UNIVERSITÄT BONN

Planting fruit trees for nutrition in Kenya

Cory Whitney[1,2], Keith Shepherd[3], Michael Krawinkel[4], Denis Lanzanova[2], Eike Luedeling[1,2,3]

[1]University of Bonn, Institute of Crop Science and Resource Conservation, [2]Center for Development Research (ZEF), Germany, [3]World Agroforestry Centre (ICRAF), Kenya, [4]Justus-Liebig University Giessen, Inst. of Nutritional Science, Germany

Evidence-based support is needed for policy decisions regarding agriculture for nutrition. What are the health implications of planting fruit trees for farming households in Kenya?
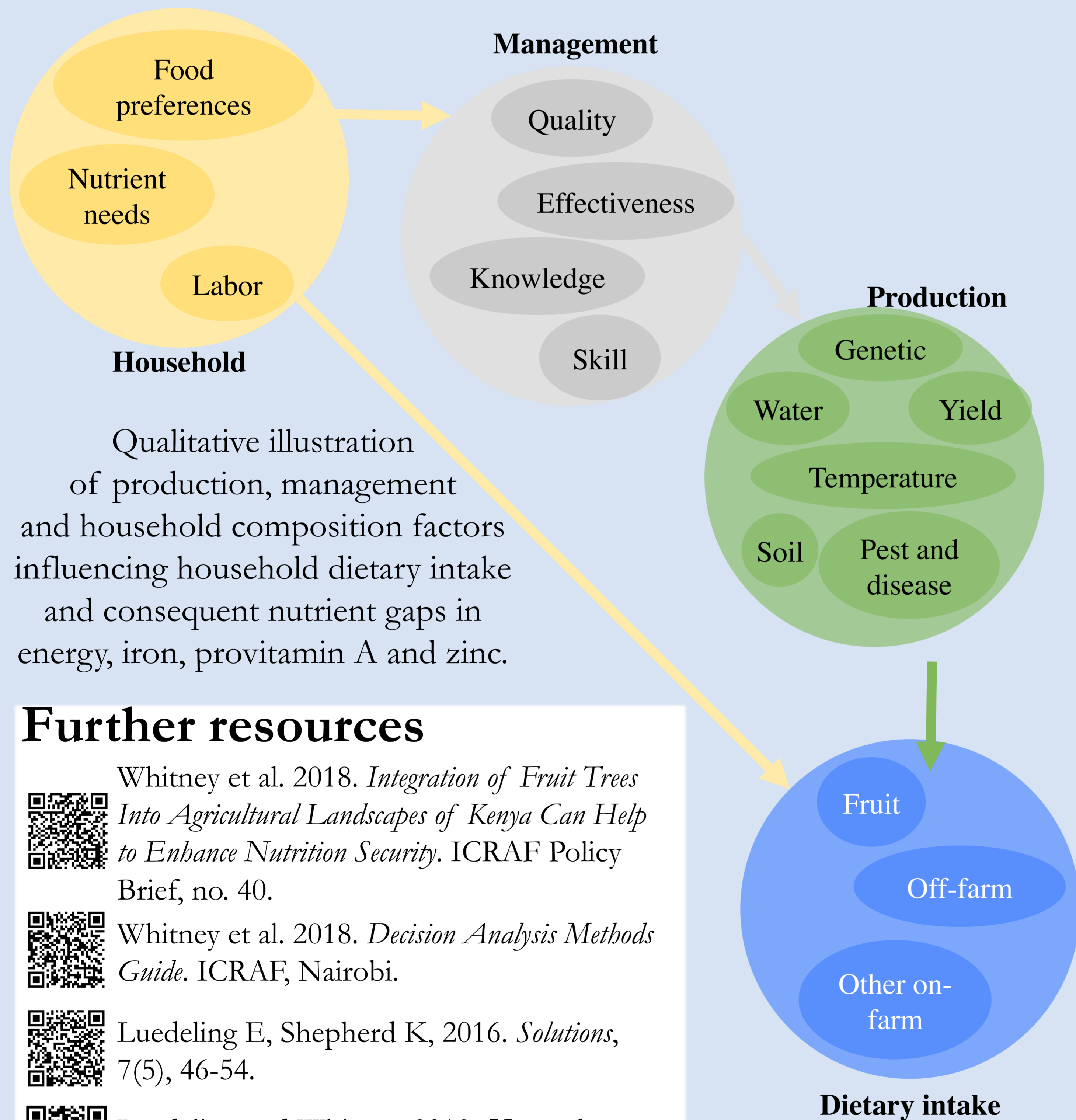
Fruit tree decisions in Kenya

- Kenya seeks better nutrition outcomes from agriculture as outlined in the Vision 2030, Constitution and resulting policies: *Agricultural Sector Development Strategy (ASDS), National Food Security and Nutrition Policy (NFSNP)* and *National Agricultural Sector Extension Policy (NASEP)*
- Planting more fruit trees could improve nutrition in Kenya, especially for rural farming families
- There is a lack of scientific support to anticipate specific policy outcomes from planting fruit trees

Decision Analysis

- Utilizes available data and expert knowledge
- Allows for the incorporation of disparate data sources and what might be considered 'imprecise' inputs
- Creates a representation of the current understanding of relationships within the target system.
- Can be applied to estimate the household nutrition benefits of policies related to planting fruit trees
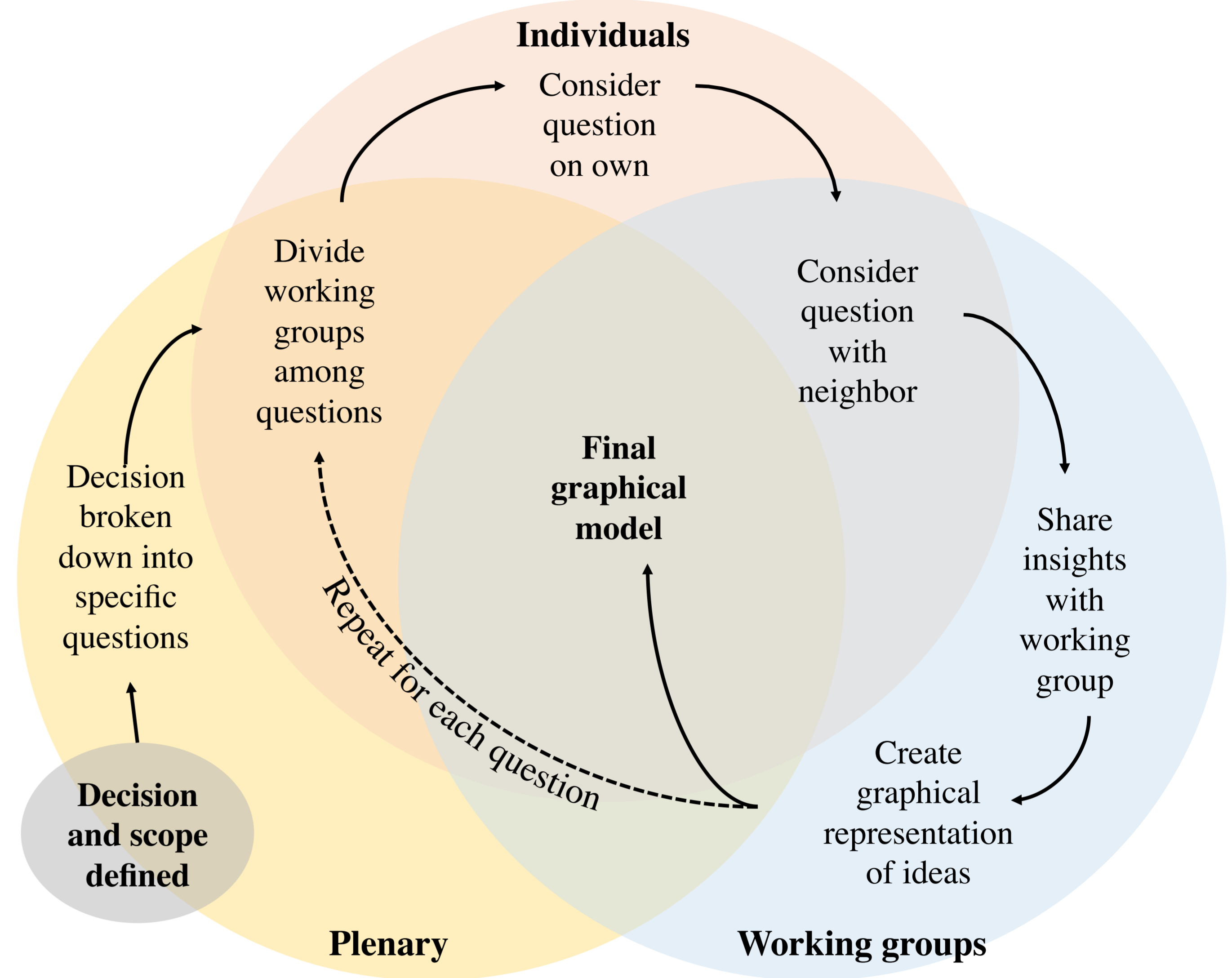
Qualitative impact pathway model

Comparison of farming households in Kenya with varieties of mango (*Mangifera indica* L.) and avocado (*Persea americana* Mill.) trees to those without.

Qualitative illustration of production, management and household composition factors influencing household dietary intake and consequent nutrient gaps in energy, iron, provitamin A and zinc.

Further resources

Whitney et al. 2018. *Integration of Fruit Trees Into Agricultural Landscapes of Kenya Can Help to Enhance Nutrition Security*. ICRAF Policy Brief, no. 40.

Whitney et al. 2018. *Decision Analysis Methods Guide*. ICRAF, Nairobi.

Luedeling E, Shepherd K, 2016. *Solutions*, 7(5), 46-54.

Luedeling and Whitney, 2018. *Harvard Dataverse*.

Process for collaborative decision model design. This process is performed in a workshop where expert knowledge holders and analysts jointly construct an impact pathway model of a particular decision.

Nutrition benefits of trees

Results from the qualitative impact pathway programmed as a Bayesian Network model in AgenaRisk Professional Version 7.0
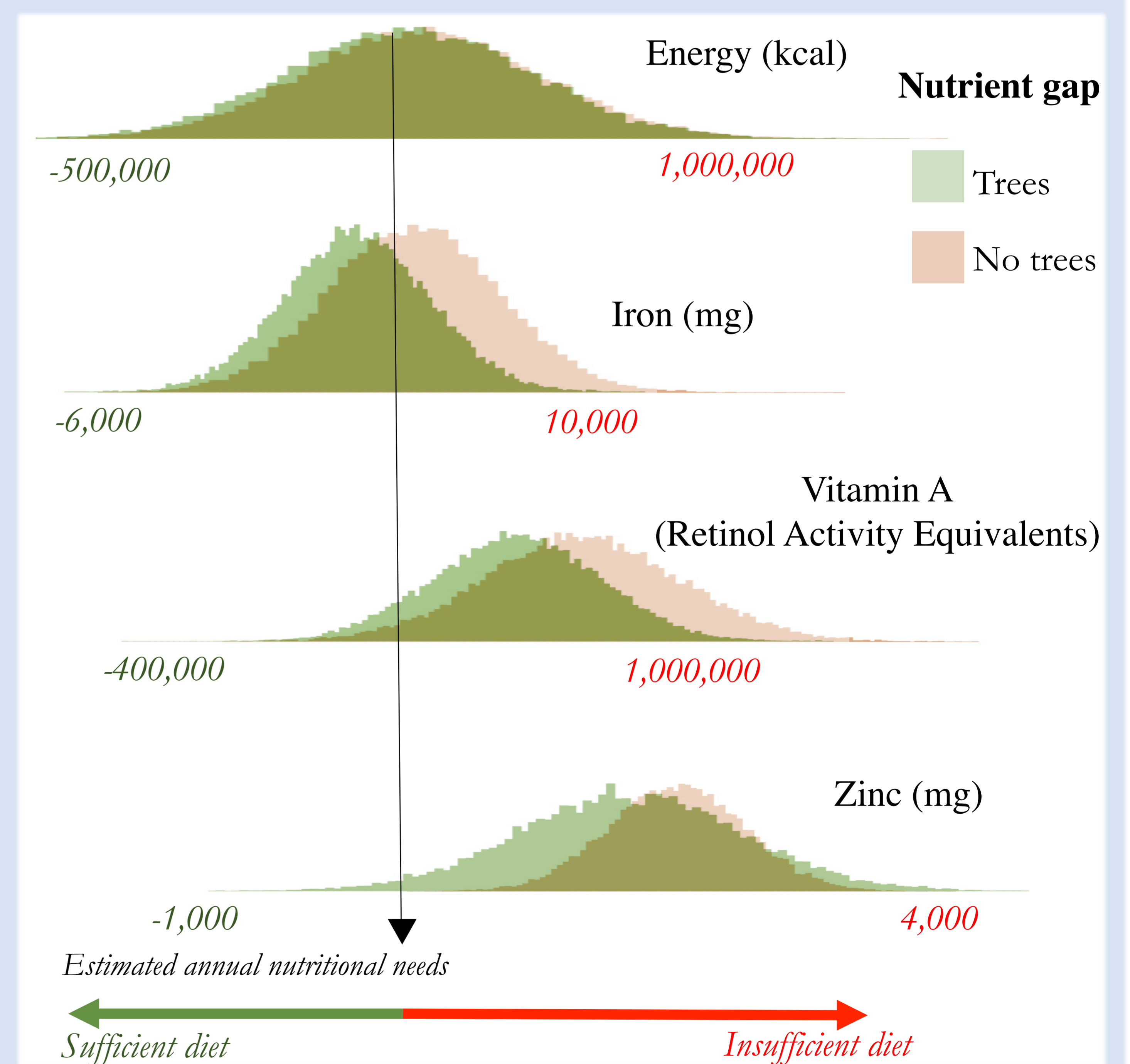
Key findings

- Fruit trees can provide many benefits and contribute to Kenya's national nutrition goals
- Various interacting factors influence fruit tree planting and subsequent nutrition outcomes for farmer households in Kenya
- Decision analysis can provide appropriate support for understanding the probable outcomes of nutrition-related policy decisions

INRES — Institut für Nutzpflanzenwissenschaften und Ressourcenschutz

zef — Center for Development Research University of Bonn

JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN

World Agroforestry Centre

Department for International Development

immana — Innovative Methods and Metrics for Agriculture and Nutrition Actions