

Second Cordillera Highland Agricultural Resource Management Project (CHARM II) in the Philippines

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IFAD evaluates the past so we can improve the future

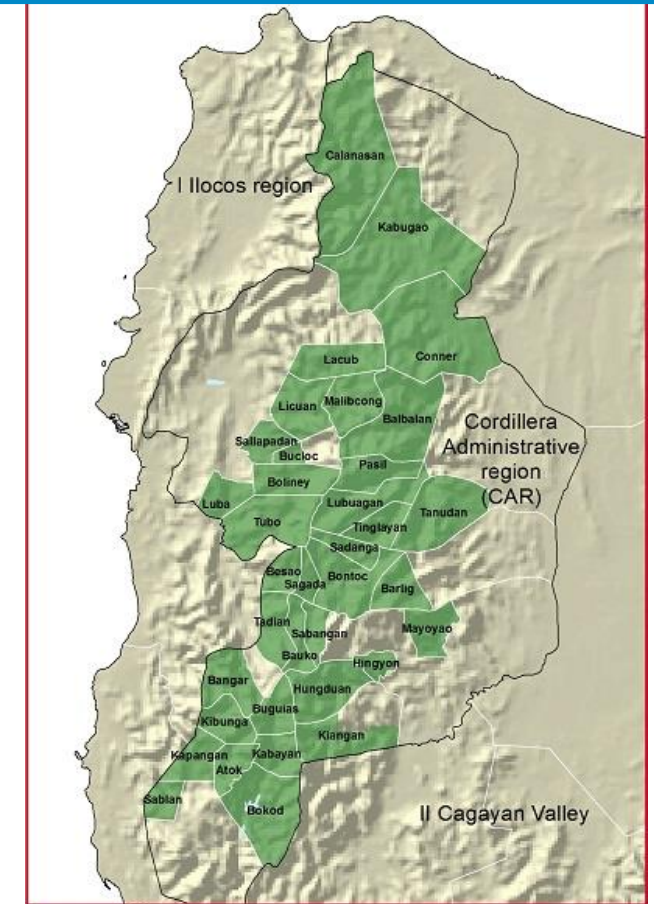
IFAD measures impacts of its investments by systematically conducting impact assessments (IA) on a sample of at least 15 per cent of projects that close during each 3- year replenishment period. Impact estimates on key indicators (income, productive capacity, market access, resilience) are aggregated and projected to the corporate level.

For IFAD11 replenishment period or the period between 2019 and 2021, 24 out of 96 projects that closed were assessed.



Second Cordillera Highland Agricultural Resource Management Project (CHARM II)

- CHARM II was implemented by the Department of Agriculture (DA) in the Cordillera Administrative Region (CAR), Philippines, between 2011 to 2018.
- The objective of CHARM II was to improve the livelihoods of poor households from the indigenous communities in the CAR through sustainable agricultural and agri-business development, improved land tenure security, infrastructure development, conservation of watersheds and highland forests.
- Targeting approach was designed to select villages in which IP live according to agreed criteria such as poverty levels, access to social services (drinking water, roads), presence of ongoing projects, irrigated land and potential for commercial activity.



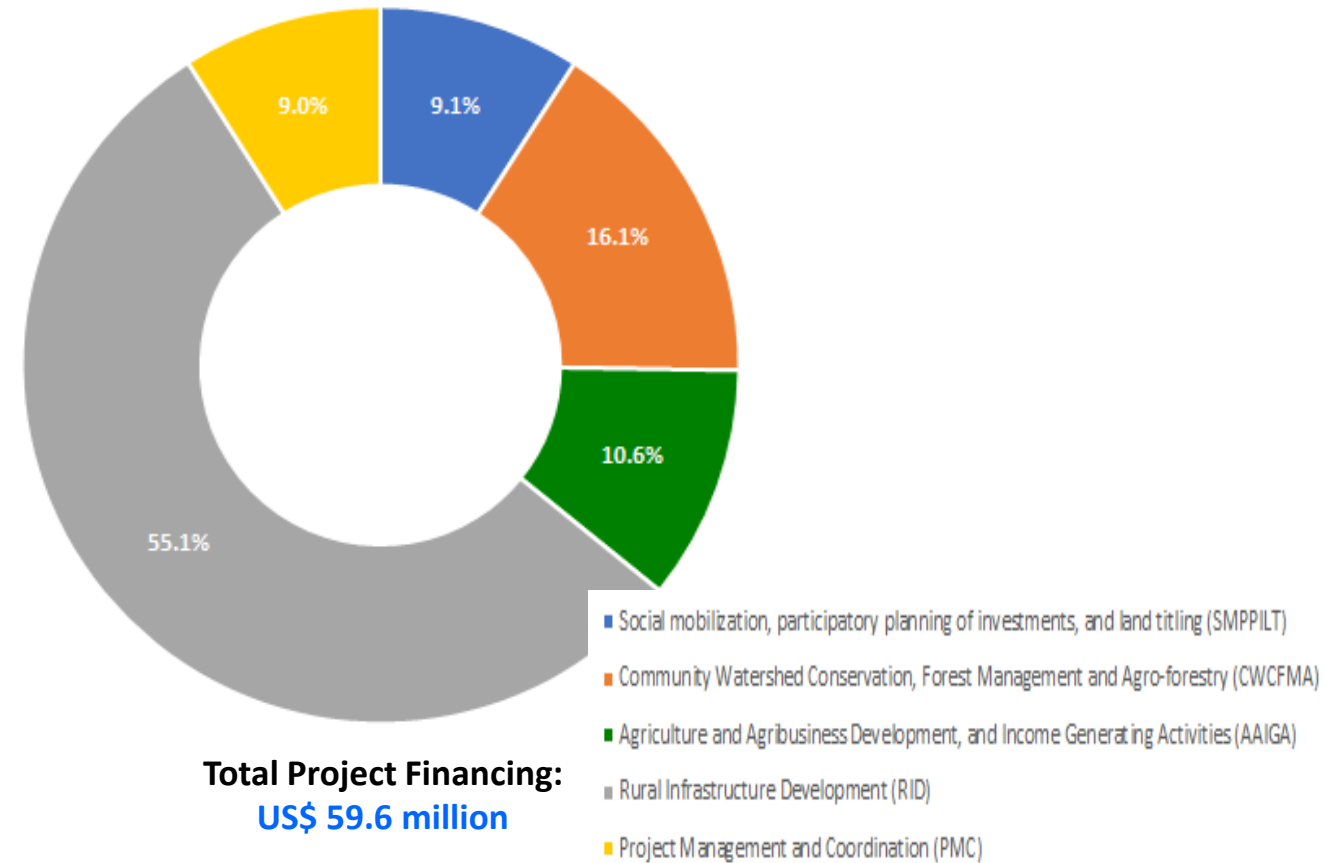
Project area



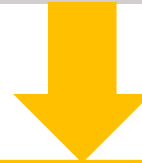
Components of CHARM II

- Community level interventions based on participatory planning and social mobilization
 - Investment in community watershed conservation, reforestation, and agroforestry.
 - Developed community infrastructure (farm-to-market roads, foot bridges, small warehouses, solar drying pavements), small-scale irrigation schemes.
 - Land titling.
 - Beneficiaries: 188 villages
- Household level interventions
 - Farmer field schools; learning visits; seed money for small economic activities.

CHARM II Project Financing by Components



The objective is to select treated (beneficiary) and control (non-beneficiary) households to survey, while ensuring that the treated and control households are comparable in terms of their characteristics and such that the only difference between them is that treated households benefitted from the project while control households did not.



The differences in the outcome variables can be meaningfully attributed to the impact of the CHARM II project.

Impact assessment survey conducted between July 2021 to March 2022 using a multi stage sampling strategy

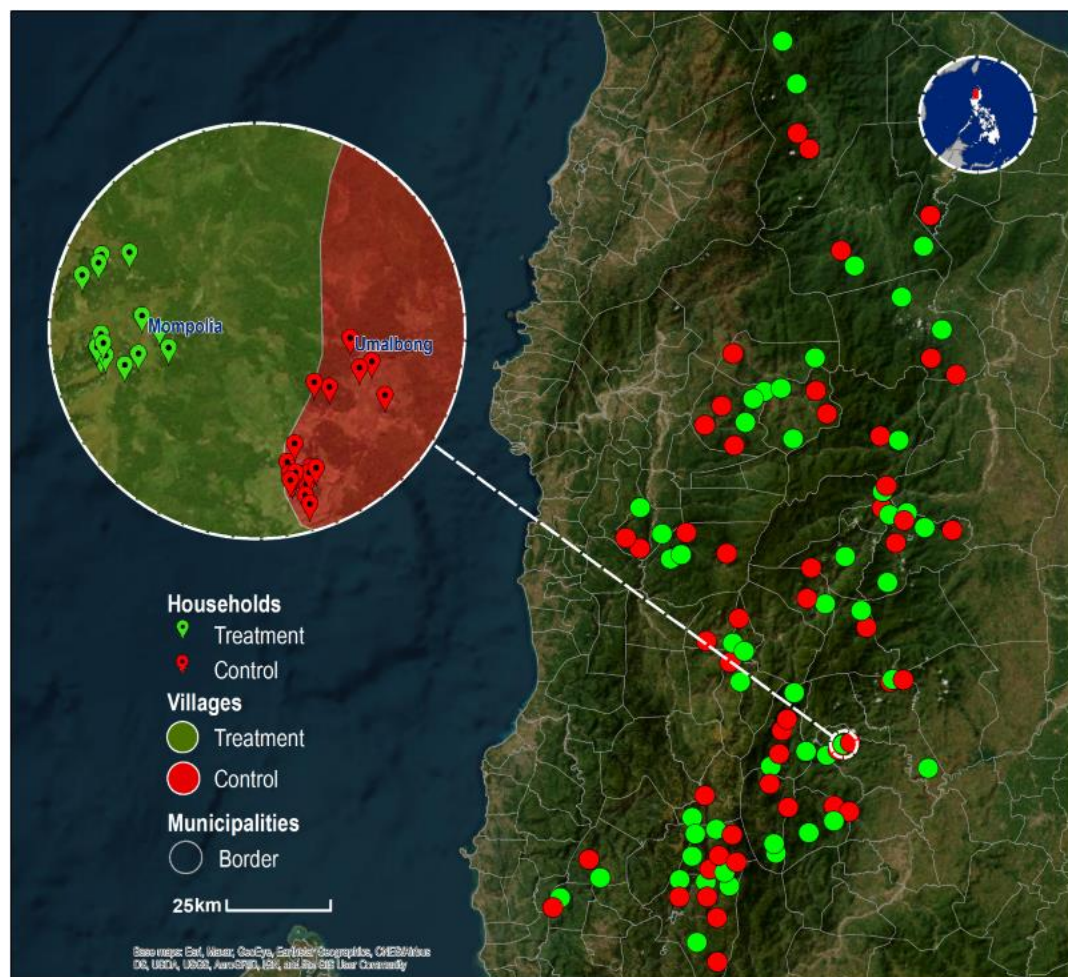
Village selection

- List all the municipalities where at least one village received CHARM project's intervention and paired control villages are available-- 28 municipalities with 96 treated villages and 204 control villages.
- **Treatment (beneficiary) village:** 50 out of the 96 available selected using a proportional sampling strategy (more likely to be selected if they have a higher beneficiary share).
- **Control (non-beneficiary) village:** rank each control village (204) based on their comparability with the beneficiary villages and choose the top 50.
 - Ex-ante matching using GIS/Earth Observation data

Household selection

- **Treatment households:** 9,202 beneficiaries in the 50 selected beneficiary villages. We randomly surveyed 20 households per village, thus overall 1000 households
- **Control households:** a two-stage procedure to select control households.
 - List all the built-up records (18,466) in the 50 control villages using the OpenStreetMap (OSM) and Google Earth Pro.
 - Randomly select 20 built-up locations per control village, thus overall 1000 households
 - Enumerators visited a selected GPS location
 - Seven targeting criteria that the CHARM project used to list potential treatment households: household interviewed if 5 out of 7 criteria are met.

Sampling strategy generated comparable treatment and control villages and households



Notes: Figure shows treatment and control villages by municipalities in the study area. The zoomed-in circle on the top-left shows the location of the study sample from one control and one treatment village. The map only shows the study area in Abra, Apayao, Benguet, Ifugao, Kalinga, and Mountain Provinces

| | Beneficiary households | Control households | Mean difference |
|-------------------------------|------------------------|--------------------|-----------------|
| Number of children | 0.93 | 0.94 | -0.01 |
| Number of males | 2.54 | 2.54 | -0.00 |
| Number of females | 2.22 | 2.25 | -0.03 |
| Female headed household | 0.17 | 0.16 | 0.01 |
| Age of household head | 54.45 | 54.83 | -0.38 |
| Productive asset index (2010) | 0.02 | 0.02 | 0.00 |
| Household asset index (2010) | 0.07 | 0.06 | 0.01 |
| Livestock asset index (2010) | 0.42 | 0.46 | -0.03*** |
| Electricity 2010 | 0.72 | 0.72 | 0.00 |
| Water access 2010 | 0.90 | 0.89 | 0.01 |
| Flush toilet 2010 | 0.87 | 0.86 | 0.01 |
| Concrete wall 2010 | 0.44 | 0.42 | 0.02 |
| Concrete roof 2010 | 0.88 | 0.87 | 0.01 |
| Concrete floor 2010 | 0.40 | 0.38 | 0.02 |

Identification of impact

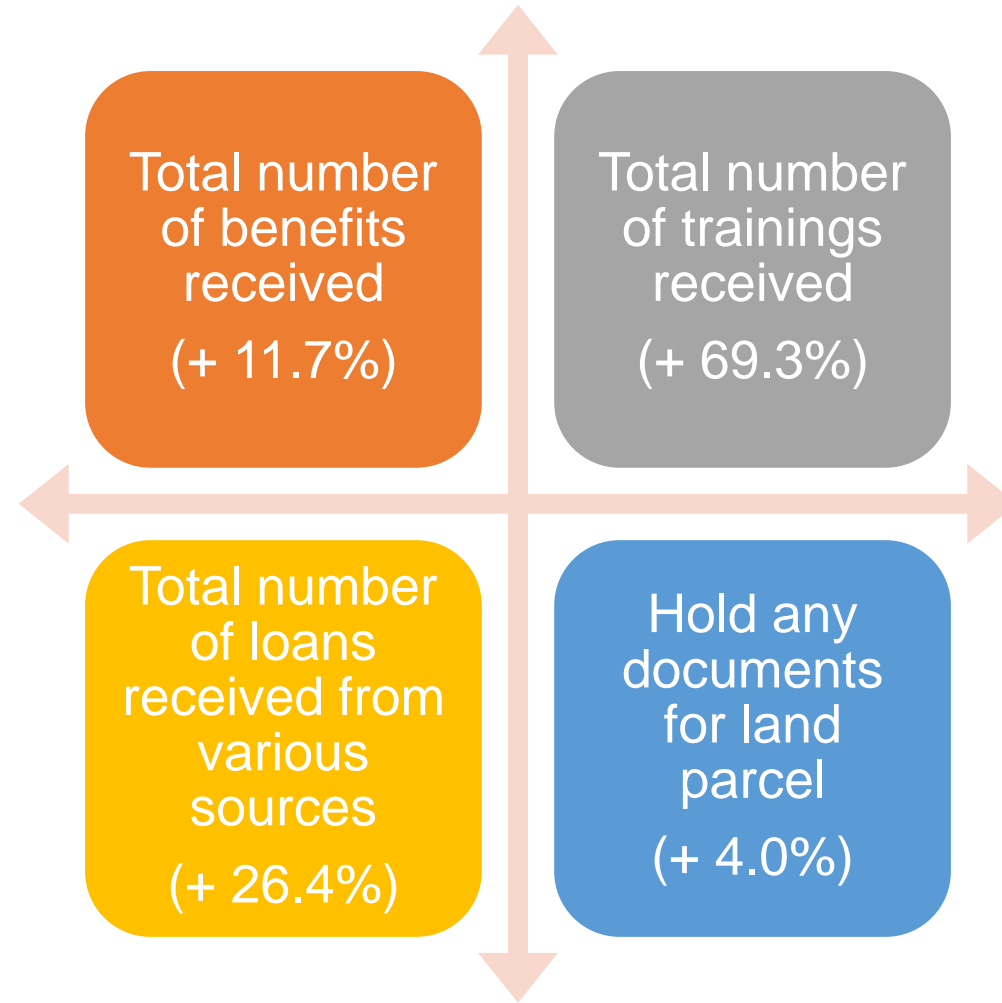
- ❑ We estimate ATET (average treatment effect on treated) which is the average difference in the outcomes of interest between beneficiary and control groups
- ❑ We implement the Inverse Probability Weighted Regression Adjustment (IPWRA) that takes pre-program observable differences between treated and control households into account

$$ATET = E\{Y_{i1} - Y_{i0} | T_i = 1\} = E(Y_{i1} | T_i = 1) - E(Y_{i0} | T_i = 1)$$

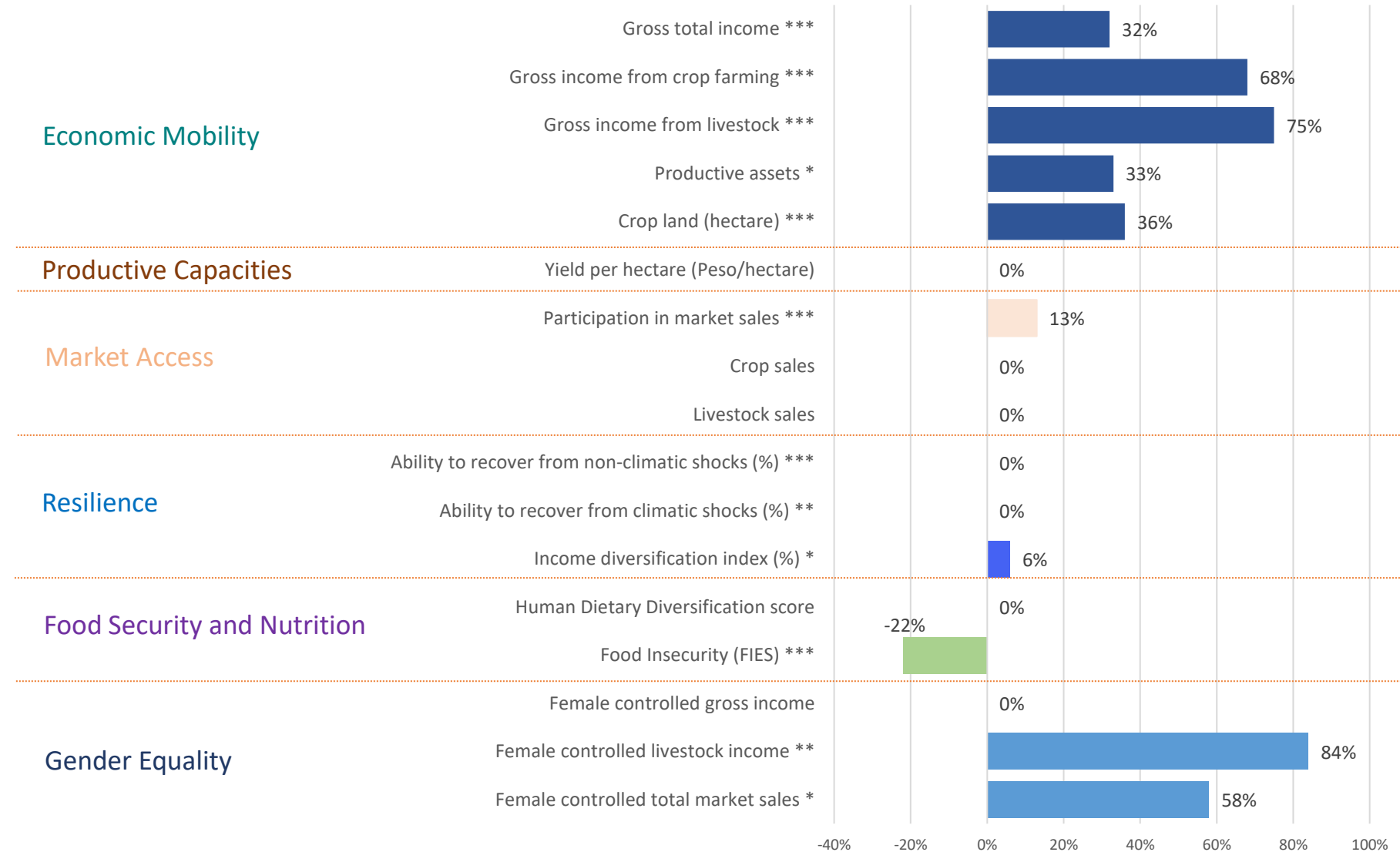
where E(.) indicates the expected value, Y_{i1} and Y_{i0} are potential outcomes under beneficiary and comparison scenario, and T is the treatment status (= 1 if beneficiary, = 0 if comparison)

Like in any impact evaluation, the identification of the impact of the CHARM II program on an outcome variable Y depends on how one can generate the value of Y for each beneficiary household had the CHARM II program never existed, known as the counterfactual outcome $Y(0)$. These counterfactual values $Y(0)$ could then be subtracted from the actual values observed $Y(1)$ for all beneficiaries to estimate the effect of the CHARM II program.

CHARM II has provided significantly high benefits, training and loans



CHARM has improved economic mobility, food security and resilience, but not crop productivity and market sales



Channels of impact



Increase in crop income driven by:

- Increase in % households participating in crop farming
- Increase in the number of crops being cultivated by each household
- Increase in non-seasonal and cash crop production
- Increase in the share of crop income



Increase in livestock income driven by:

- Increase in % households participating in livestock farming
- More livestock assets owned by households

| | (1) | (2) |
|--|------------|------|
| | Impact (%) | N |
| Participated in crop farming | 5.0%** | 1743 |
| Seasonal crops production | 0.00 | 1743 |
| Non-seasonal crops production | 77.4%** | 1743 |
| Number of crops cultivated per household | 12.9%** | 1743 |

| | (1) | (2) |
|------------------------------------|------------|------|
| | Impact (%) | N |
| Participated in livestock activity | 8.0% | 1743 |
| Livestock asset | 94.6% | 1743 |

Conclusions

- **Positive impacts on gross income** among beneficiary households driven by
 - **Higher crop income** due to commercialization of farming, that is higher production of cash and non-seasonal crops, as well as higher land area cultivated and higher probability to participate in crop farming. Increase in productive assets presumably contributed.
 - **Higher livestock income** due to higher probability to participate in livestock farming and more livestock assets
- Beneficiary households are 13 percentage points more likely to engage in selling their products in the market but no increase in market sales.



Spillover impacts on livestock and cash/ non-seasonal crops may imply that the development of infrastructure made it more lucrative for farmers in these indigenous communities to engage in activities not targeted directly by the program.

Conclusions (2)



The project had improved food security (less likely to be worried about food, not eating healthy food and eating fewer foods).



The project had limited impact on nutrition as it did not explicitly target nutrition.



Evidence of improved women empowerment in terms of income and sales.



Limited impacts observed on resilience point that a more holistic approach to strengthening resilience may be warranted.

Thank you.