

# Testing relationships in an impact pathway model of interventions for Agroforestry

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## Impact pathways of agroforestry interventions

- Agroforestry interventions are often expected to trigger a series of events that leads to impacts.
- Impact pathways can make these causal linkages explicit, help anticipate problems and strengthen project design.
- We propose using impact pathways to guide adaptive management of development projects. This can be achieved by treating the impact pathway as a collection of hypotheses about causal relationships between system components, which can be tested by targeted research.
- By evaluating causal linkages during project implementation, likely points of failure can be anticipated and possibly eliminated, allowing adaptive project management.

## Materials and Methods

- The study was carried out with 195 farmers in Kavre and Lamjung districts of Nepal.
- We developed a conceptual impact model for the 'Enhancing livelihoods and food security from agroforestry and community forest in Nepal' (EnLiFT) project based on field observations across all districts, focus group discussions (n=9) and participatory modelling sessions (n=6).
- The conceptual model was then synthesized into an impact pathway model that explicitly spelled out all cause-effect relationships needed for project success.
- Questionnaires (n=40 farmer households) were then used to test selected linkages in the impact pathway. Strengths of associations between elements of the impact model were tested in R (2018) with the ciBinomial() function of the gsDesign package (Anderson, 2016).

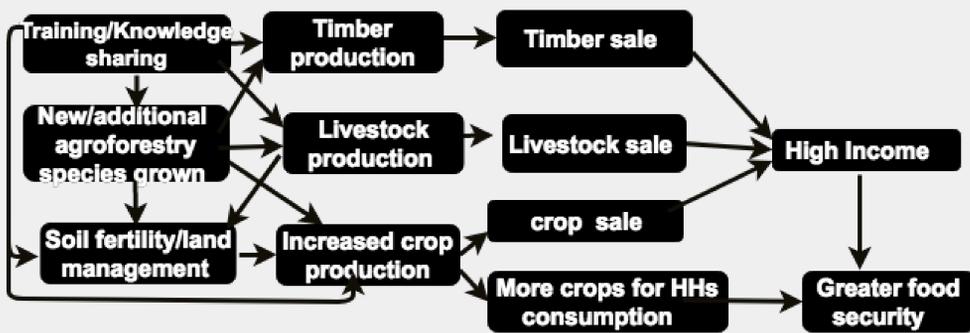


EnLiFT Project farmer inspects vegetables with fodder and maize field in agroforestry project in Kavre district of Nepal.

## Impact pathway validation



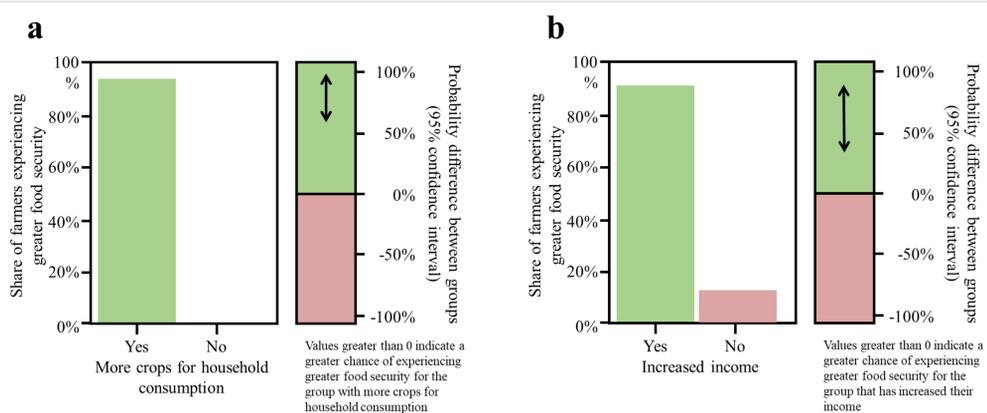
Impact pathway of the EnLiFT Project synthesized after the discussion with farmers, project workers and agroforestry experts. Some of the linkages in the pathway were tested. Green arrows show strong relationships, yellow arrows show weak relationships and red arrows show no relationships between tested variables in the impact pathway model.



Conceptual framework of EnLiFT agroforestry interventions.



EnLiFT Project agroforestry system of maize crops for household consumption in the mid hill region of Nepal.



Example of two of the ciBinomial() confidence interval tests. **a.** Share of farmers experiencing greater food security among farmers with more (n=32) and fewer (n=8) food crops for household consumption and **b.** with high and low income.

## Key findings

- Impact pathway validation can provide guidance for strengthening project design
- The study shows that the benefits from agroforestry are apparent only in small scale
- Most of the relationships in the pathway are plausible. But great efforts are needed to make it sustainable

Please visit <https://enliftnepal.org/> for more information about the EnLiFT project in Nepal.

## References

Anderson K, 2016. gsDesign: Group Sequential Design (Version 3.0-1). <https://CRAN.R-project.org/package=gsDesign>  
R core team, 2018. R Foundation for Statistical Computing, Vienna, Austria.



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