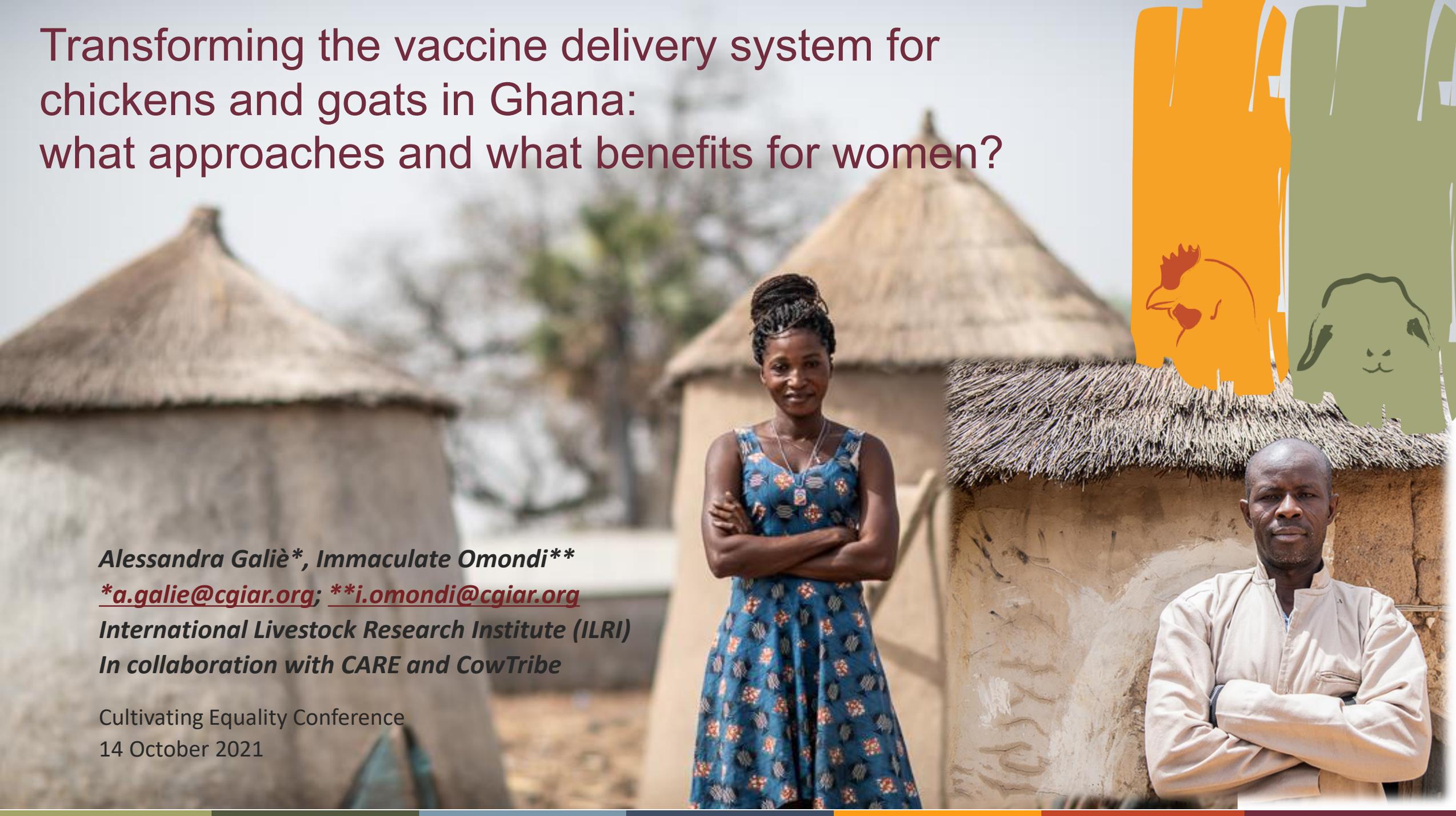


Transforming the vaccine delivery system for chickens and goats in Ghana: what approaches and what benefits for women?

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In collaboration with CARE and CowTribe

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The project in a nutshell

Goal: *institutionalized gender-responsive vaccine system* for enhanced nutrition security and women's empowerment

Focus: Newcastle, *peste des petits ruminants*, and contagious caprine pleuropneumonia: GOATS and CHICKEN

What we do: we test two approaches for vaccine delivery — one gender accommodative (GAA) and one gender transformative (GTA) — to facilitate women's sustained involvement in livestock vaccination

Research questions: 1. What does a gender-responsive vaccine system look like?
2. How is a transformative approach affecting women's ability to benefit from vaccines as compared to an accommodative approach?

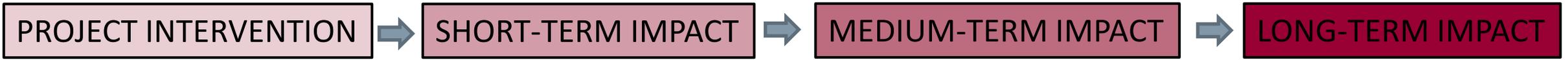
Where: 2 regions in north Ghana: Upper East (Bawku West District); Upper West (Pusiga District).
5 communities in each district – 50 hhs in each district – half GAA and half GTA+GAA

Partners:

CARE-lead, field implementation, GTA experience

ILRI, scientific design and analysis

Cowtribe, private vaccine provider



Engage women farmers
 Access to info & vaccines with Cowtribe; access VLAs; address gender norms

Engage women AHSPs
 recruit young AHSPs; enhance capacity; address gender norms

Conducive gender norms
 social media campaign; community dialogues; support champions

Equitable vaccine system
 involve policy makers; Cowtribe electronic system gender-responsive

Campaign on healthy diets

Women farmers vaccinate
 their livestock

Women AHSP succeed
 in business

Vaccinated livestock more
productive

Households, communities, AHSPs, extensionists support new AHSPs

Households & communities support animal vaccines for women's species; and women enjoying benefits

Policy makers support women AHSPs and start changing the vaccine system

Households know healthy diets

Women farmers benefit
 from vaccinated livestock

More Women AHSP
 involved in business and benefit from it

Households & communities appreciate value of women's vaccinated species

Policy makers see value of gender-responsive vaccine systems

Households use increased productivity for **better diets**

Empowerment of women farmers and AHSPs

Gender-responsive animal vaccine system institutionalized

Improved household nutrition



Our ToC...how we think change will happen:

1. if women farmers vaccinate their livestock AND enjoy the benefits from increased productivity; then Their empowerment will be enhanced; **A Goal in itself AND a means to improved nutrition**

2. for women farmers to vaccinate their livestock – we need women AHSPs (women to women works better)
Who can effectively perform their job

If women AHSPs can effectively perform their job, then their empowerment can also be supported

3. For women farmers and AHSPs to thrive through livestock (and be empowered)
we need HHs and communities to be supportive (e.g. of women in business; of women controlling income etc)

4. For these changes to be sustainable in the long run and have a large impact-we need them to be institutionalized
Through a gender-responsive animal vaccine system

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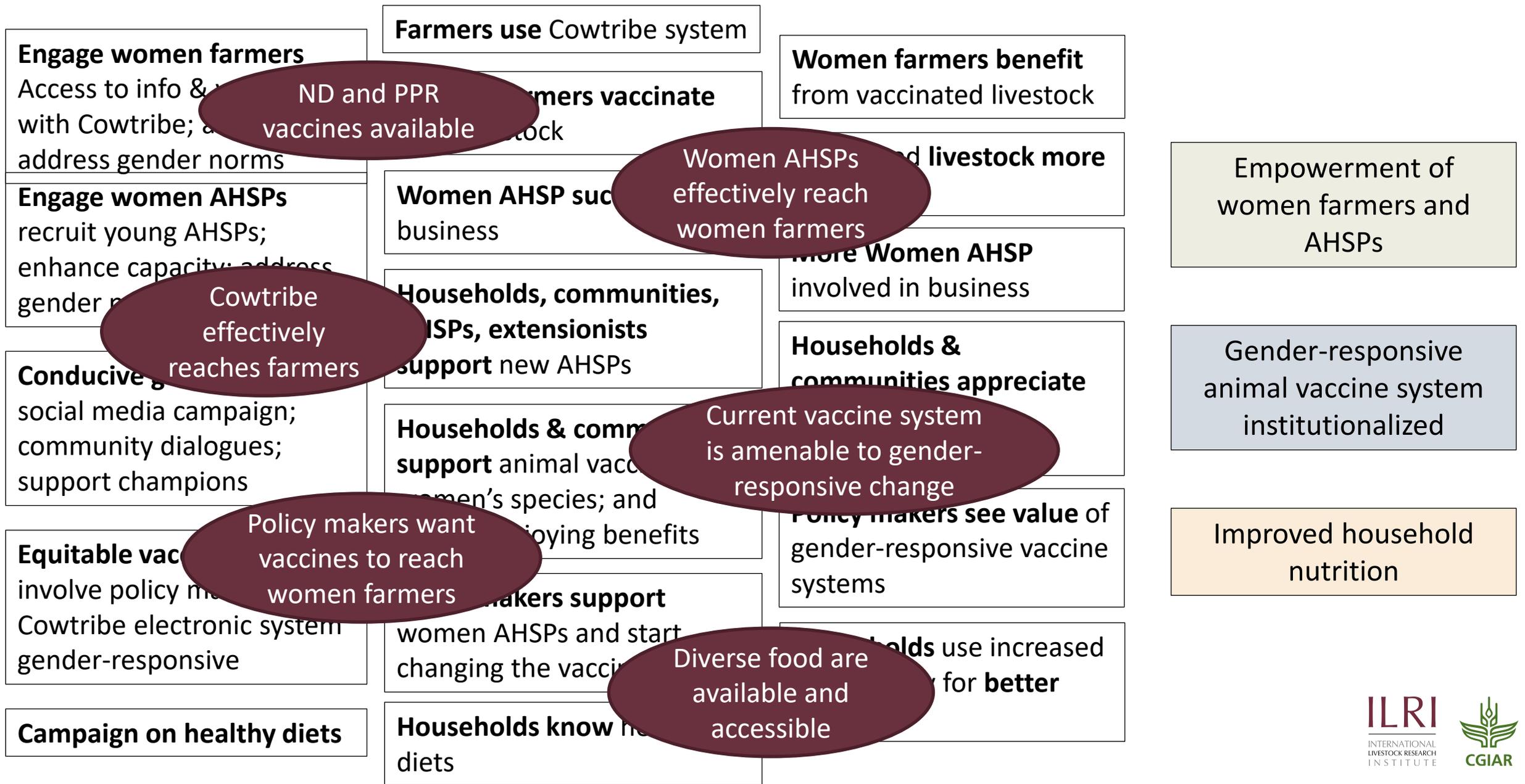
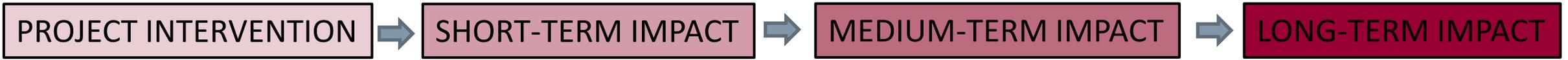
5. For this system to translate into improved nutrition we need to make sure hhs invest income
in available, nutritious food

WHAT WE DO: **Work at 4 interconnected levels:**

Individual women: Support their capacity;

Hhs and communities, private and public sector: engage in questioning unequal norms towards conducive norms

Policy makers: involve them in our approach to refine it, see benefits, institutionalize it



ND and PPR vaccines available

Women AHSPs effectively reach women farmers

Cowtribe effectively reaches farmers

Current vaccine system is amenable to gender-responsive change

Policy makers want vaccines to reach women farmers

Diverse food are available and accessible



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Equitable vaccine system
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Campaign on healthy diets

Farmers use Cowtribe system

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Women AHSP succeed
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Research study on vaccines and empowerment

What would we want to know?

- Is there a significant relationship between empowerment and different aspects of vaccines
 - i.e. does access to vaccines, knowledge about vaccines, participation in vaccines etc influence empowerment?
- How does the empowerment subdimensions relate to vaccine aspects?
 - i.e. is there a significant difference in the relationship between different aspects of vaccine and the subdimensions of WELI?

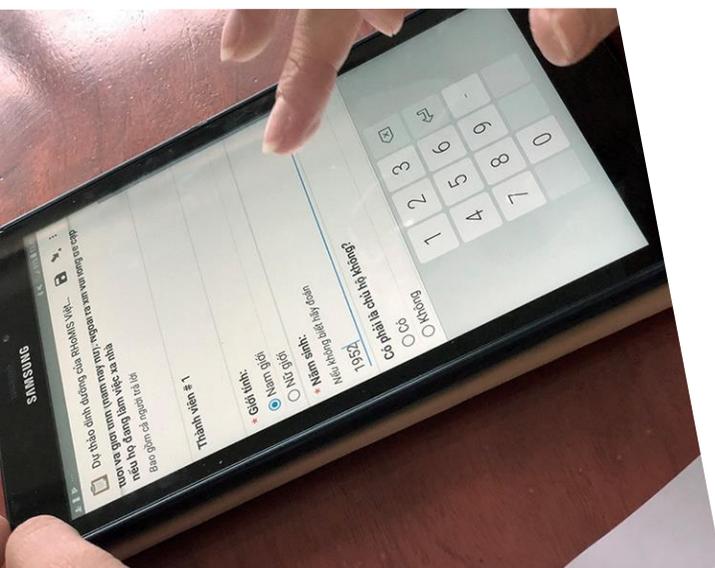
What for?

- Identify intervention areas that optimize women's (and men's) participation and their benefits
 - explore the link between women's empowerment in livestock and knowledge, access and participation in vaccinations for small stock



Method

- The study:
 - explores the context of vaccine delivery in relation to empowerment in rural Ghanaian livestock keeping households
 - applies SEM technique to examine this complex phenomenon WELI is a multidimensional weighted empowerment index; it is a decomposable structure consisting of many indicators; hence, partial least squares – structural equilibrium model (PLS-SEM), to evaluate the link between WELI and vaccines
 - Partial least squares – structural equilibrium model (PLS-SEM)
 - PLS-SEM captures the internal relationships within an equation
 - PLS-SEM is useful because:
 - It places fewer limitations on sample size and data distribution
 - It is appropriate to build theory and explore models with cause-effect relationships
 - Smart PLS 3 - a multivariate analysis method of s is employed



Results

Reliability and validity tests

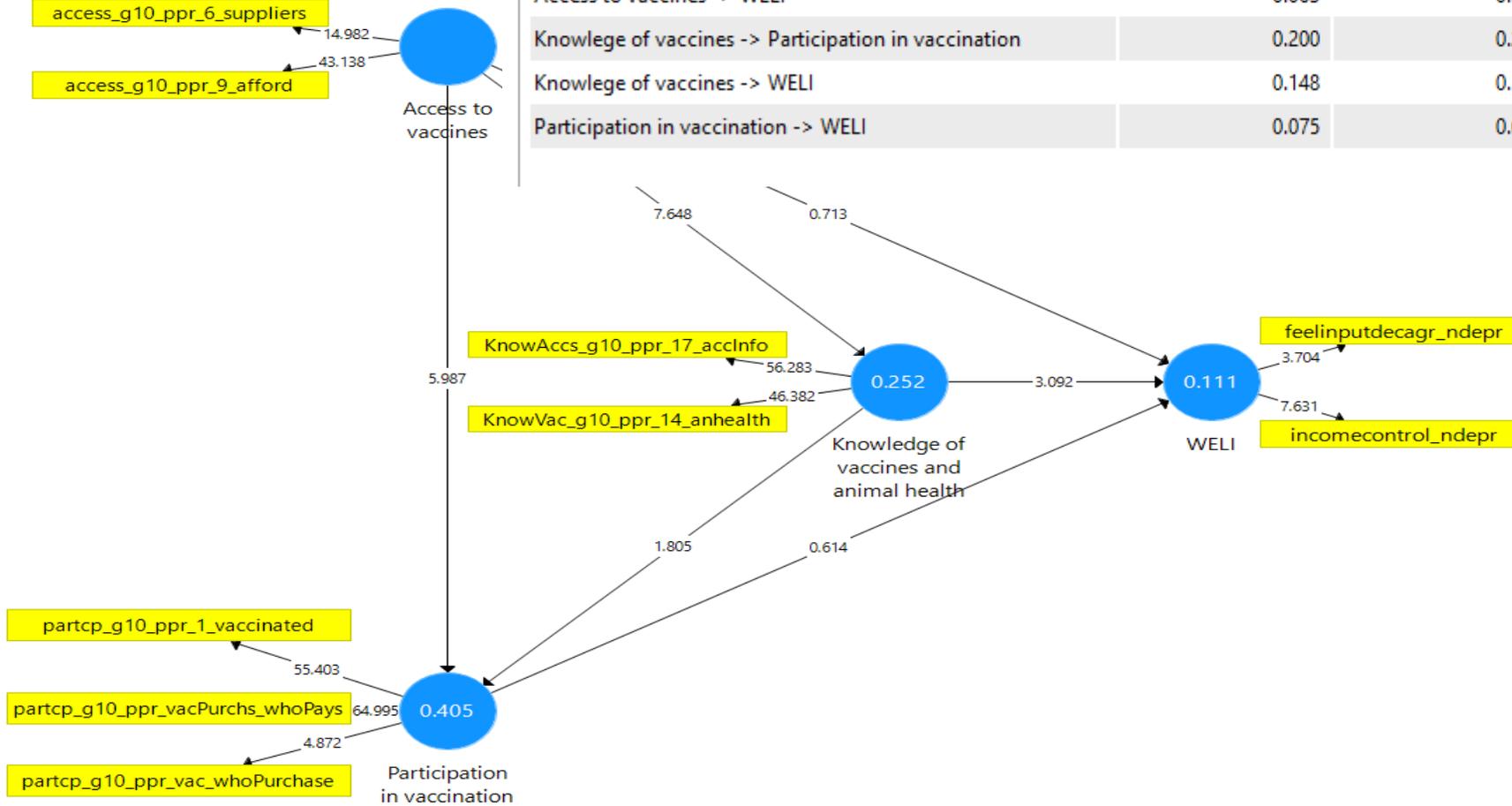
- CA values and CRs were higher than, or closer to the recommended value, of 0.700, for achieving internal consistency reliability
- Convergent validity assessed by AVE - the values exceed the threshold of 0.4

| Constructs | Variable name in the data | Females | | | | | Males | | | | |
|------------------------------|----------------------------------|-----------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|
| | | λ | CA | rho_A | CR | AVE | λ | CA | rho_A | CR | AVE |
| Access to vaccines | access_g10_ppr_6_suppliers | 0.821 | 0.662 | 0.697 | 0.853 | 0.744 | 0.820 | 0.664 | 0.703 | 0.854 | 0.745 |
| | access_g10_ppr_9_afford | 0.902 | | | | | 0.905 | | | | |
| Knowledge of vaccines | KnowAccs_g10_ppr_17_acclInfo | 0.929 | 0.742 | 0.793 | 0.883 | 0.791 | 0.928 | 0.839 | 0.839 | 0.925 | 0.861 |
| | KnowVac_g10_ppr_14_anhealth | 0.847 | | | | | 0.928 | | | | |
| Participation in vaccination | partcp_g10_ppr_1_vaccinated | 0.941 | 0.805 | 0.887 | 0.886 | 0.727 | 0.924 | 0.757 | 0.861 | 0.860 | 0.681 |
| | partcp_g10_ppr_vacPurchs_whoPays | 0.946 | | | | | 0.925 | | | | |
| | partcp_g10_ppr_vac_whoPurchase | 0.632 | | | | | 0.577 | | | | |
| WELI | assetownership_ndepr | 0.694 | 0.352 | 0.374 | 0.751 | 0.604 | - | - | - | - | - |
| | feelinputdecagri_ndepr | 0.852 | | | | | - | | | | |
| | feelinputdecagri_ndepr | - | - | - | - | - | 0.851 | 0.647 | 0.649 | 0.850 | 0.739 |
| | Incomecontrol__ndepr | - | | | | | 0.869 | | | | |

Results

Path Coefficients

| | Original Sample (O) | Sample Mean (M) | Standard Deviation... | T Statistics (O/STDEV) | P Values |
|---|---------------------|-----------------|-----------------------|--------------------------|----------|
| Access to vaccines -> Knowledge of vaccines | 0.388 | 0.389 | 0.036 | 10.778 | 0.000 |
| Access to vaccines -> Participation in vaccination | 0.548 | 0.550 | 0.035 | 15.772 | 0.000 |
| Access to vaccines -> WELI | 0.063 | 0.062 | 0.058 | 1.090 | 0.276 |
| Knowledge of vaccines -> Participation in vaccination | 0.200 | 0.200 | 0.037 | 5.445 | 0.000 |
| Knowledge of vaccines -> WELI | 0.148 | 0.150 | 0.047 | 3.123 | 0.002 |
| Participation in vaccination -> WELI | 0.075 | 0.076 | 0.064 | 1.170 | 0.242 |

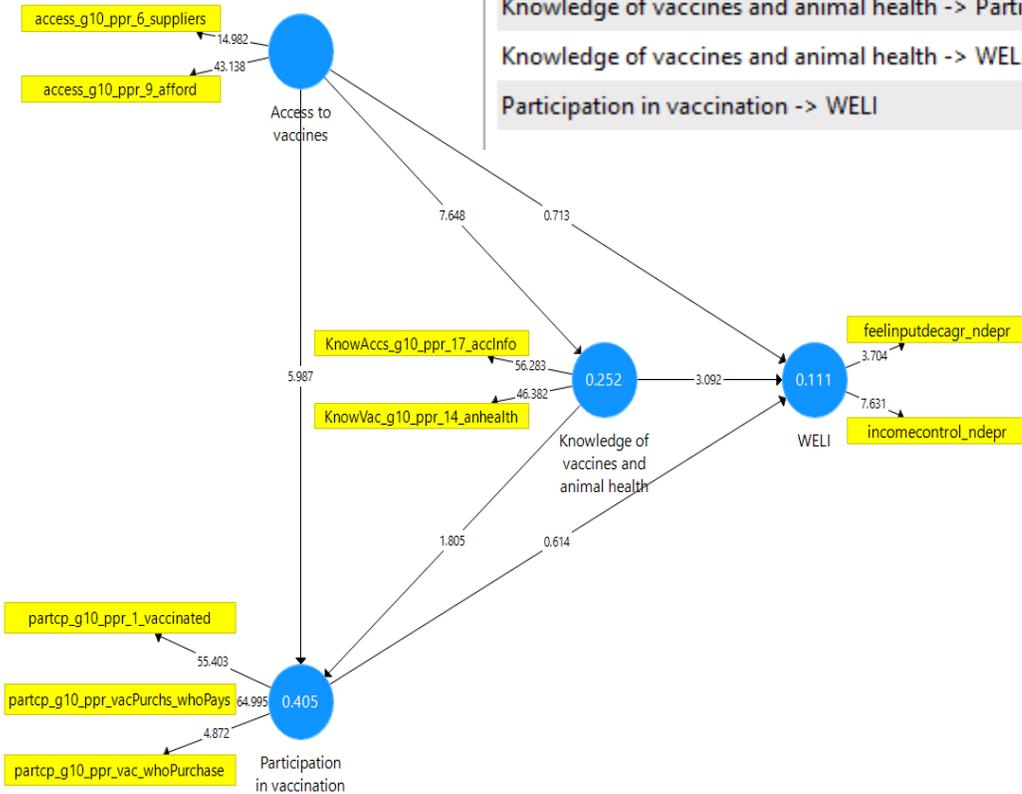


Structural model and mediation analysis for **women** goat keepers

Results

Path Coefficients

| | Mean, STDEV, T-Values, P-Values | Confidence Intervals | Confidence Intervals Bias Corrected | Samples | |
|---|---------------------------------|----------------------|-------------------------------------|------------------|----------|
| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics ... | P Values |
| Access to vaccines -> Knowledge of vaccines and animal health | 0.502 | 0.515 | 0.063 | 7.966 | 0.000 |
| Access to vaccines -> Participation in vaccination | 0.528 | 0.541 | 0.091 | 5.796 | 0.000 |
| Access to vaccines -> WELI | 0.068 | 0.065 | 0.087 | 0.784 | 0.435 |
| Knowledge of vaccines and animal health -> Participation in vaccination | 0.178 | 0.167 | 0.096 | 1.855 | 0.067 |
| Knowledge of vaccines and animal health -> WELI | 0.274 | 0.275 | 0.089 | 3.081 | 0.003 |
| Participation in vaccination -> WELI | 0.035 | 0.037 | 0.063 | 0.554 | 0.581 |



Structural model and mediation analysis for **men** goat keepers

Observations from results

- Significant difference between male and female respondents in empowerment measure, ^{WELI}
 - Females – ‘asset ownership’ and ‘input into decisions on livestock production’ subdimensions strongly constitute/ represent empowerment
 - Males – ‘control of income’ and ‘input into decisions on agricultural production’ subdimensions
- The results demonstrate strong positive association between knowledge about vaccines and empowerment for both females
- The relationship between knowledge & empowerment is significant for men & women
- Participation in vaccination and access to vaccines are not linked with empowerment
- Access to vaccines exhibits an indirect effect since it significantly influences knowledge
 - Participation in vaccination does not significantly influence WELI, however:
 - It is strongly influenced by access to vaccines
 - knowledge of vaccines exhibits significant mediation effect (on participation through access to vaccine, for women)

Implications on gender-responsive animal vaccine system

- Strategic attention drawn to activities that would increase women's:
 - Livestock asset ownership
 - Input into decisions on livestock production
 - Knowledge on animal health and vaccines
 - Access to vaccines

