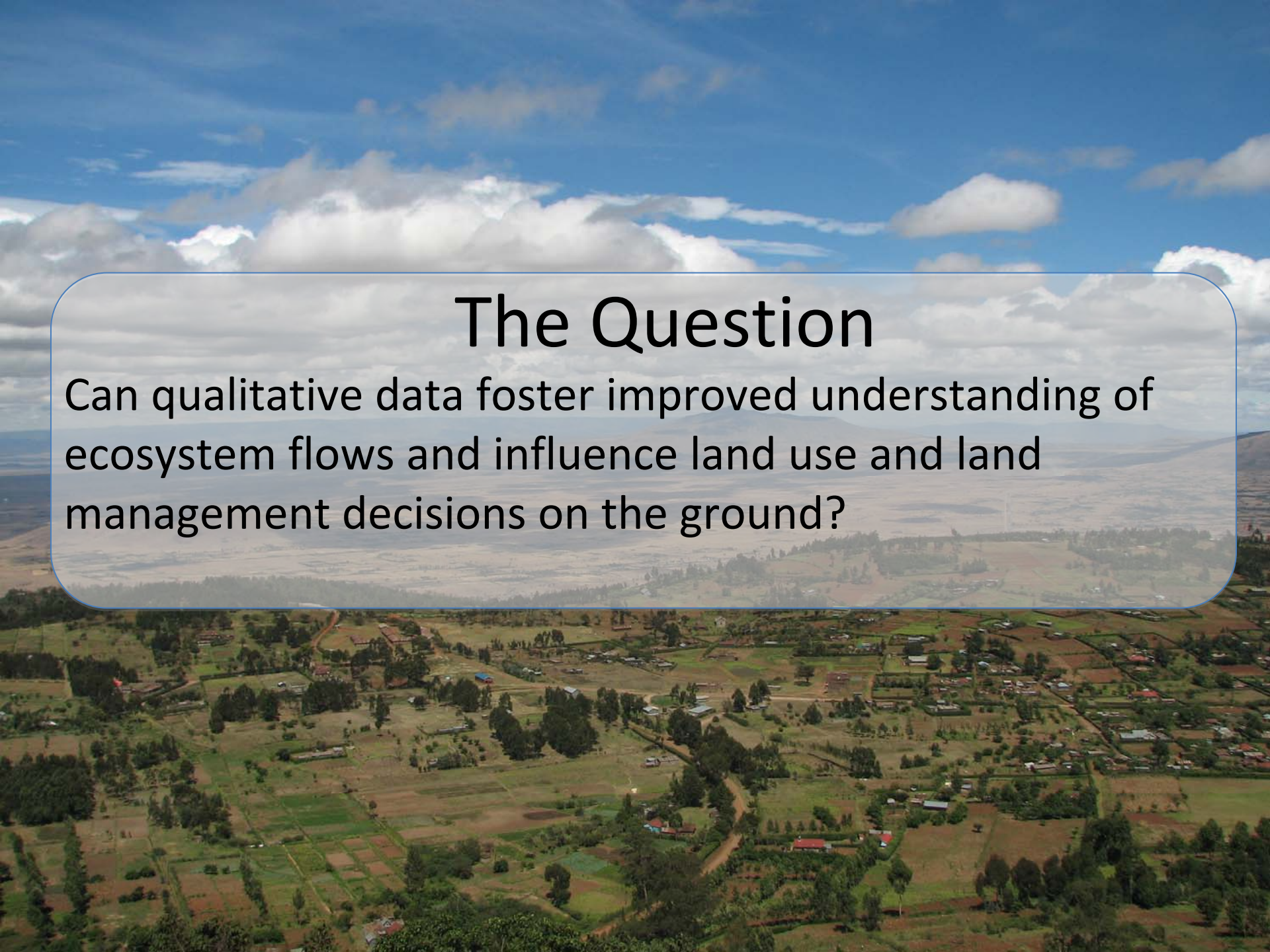


The Issue

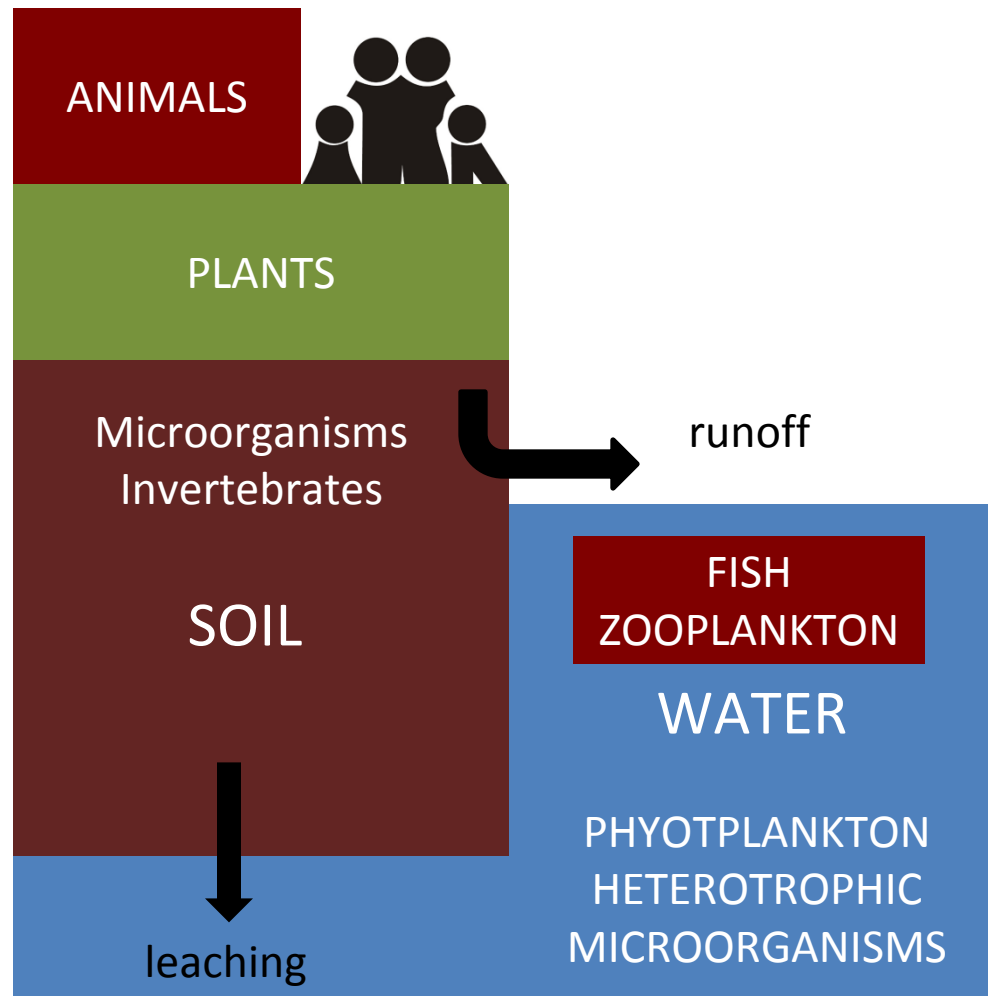
- Nitrogen inputs are a common “intervention” by development organizations to increase agricultural yields
- Many rural areas do not have the capacity to measure and monitor environmental impacts of these activities

The Question

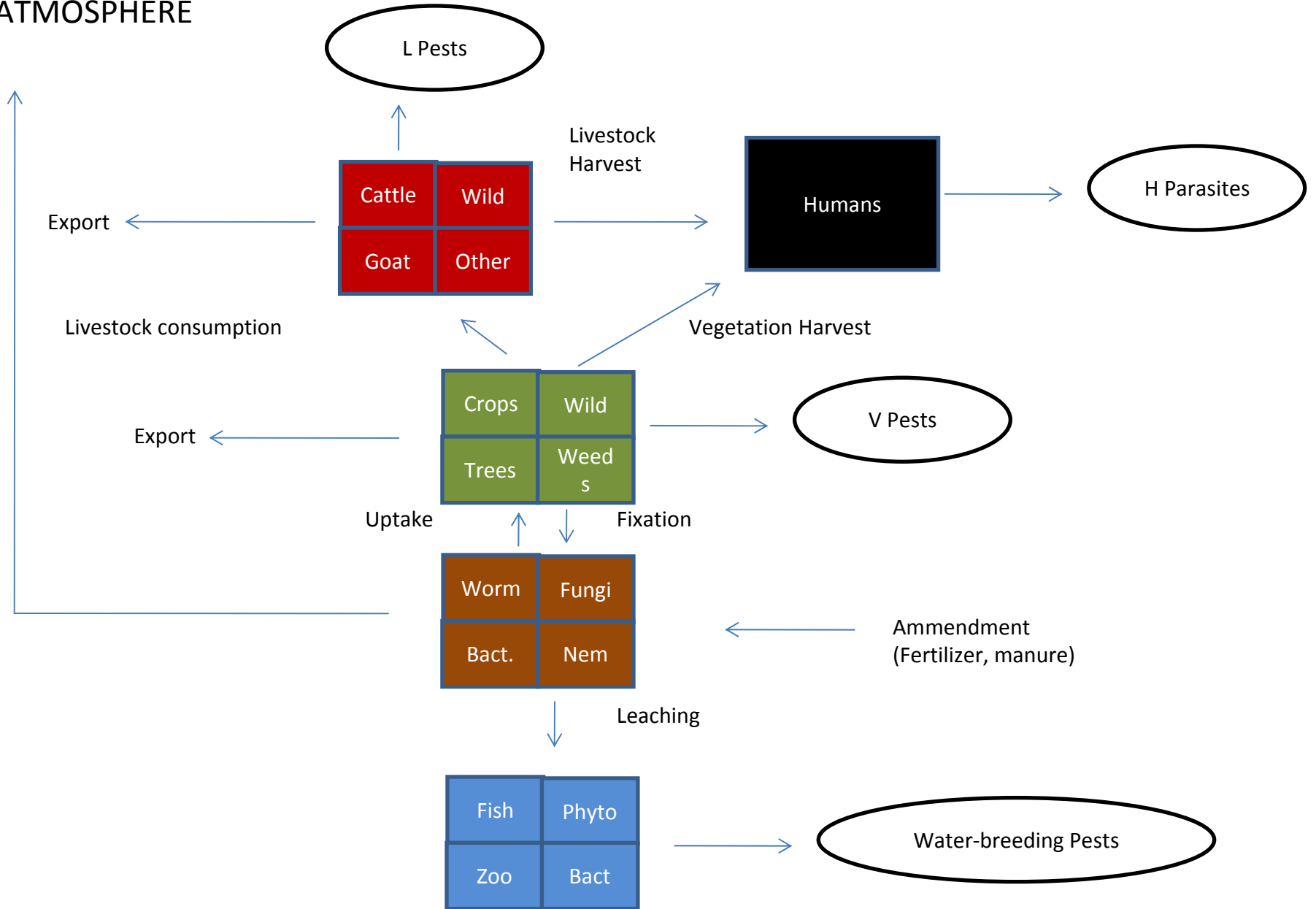
Can qualitative data foster improved understanding of ecosystem flows and influence land use and land management decisions on the ground?



“Service” Ecosystem

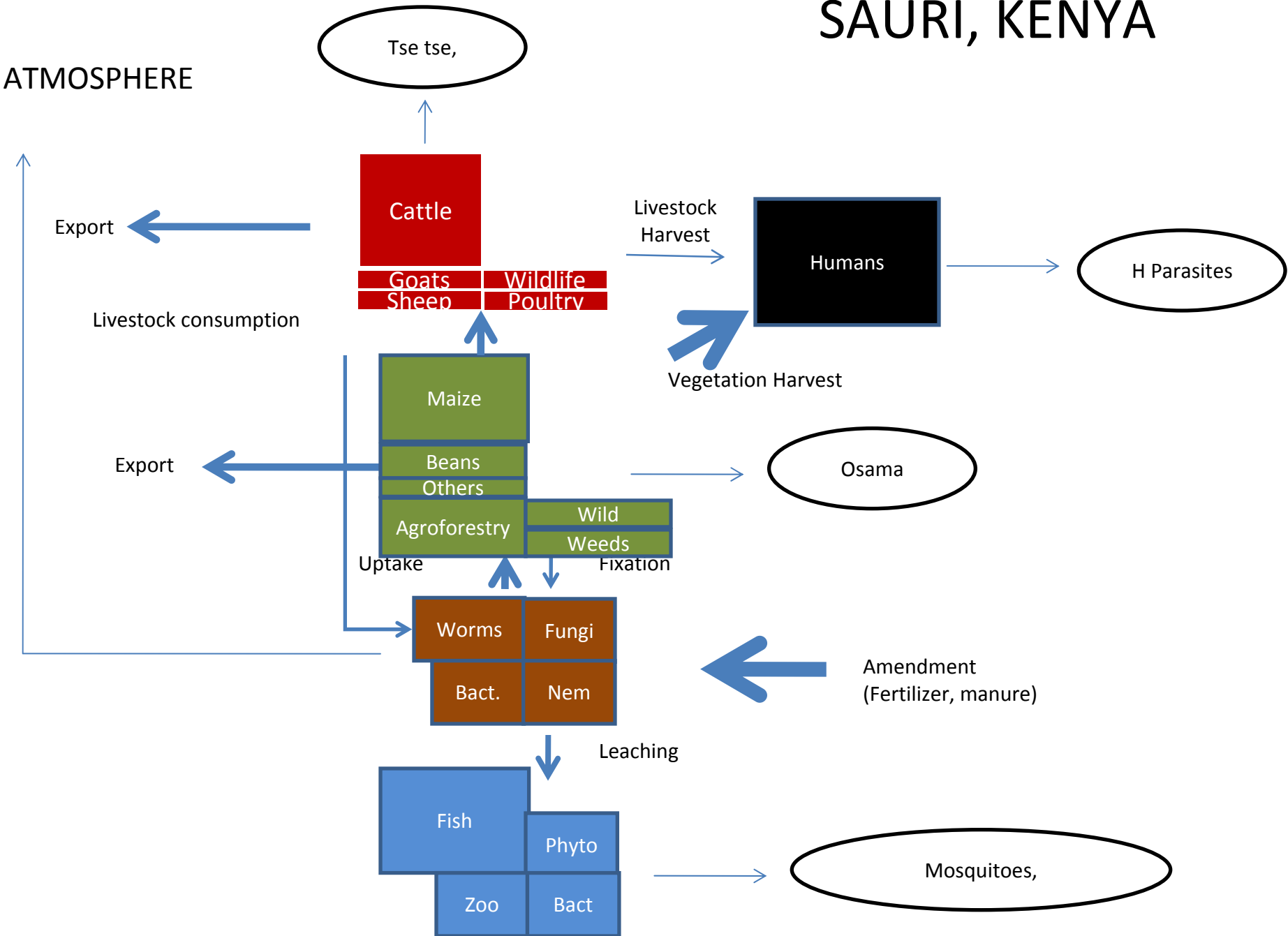


ATMOSPHERE



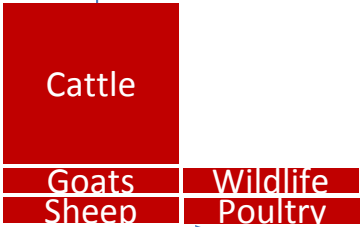
SAURI, KENYA

ATMOSPHERE



TIBY, MALI

ATMOSPHERE



Export

Livestock Harvest

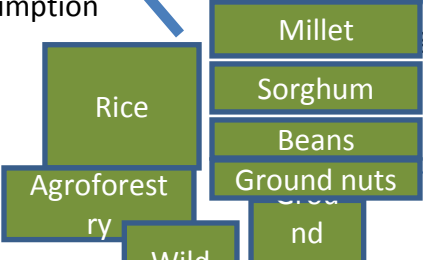


H Parasites

Livestock consumption

Vegetation Harvest

Export



Storage pests

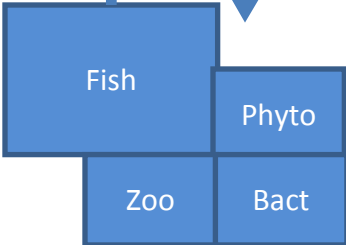
Uptake

Fixation

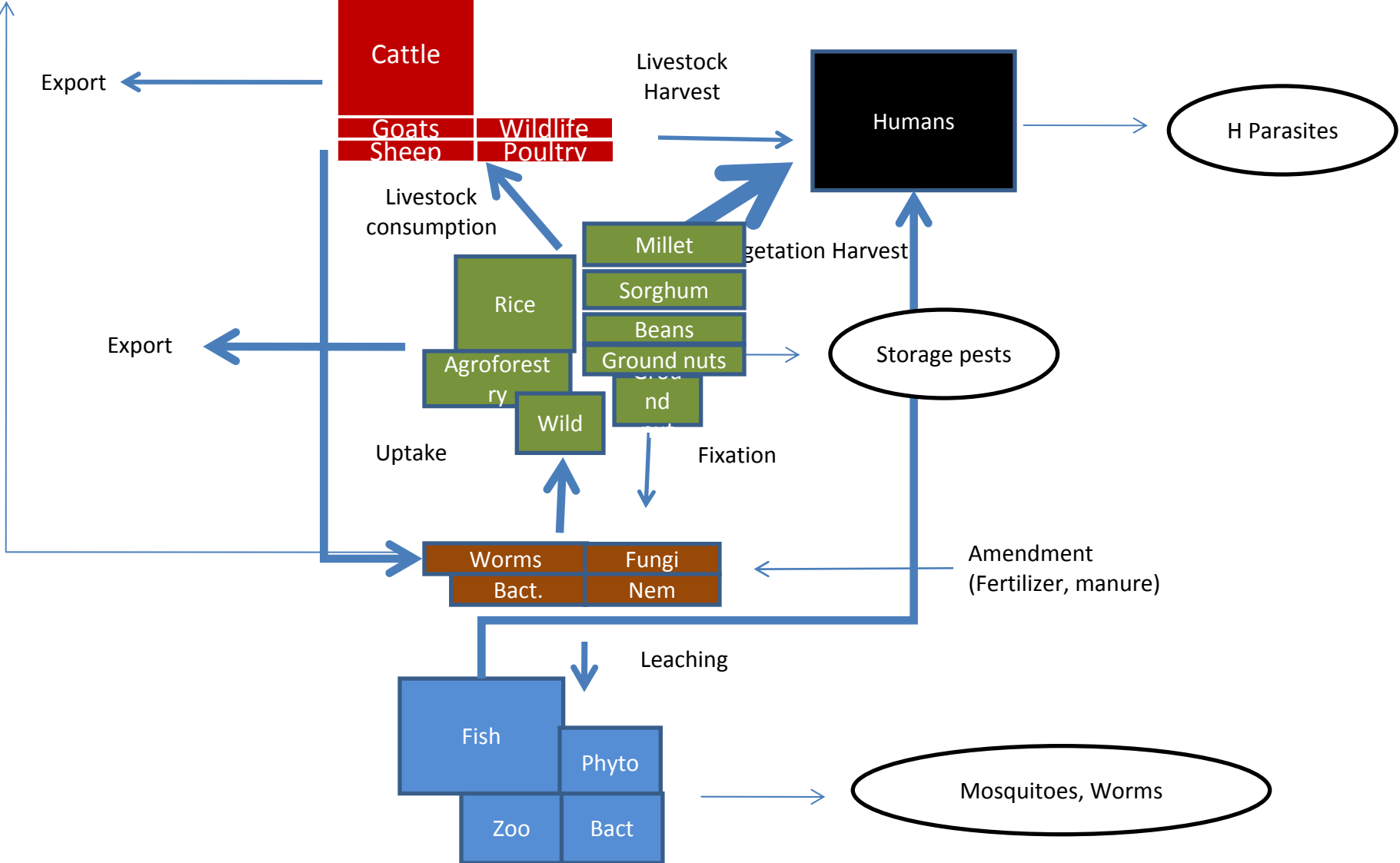


Amendment (Fertilizer, manure)

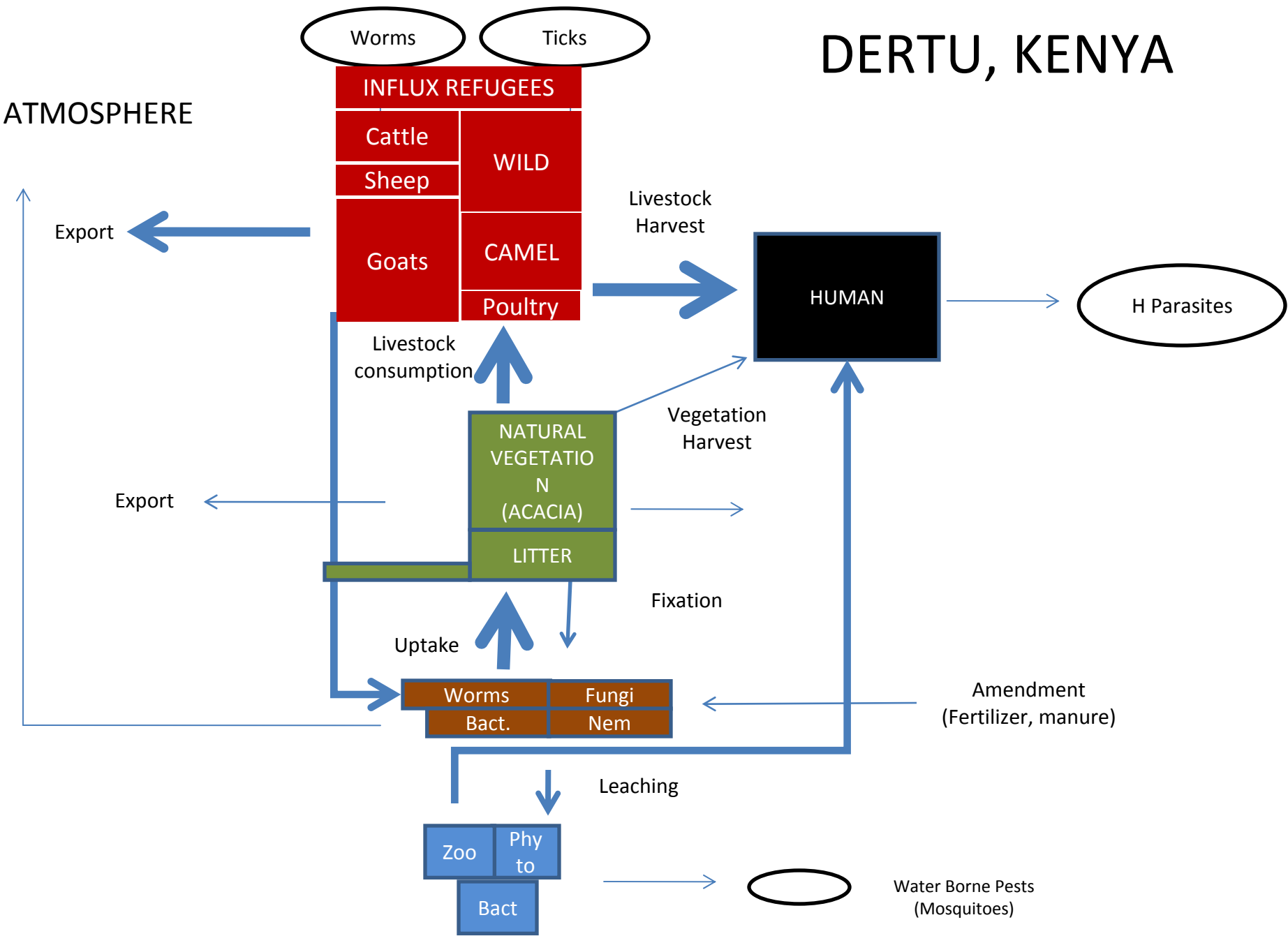
Leaching



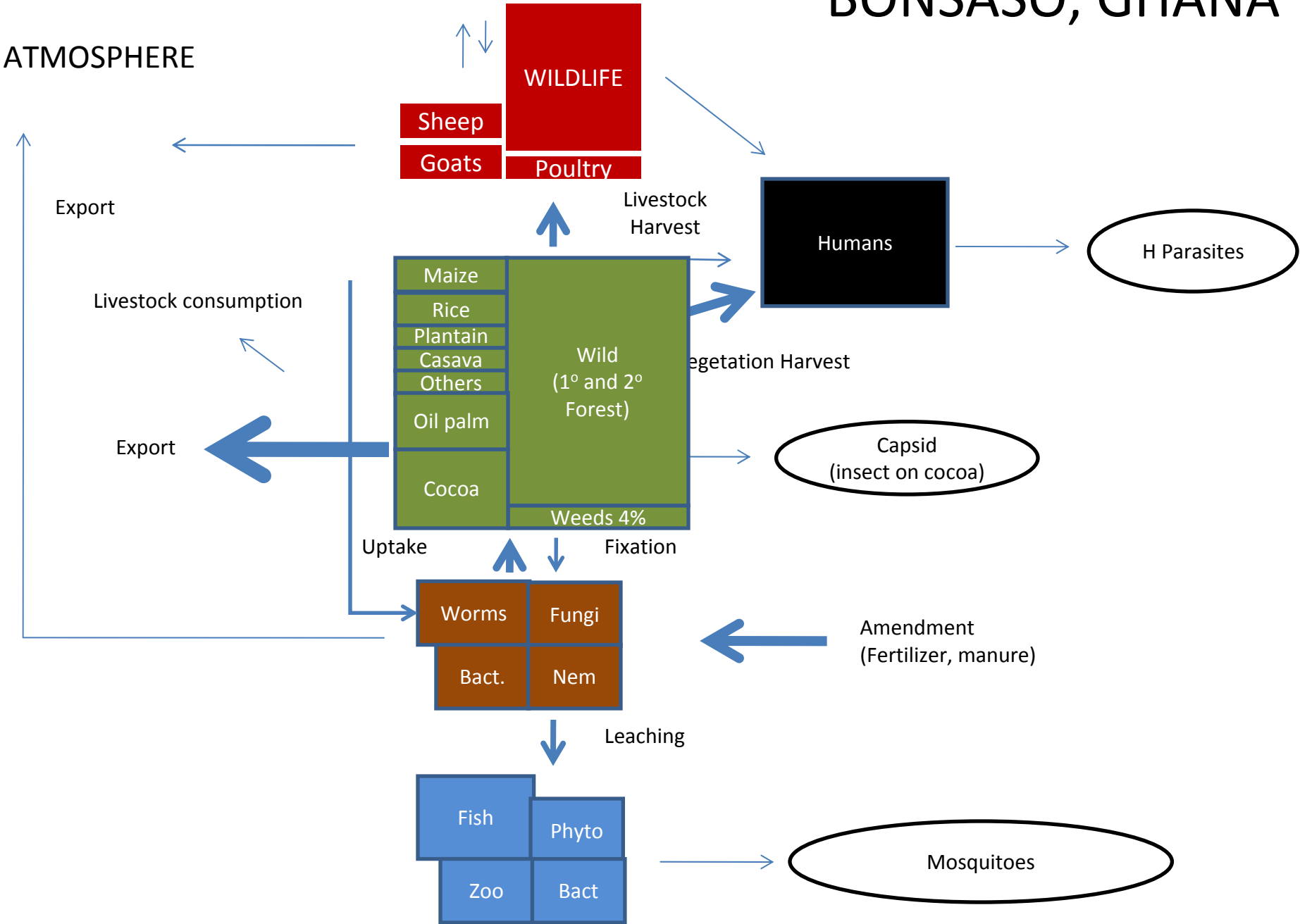
Mosquitoes, Worms



DEERTU, KENYA



BONSASO, GHANA



Preliminary Predictions

- Visualization exercise promotes understanding of among farmers and land managers
- Iterative free-flowing conversation more effective than consistent set of questions
- Potential for site specific cause-effect comparisons over time may be most instructive



A person is seen from behind, sitting in a traditional dugout canoe on a large body of water. The person is holding a long wooden paddle. The background features a large, terraced hillside covered in lush green vegetation and trees. The sky is overcast with grey clouds. The text "Thanks for your attention!" is overlaid in white on the water.

Thanks for your attention!