



## Breaking the Vulnerability Trap: A One Health Approach to Rural Resilience in Cambodia

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### Key Messages

- Institutionalising the One Health approach within national agricultural extension services can significantly strengthen climate and disease resilience among smallholder farmers.
- Women-Led Groups are critical catalysts for technology adoption, peer learning, and income diversification, and should be integrated into national rural development strategies.
- Support packages must be tailored to household conditions — a one-size-fits-all approach leaves the most vulnerable behind.
- Teaching financial literacy before distributing assets prevents losses and builds lasting economic resilience.

### Climate Shocks, Disease Risk, and Gender Inequality Are Locking Smallholders into Poverty

Cambodia's rural economy faces an interconnected set of vulnerabilities that conventional, single-sector interventions have consistently failed to address. Climate shocks—recurrent floods and droughts—destroy crops and erode household asset bases. Zoonotic disease outbreaks and rising antimicrobial resistance (AMR), driven by improper antibiotic use, threaten livestock and human health alike. And despite constituting approximately 70% of the agricultural workforce, women remain systematically marginalised from land ownership, credit, and leadership. A household hit by a disease outbreak is also less able to absorb a climate shock; a woman denied land access cannot invest in bio-secure housing. Addressing any one of these vulnerabilities without the others produces fragile, short-lived gains.

Without integrated responses, these risks are likely to intensify. Climate projections for Cambodia indicate that extreme floods and droughts will increase in frequency, threatening crop yields and livestock productivity. Combined with rising livestock disease risks and persistent gender inequalities, these trends threaten to deepen rural poverty and food insecurity, particularly among smallholder households that depend heavily on climate-sensitive agriculture. Failure to address these vulnerabilities simultaneously risks trapping rural communities in recurring cycles of asset loss, declining productivity, and reduced resilience to future shocks.

Cambodia's agricultural extension services—the principal mechanism through which these challenges should be addressed—is currently ill-equipped to respond. Coordinated by the Ministry of Agriculture, Forestry and Fisheries (MAFF) through provincial departments, district offices, and a network of commune extension workers, extension services remain largely sector-specific and production-focused. While recent policies emphasize climate-smart agriculture and improved livestock management, the integration of animal health, environmental sustainability, and gender-responsive approaches remains limited and uneven across provinces. Strengthening extension services to incorporate a gender-responsive One Health approach—integrating animal, human, and environmental health within a unified framework—therefore represents a key opportunity to enhance resilience and long-term productivity among smallholder farmers.

Cricket Beneficiary of AGROW Project. Photo: AGROW Project Research Team



## The Research Project

The Agricultural-based Growth and Resilience Opportunities for Women (AGROW) project was implemented in Battambang Province between 2022 and 2024, with financial support from Global Affairs Canada (GAC). Designed to align with GAC's Feminist International Assistance Policy (FIAP), the project assessed whether an integrated One Health and gender-responsive agricultural model could strengthen household resilience, improve women's empowerment, increase technical knowledge, and diversify income among small-holder farming families.

The project worked across three mutually reinforcing pathways: building technical capacity and biosecurity knowledge through One Health training and Village Animal Health Worker (VAHW) networks; supporting economic diversification through demonstration sites and input distribution in vegetables, crickets, and poultry; and catalysing women's leadership through the formation and coaching of Women-Led Groups (WLGs).

The intervention was developed through a participatory design process involving consultations with local authorities, agricultural extension officers, VAHWs, and farmer groups. These stakeholders helped shape training content, demonstration activities, and WLG formation, to address locally identified priorities including livestock disease management, climate variability, and women's participation in agricultural production. Ongoing engagement throughout implementation allowed for adaptive adjustments to training delivery and asset support.

To assess the intervention, local PEP researchers conducted an impact evaluation comparing outcomes between participating and non-participating households using statistical matching methods (Propensity Score Matching and Difference-in-Differences), isolating the project's effect from other factors. They also used Qualitative Comparative Analysis to identify which combinations of household conditions drove success or failure.



Focus group discussion with AGROW-beneficiary farmers.

Photo: AGROW Project Research Team

## Key Findings

**The evaluation shows that the integrated model strengthens household resilience and women's empowerment and highlights the conditions required for successful implementation:**

### **Resilience and empowerment gains were significant**

Beneficiary households showed a measurable increase in resilience against climate and disease shocks (+0.211 index points). Women's empowerment also improved meaningfully (+0.14 index points), driven by gains in decision-making autonomy and control over household expenditures. These findings hold under rigorous statistical methods, and projections suggest similar results could be achieved if the model were scaled nationally.

### **Knowledge transfer through peer learning is highly effective**

Technical knowledge scores increased by 13 percentage points in the poultry sector and 11 percentage points in the cattle sector. These gains were achieved largely through Women-Led Groups facilitating peer-to-peer learning—a low-cost, high-impact alternative to top-down extension delivery.

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## Key Findings (continued)

### Income diversification showed strong results in most sectors

Income from vegetables and crickets grew by 20–30%. However, the cattle sub-sector produced uneven results: farmers faced higher disease and mortality risks, slower growth cycles, greater labour demands, and market price volatility. These findings suggest that livestock asset-transfer programmes require careful design and strong veterinary and market support to be effective.

### Success depends on the right combination of conditions

Impact was maximised when four factors converged: frequent training, land access, personal motivation, and household support (specifically including male endorsement of women's participation). Technical training for women frequently fails when not accompanied by gender-sensitisation efforts that encourage men to share domestic and agricultural labour. A one-size-fits-all programme design cannot reliably produce these conditions; targeting and tailoring are essential.



Net house at a farmer's demo site. Photo: AGROW Project Research Team

### The most vulnerable households face a compounding vulnerability trap

Progress stalled when households faced poor-quality or infertile livestock assets, limited capital or land to build bio-secure infrastructure, or chronic illness reducing available family labour. These are structural barriers that programme design must anticipate and address.

The table below summarises the comparative strengths and limitations of three policy options available to decision-makers:

Policy Option	Advantages	Limitations
Option 1: Continue conventional productivity-focused extension	Lower short-term cost; familiar institutional structure	Does not address climate or disease risks; excludes gender empowerment; weak long-term resilience impact
Option 2: Institutionalise an integrated One Health and gender-responsive extension model nationwide	Strengthens climate resilience and biosecurity; promotes women's economic empowerment; generates systemic, long-term benefits	Requires institutional coordination; needs curriculum reform and capacity building
<b>Option 3: Institutionalise the integrated model with configuration-sensitive targeting</b> ✓ Recommended	Maximises impact by tailoring support to household capacity; reduces vulnerability traps; improves efficiency of public investment	More complex implementation design; requires stronger data and extension management capacity

## Conclusions and Policy Messages

The AGROW evaluation demonstrates that women's leadership and collective action are foundational for agricultural development. When women gain agency, they accelerate the adoption of sustainable practices across their communities, creating self-reinforcing cycles of productivity, health, and resilience. Technical interventions that ignore this dynamic will continue to underperform.

The evidence points clearly toward Option 3: institutionalising an integrated One Health and gender-responsive extension model, delivered with configuration-sensitive targeting that meets households where they are. The following actions are recommended for the Ministry of Agriculture, Forestry and Fisheries (MAFF), Global Affairs Canada (GAC), and relevant local implementers:

- 1. Institutionalise One Health in national extension services.** Formally integrate One Health principles and agroecological standards into Cambodia's national extension mandate, ensuring cross-sectoral collaboration between animal health, human health, and environmental agencies.
- 2. Scale Women-Led Groups as the primary vehicle for training and leadership.** WLGs are proven drivers of horizontal knowledge diffusion and community social capital. They should be recognised and resourced within national rural development strategy.

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## Conclusions and Policy Messages (continued)

- 3. Require financial literacy training before asset or input distribution.** Providing financial education before the distribution of livestock or agricultural inputs prevents asset mismanagement and ensures households are prepared to sustain gains.
- 4. Strengthen and formally recognise Village Animal Health Worker networks.** Provincial-level recognition and regular refresher training for VAHWs will build farmer trust and establish a reliable first line of defence against disease outbreaks.
- 5. Adopt configuration-sensitive programme design.** Differentiate support based on household profiles: fast-track resource-ready households toward market linkages, while providing intensive follow-up and flexible asset-transfer models for more vulnerable farmers. Livestock asset-transfer schemes should be accompanied by strong veterinary support and market linkages to reduce the risk of asset loss.

## Roadmap

To transition AGROW's model from a provincial pilot to a replicable national standard, the following steps are recommended:

- 1. Develop and institutionalise a national One Health extension curriculum.** MAFF, in collaboration with universities, research institutes, and development partners, should adapt AGROW training materials into a standardised curriculum for agricultural extension officers. The curriculum should integrate biosecurity, climate adaptation, livestock health management, and gender-responsive approaches, and be incorporated into regular training programmes for provincial and district extension staff.
- 2. Introduce household diagnostic and targeting tools.** Extension services should adopt simple household profiling tools to assess farmers' resource capacity, land access, labour availability, and vulnerability levels. These tools will allow extension officers to match households with appropriate support packages, ensuring that configuration-sensitive targeting is applied in practice.
- 3. Strengthen support systems for livestock-based interventions.** Before expanding livestock asset-transfer programmes, MAFF and partners should establish veterinary backstopping services, quality control mechanisms for breeding stock, and linkages with local input suppliers and markets. This will reduce livestock mortality risks and improve the sustainability of livestock investments.
- 4. Institutionalise and support Women-Led Groups and Village Animal Health Workers.** Formal recognition mechanisms should be developed within provincial agricultural governance structures to integrate these community actors into extension systems. This includes providing refresher training, basic operational support, and coordination with extension officers.
- 5. Pilot configuration-sensitive targeting in additional provinces.** MAFF and partners should test the integrated model with household targeting tools in selected provinces beyond Battambang. Lessons from these pilots can inform national scaling strategies and help refine implementation guidelines before wider rollout.



AGROW beneficiaries. Photo: AGROW Project Research Team

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