The complex links between food security, migration, and fragility in Northern Central America

June 2026

Viviana M.E. Perego, Karima Ben Bih, Maria Florencia Tejeda, Pol Nadal, Juan Carlos Muñoz-Mora, Stefany López

WORLD BANK GROUP
Agriculture & Food

SPF STATE AND PEACEBUILDING FUND

GFDRR
Global Facility for Disaster Reduction and Recovery

1818 H Street NW, Washington DC 20433
Telephone: 202-473-1000; Internet: www.worldbank.org

CONTENTS

ACRONYMS

ACRONYM	DEFINITION
ACLED	Armed Conflict Location and Event Data Project
ASA	Advisory Services and Analytics (World Bank)
CAC	Central American Agricultural Council
CARE	Climate Adaptation and Resilience for South Asia
CARI	Consolidated Approach for Reporting Indicators of Food Security (WFP)
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CENTA	National Center for Agricultural and Forestry Technology
CEPREDENAC	Coordination Center for Disaster Prevention in Central America and the Dominican Republic
CHIRPS	Climate Hazards Group InfraRed Precipitation with Station data
CIS	Council for Social Integration
CODISRA	Presidential Commission against Discrimination and Racism against Indigenous Peoples
CONAMIGUA	National Council for the Assistance of Guatemalan Migrants
CONAPOA	National Coordination of Indigenous and Afro-Honduran Peoples
CONASAN	National Council for Food and Nutrition Security
CONJUVE	National Youth Council
CONRED	National Coordinator for Disaster Reduction
COPECO	Permanent Contingency Commission
COSEFIN	Council of Ministers of Finance of Central America, Panama and the Dominican Republic
CPF	Country Partnership Framework (World Bank)
CSE	Consumer Support Estimate
DEFF	Design Effect
DEMI	Office of the Ombudsman for Indigenous Women
DGPC	General Directorate of Civil Protection
DGME	General Directorate of Migration and Aliens
DICORER	Rural Extension Directorate
DICTA	Directorate of Agricultural Science and Technology
DINAFROH	National Directorate of Indigenous and Afro-Honduran Peoples
ECLAC	Economic Commission for Latin America and the Caribbean
EMBRAPA	Brazilian Agricultural Research Corporation

ACRONYM	DEFINITION
FAO	Food and Agriculture Organization
FCV	Fragility, Conflict, and Violence
FGD	Focus Group Discussion
FIES	Food Insecurity Experience Scale
FNS	Food and Nutritional Security
FODIGUA	Guatemalan Indigenous Development Fund
FSCPP	Food Security Crisis Preparedness Plan
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GDRI	Global Disaster Risk Index
GSSE	General Services Support Estimate
HDDS	Household Dietary Diversity Score
HDP	Humanitarian–Development–Peace nexus
HSNP	Hunger Safety Net Program
ICC	Intra-Cluster Correlation
IGM	Guatemalan Migration Institute
INJUVE	National Youth Council
INM	National Migration Institute
INSIVUMEH	National Institute of Seismology, Volcanology, Meteorology and Hydrology
IOM	International Organization for Migration
IPC	Integrated Food Security Phase Classification
ISDEMU	Salvadoran Institute for the Development of Women
KII	Key Informant Interview
MAG	Ministry of Agriculture and Livestock
MAGA	Ministry of Agriculture, Livestock and Food
MDE	Minimum Detectable Effect
MIDES	Ministry of Social Development
NCA	Northern Central America
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OECD	Organisation for Economic Co-operation and Development
OFAMIR	Office for Assistance to Returned Migrants
PAD	Project Appraisal Document (World Bank)
PESAN	National Strategic Plan for Food and Nutrition Security
POASAN	Annual Operational Plan for Food and Nutritional Security
POLSAN	Policy for Food and Nutritional Security of Central America and the Dominican Republic 2012–2032

ACRONYM	DEFINITION
PROASOL	Program of Solidarity Action
PSE	Producer Support Estimate
PSU	Primary Sampling Unit
rCSI	Reduced Coping Strategies Index
RUP	Single Registry of Participants
SAG	Ministry of Agriculture and Livestock
SCD	Systematic Country Diagnostic (World Bank)
SECAC	Executive Secretariat of the Central American Agricultural Council
SEDESOL	Secretariat of Social Development
SEMUJER	State Secretariat for Women's Affairs
SEPREM	Presidential Secretariat for Women
SESAN	Secretariat for Food and Nutrition Security
SICA	Central American Integration System
SIECA	Secretariat for Central American Economic Integration
SINASAN	National Food and Nutrition Security System
SINAGER	National Risk Management System
SIRBHO	Honduras's Social Information and Beneficiary Registry
SISCA	Secretariat for Central American Social Integration
SOFI	The State of Food Security and Nutrition in the World
SOPs	Standard Operating Procedures
SPF	State and Peacebuilding Fund (World Bank)
SPSU	Universal Social Protection System
STPP	Technical Secretariat of the Presidency
UNHCR	United Nations High Commissioner for Refugees
UNODC	United Nations Office on Drugs and Crime
USU	Ultimate Sampling Unit
UTSAN	Technical Unit of Food and Nutrition Security
WFP	World Food Programme
WRI	World Resources Institute

ACKNOWLEDGMENTS

This report was financed by the State and Peacebuilding Fund (SPF), with support from the Global Facility for Disaster Reduction and Recovery (GFDRR). The full team included Viviana Maria Eugenia Perego (Task Team Leader, Senior Agriculture Economist, World Bank), Karima Ben Bih (Senior Disaster Risk Management Specialist, World Bank), Maria Florencia Tejeda (Agriculture Economist, World Bank), Pol Nadal Cros (Consultant, World Bank), Juan Carlos Muñoz (Consultant, World Bank, and Centro Valor Público at Universidad EAFIT), Stefany López (Research Assistant, Centro Valor Público at Universidad EAFIT), Melissa Brown (Senior Agriculture Specialist, World Bank), Hiromi Akiyama (Urban Specialist, World Bank), Mohini Bhatia (Consultant, World Bank), Jorge Rueda (Consultant, World Bank, and Centro Valor Público at Universidad EAFIT), Laura Maria Quintero (Research Assistant, Centro Valor Público at Universidad EAFIT). Surveying, data collection, and qualitative analysis were respectively carried out by A2F Consulting (Ahadul Kabir Muyeed, Poulomi Dasgupta, Ana Sofia Sandoval) and Kantar Mercaplan (Ricardo Alfaro, Carlos Cedeño, Gonzalo Martínez, Alexandra Uribe).

The team is grateful for the guidance and support of Diego Arias (Practice Manager, World Bank), Marco Scuriatti (SPF Program Manager, World Bank), Jeannette Ramirez (SPF Operations Officer, World Bank). Katie Kennedy Freeman (Lead Agriculture Economist, World Bank), Brendan Jongman (Senior Disaster Risk Management Specialist, World Bank), and Margaux Vinez (Senior Economist, World Bank) kindly served as Peer Reviewers for this report. The team acknowledges advice and brainstorming from Eva Hasiner (Senior Agriculture Economist, World Bank), Francisco Bueso (Senior Agriculture Economist, World Bank), Mariangela Ramirez (Senior Agriculture Specialist, World Bank), Pablo Valdivia (Senior Agribusiness Specialist, World Bank), Åsa Giertz (Senior Agriculture Economist, World Bank), David Tréguer (Senior Agriculture Economist, World Bank), Ana Aguilera (Senior Social Development Specialist, World Bank), Carolina Mejía-Mantilla (Senior Economist, World Bank), Ezequiel Miranda (Senior Operations Officer, International Finance Corporation), Veronica Michel (Economist, World Bank), Mirtha Liliana Escobar (Senior Disaster Risk Management Specialist, World Bank), Giuliana De Mendiola Ramirez (Urban Specialist, World Bank), Solène Masson (Consultant, World Bank).

The completion of this report involved continued dialogue with partner institutions World Food Programme (WFP), Food and Agriculture Organisation of the United Nations (FAO), International Organization for Migration (IOM), UN Refugee Agency (UNHCR). In particular, the team wishes to especially acknowledge the close collaboration with Marta Giambino, Marta Ortiz, Annette Castillo, Jonathan Cullen, Maria Elena Velazquez, Frederick Ranitzsch from WFP; Adoniram Sanches, Ekaterina Krivonos, Cristina Rapone, Marco Minelli, Israel Rios, Jacqueline Demeranville, Yerania Sanchez, Clelia Puzzo from FAO; Karolina Krelinova, Raul Andres Soto, Eugenia Maria Loria, Andrea Hidalgo, Luis Fernando Novoa, Guillermo Garcia from IOM; Carmen Asenjo, Vinicius Feitosa from UNHCR.

The authors would like to acknowledge the invaluable support received from stakeholders, key informants, and focus group participants, who graciously offered the insights and observations

that were necessary to produce this report. Valuable insights and advice were gathered from Jose Manuel Iraheta Bonilla and Lia Fain (Economic Commission for Latin America and the Caribbean - ECLAC), Association for Rural Development of the West (CDRO), CARE International Honduras, Center for Research and Promotion of Human Rights (CIPRODEH), Eva Mercedes Pinzón González, FAO Office in Honduras, IOM Country Office in El Salvador, Magenta Consulting, Survivors Foundation, as well as focus group participants in rural communities of El Salvador, Guatemala, Honduras. The team recognizes with gratitude the participants in a virtual validation workshop of the preliminary results of this study, held in May 2026. The contributions made by participants in the workshop were essential to validate, refine, and finalize the contents of this report, and the team wishes to acknowledge all attendees for their active participation and insights.

The World Bank Central America Country Management Unit was instrumental in supporting the inception and dissemination of this work. The team is especially grateful to Michel Kerf (Regional Practice Director, World Bank), Juan Pablo Uribe (Division Director, World Bank), and Joelle Dehasse (Operations Manager, World Bank). The team expresses its gratitude for logistical and administrative support from Sofia Neiva and Gabriel Lalane Mercado (Team Assistants, World Bank). Translation services were provided by Sofie Van Renterghem and graphic design by Cybil Maradza.

EXECUTIVE SUMMARY

Photo Credit: David Peinado Romero / Shutterstock

A. INTRODUCTION

This report examines the interlinked dynamics of fragility, food insecurity, shocks, and migration in the Northern Central America (NCA) region, composed of El Salvador, Guatemala, and Honduras. In recent years, food insecurity and migration (including a recent trend of return and reverse migration) have emerged as deeply interconnected challenges driven by a combination of economic hardship, climate shocks, and long-standing fragility. The COVID-19 pandemic and subsequent food and fertilizer price crises significantly worsened food insecurity across the region, while factors such as drought, hurricanes, crop failures, and social instability have pushed households towards migration. While most of the existing literature on NCA countries examines bilateral relationships in isolation (shocks and food insecurity, food insecurity and migration, or migration and remittances), the contribution of this study is to simultaneously capture shock exposure, food security, and migration dynamics within the same households, also incorporating structural fragility as a key conditioning factor. Although migration has an inherently dual nature (an aspirational income diversification strategy, in addition to a reactive coping mechanism), the distinct focus of this report is specifically on the drivers of distress-driven migration. Drawing on household survey data, econometric analysis, qualitative interviews, and review of secondary data and literature, the report aims to generate evidence to inform more effective policies and investments to reduce hunger, build resilience, and address the root causes of forced migration.

The analysis stems from a unified framework capturing the full sequence from shocks to food insecurity, migration decisions, and back to food security outcomes. Especially in fragile settings, environmental, market, and social instability shocks tend to accumulate and reinforce one another, progressively eroding livelihoods, weakening resilience, and reducing households' ability to secure stable

and adequate access to food. Within this framework, migration emerges as an adaptive response. On the one hand, food insecurity deterioration increases pressure to migrate. On the other hand, previous migration experience within the household can help mitigate food insecurity and strengthen resilience through remittances and income diversification. These effects, however, are heterogeneous and depend on households' access to resources, social networks, and migration opportunities. Within this framework, the analysis is organized around three interconnected hypotheses that translate into a set of analytical questions, with the aim of identifying operational implications for policy design in fragile, shock-prone settings (Table ES1).

TABLE ES1. GUIDING HYPOTHESES AND ANALYTICAL QUESTIONS

HYPOTHESIS	ANALYTICAL QUESTION	CROSS-CUTTING
H1: Compounding shocks erode food and nutrition security	Q1: Which shocks are most associated with food insecurity? Q2: When do shocks become a crisis — do impacts compound after multiple shocks?	Q6: How do gender and ethnicity shape exposure, coping, and migration outcomes?
H2: Migration as a coping and a resilience strategy	Q3: Does food insecurity translate into pressure to migrate? Q4: Does migration ease food insecurity and shield against shocks?	
H3: Structural fragility as an amplification channel	Q5: How does fragility affect the shock–migration–food security pathway?	

B. RESULTS

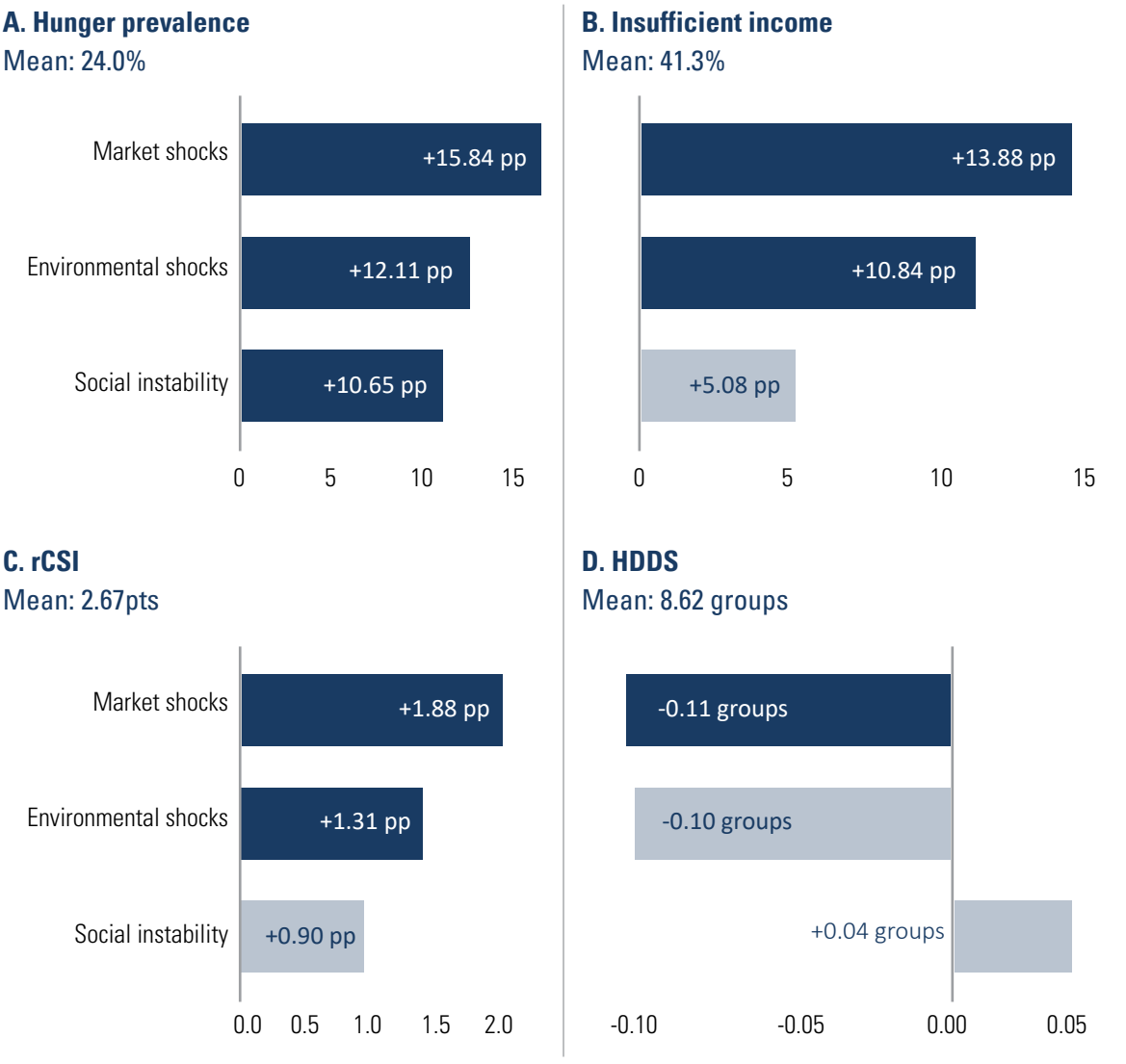
The analysis shows that, in fragile, shock-prone settings, the pressures of hunger and migration reinforce each other through identifiable channels. Based on the four guiding hypotheses resulting from the conceptual framework formulated in Table ES1, a number of key operationalizable takeaways (to be interpreted as correlations rather than as causal evidence) emerge from the findings of this report:

Photo Credit: rakhmatsuwandi / Pexels

1. HYPOTHESIS 1:

Repeated and compounding shocks, especially shocks directly related to loss of household income, erode households' food security and can overwhelm their coping capacity (Figure ES1).

FIGURE ES1. ESTIMATED EFFECTS OF SHOCKS ON FOOD INSECURITY

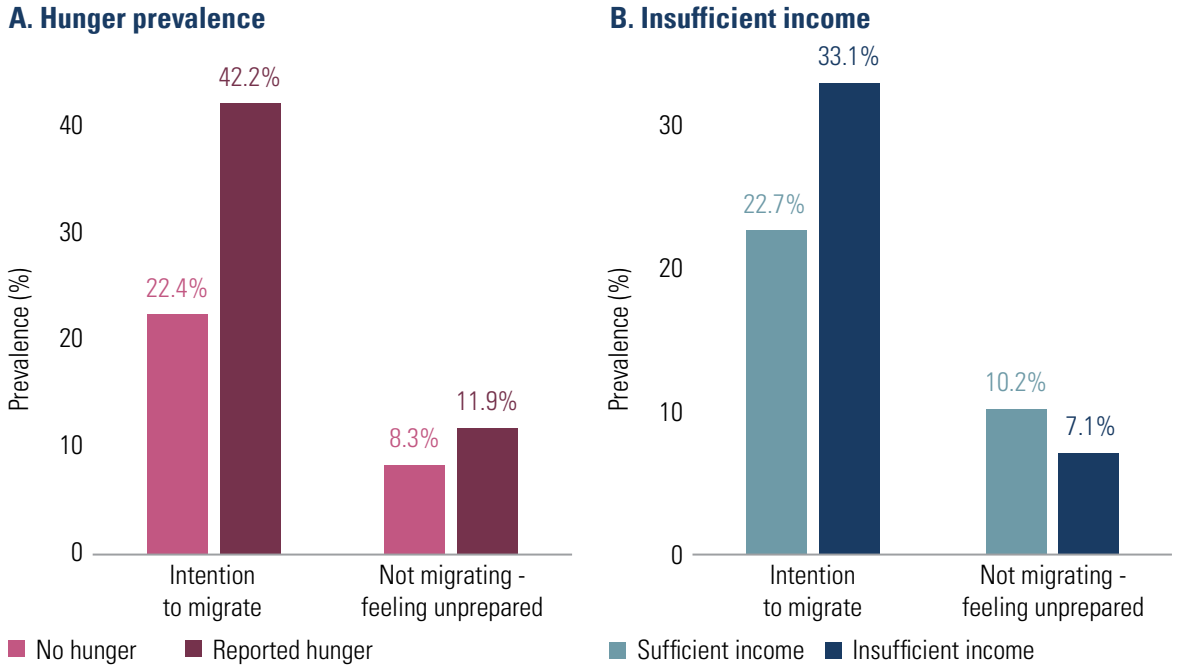


Notes: Each bar shows the estimated coefficient from a separate regression of the indicated shock on hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (points), and HDDS (food groups). The mean of each dependent variable is reported in the panel titles. All models control for municipal-level fragility and household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate estimates that are not statistically significant at the 10% level.
Source: Authors' calculation.

2. HYPOTHESIS 2:

Hunger is a strong contributor to migration pressure when households see no viable pathway to recovery locally, but some of the most food-insecure households may be unable to migrate due to insecurity or poor connectivity (Figure ES2). Having migrant household members and receiving remittances can buffer the negative effects of shocks on food security (Figure ES3), but migrating is not an effective coping strategy in the aftermath of a shock (Figure ES4).

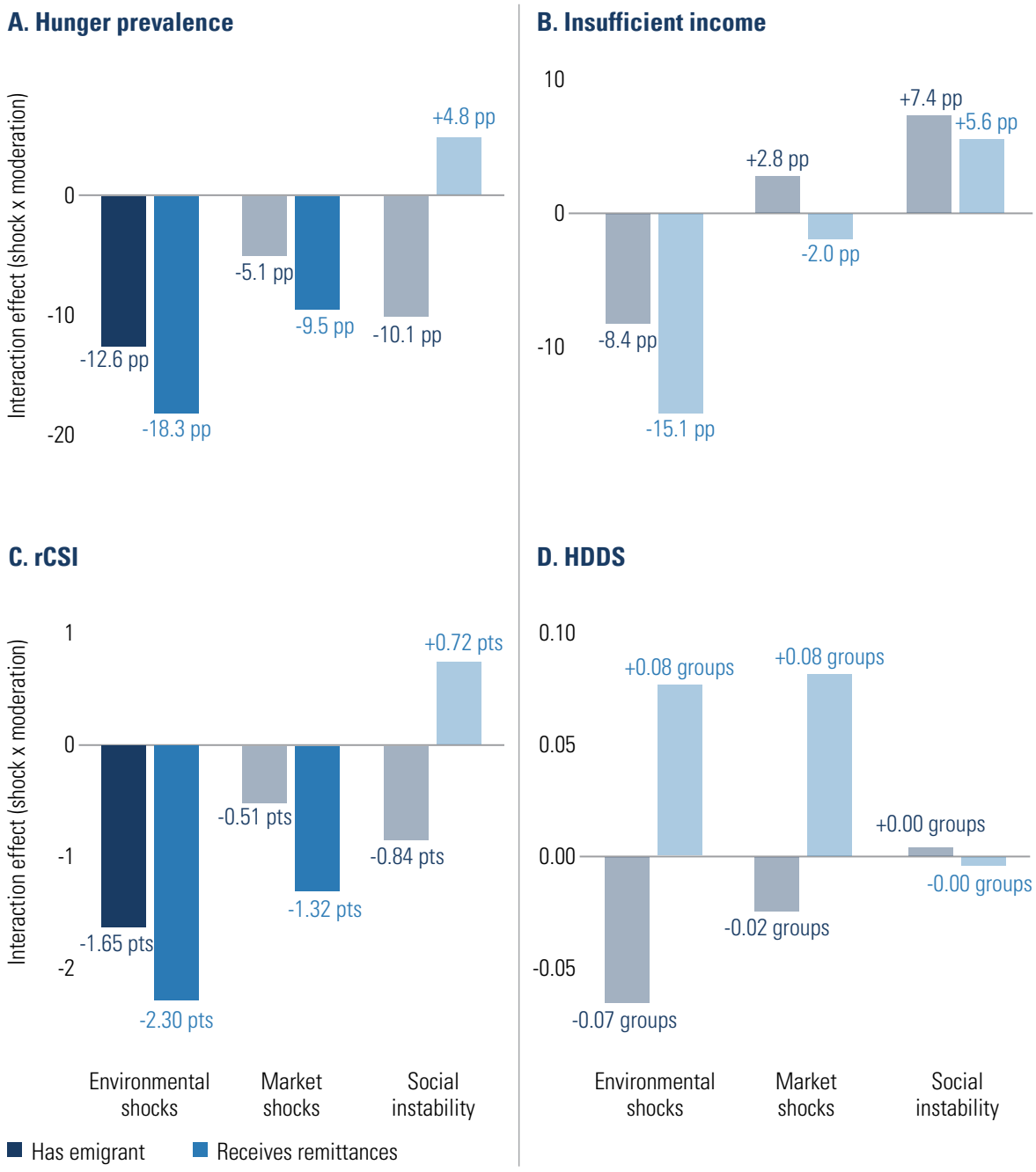
FIGURE ES2. MIGRATION INTENTIONS AND CONSTRAINTS BY FOOD INSECURITY STATUS



Notes: The figure presents the percentage of households reporting migration intentions (internal or international) and the share of households that, despite preferring to remain in their current location, report doing so due to migration constraints. Constraints include inability to finance, the lack of documentation, or perceived migration risks. Percentages are shown separately by food insecurity status. Panel A compares households that reported experiencing hunger with those that did not. Panel B compares households whose income was insufficient to purchase food with those reporting sufficient income for food needs.
Source: Authors' calculations.

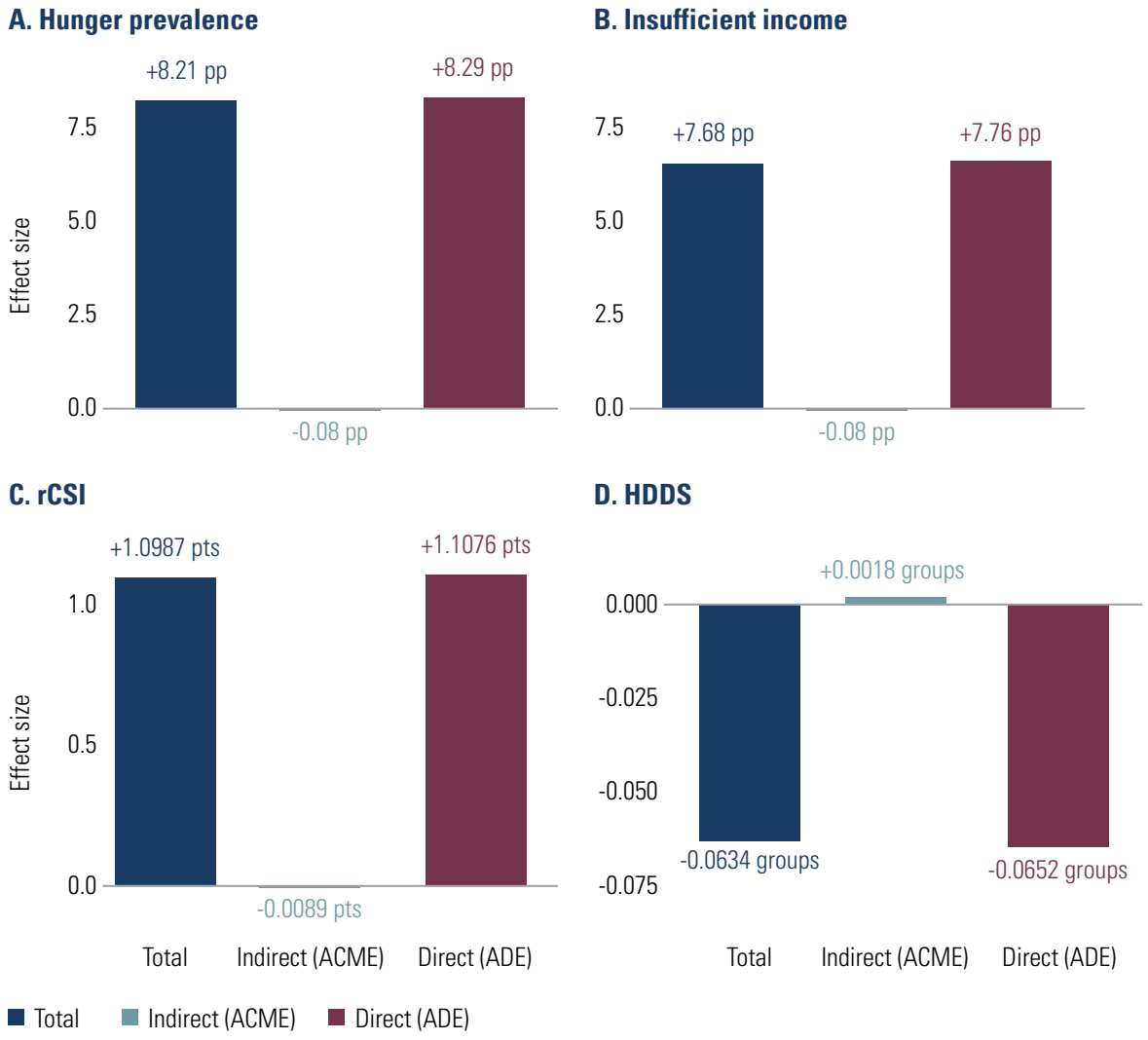
Photo Credit: Omri Eliyahu / Shutterstock

FIGURE ES3. INTERACTION EFFECTS OF MIGRATION AND REMITTANCES ON SHOCK IMPACTS



Notes: Bars show the estimated interaction coefficient between each shock type and either having an emigrant household member or receiving remittances. The coefficients capture whether migration or remittance links moderate the association between shocks and food security outcomes. For hunger, insufficient income, and rCSI, negative coefficients are consistent with a buffering effect; for HDDS, positive coefficients are consistent with buffering. Models control for municipal-level fragility and household characteristics, include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.
Source: Authors' calculations.

FIGURE ES4. MEDIATION ANALYSIS: INDIRECT AND DIRECT EFFECTS OF SHOCKS ON FOOD SECURITY THROUGH MIGRATION



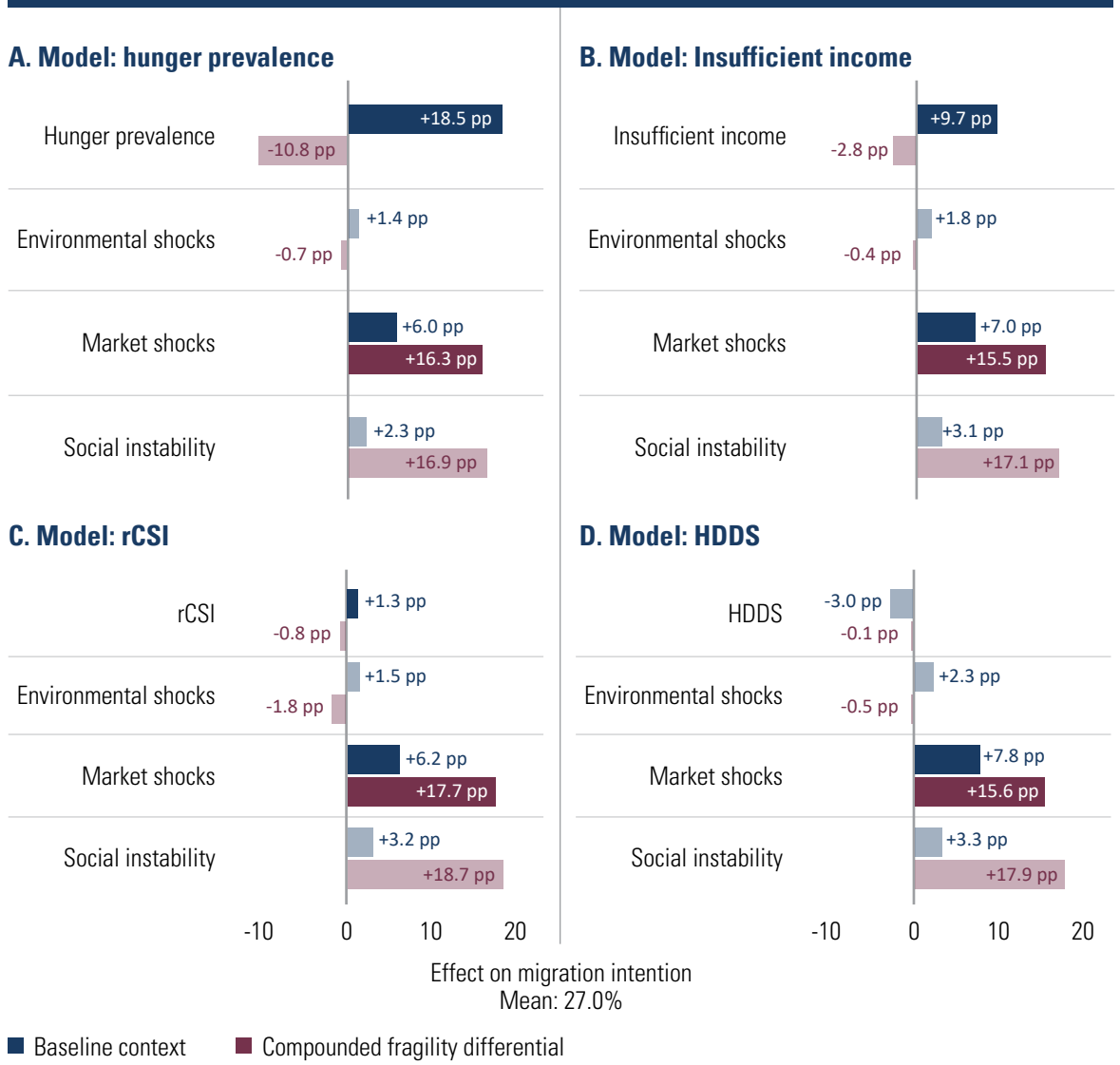
Notes: The figure presents the decomposition of the total effect of shocks on food security outcomes into indirect effects through migration (ACME) and direct effects (ADE). Outcomes include hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (index points), and HDDS (food groups). The indirect effect captures the extent to which shocks affect outcomes through changes in migration behavior, while the direct effect reflects the remaining impact not mediated by migration. All estimates are derived from mediation models controlling for municipal-level fragility and household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), including country fixed effects and clustering standard errors at the municipal level.
Source: Authors' calculations.

Photo Credit: virtualexploring / Shutterstock

3. HYPOTHESIS 3:

Where climate risk intersects with social instability, shocks result in more acute food security losses and migration pressure (Figure ES5). However, migration continues not to be an effective strategy to alleviate food insecurity after a shock, and the buffer effect of previous migration and remittances is the same as in lower fragility areas.

FIGURE ES5. ESTIMATED EFFECTS OF SHOCKS ON MIGRATION INTENTIONS, BY FRAGILITY CONTEXT

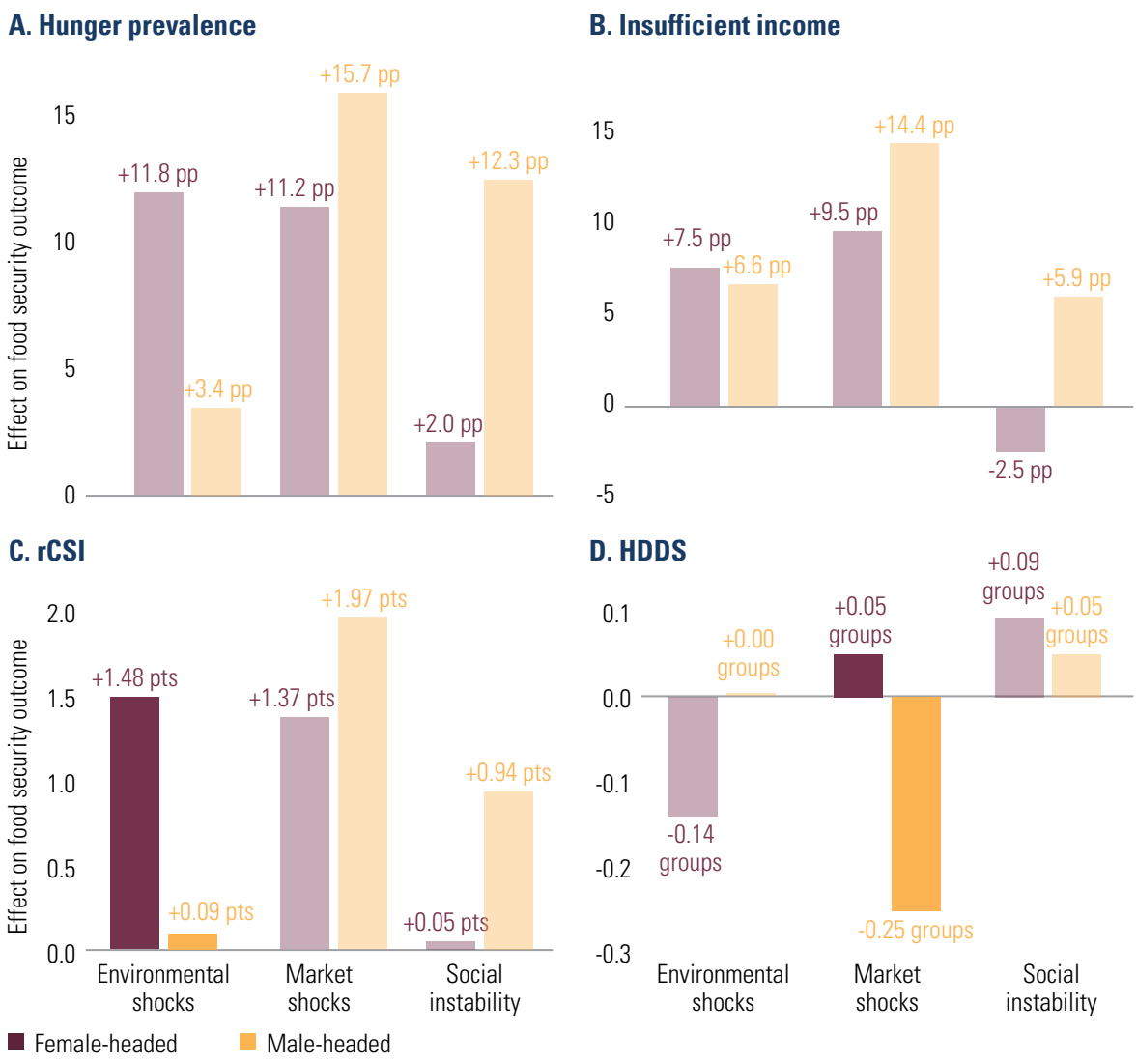


Notes: Blue bars show the estimated association between each shock or food insecurity indicator and migration intentions in baseline contexts (i.e., those with low disaster risk exposure, low social fragility, or both). Red bars show the additional differential association in compounded fragility areas, estimated through interactions between each indicator and compounded fragility. The total association in compounded fragility contexts is the sum of the blue and red coefficients. Each panel uses a separate model for the food insecurity indicator shown in the panel title; in all models, that indicator and all shock types are interacted with compounded fragility. Models control for household characteristics, include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate coefficients that are not statistically significant at the 10% level.
Source: Authors' calculations.

4. CROSS-CUTTING

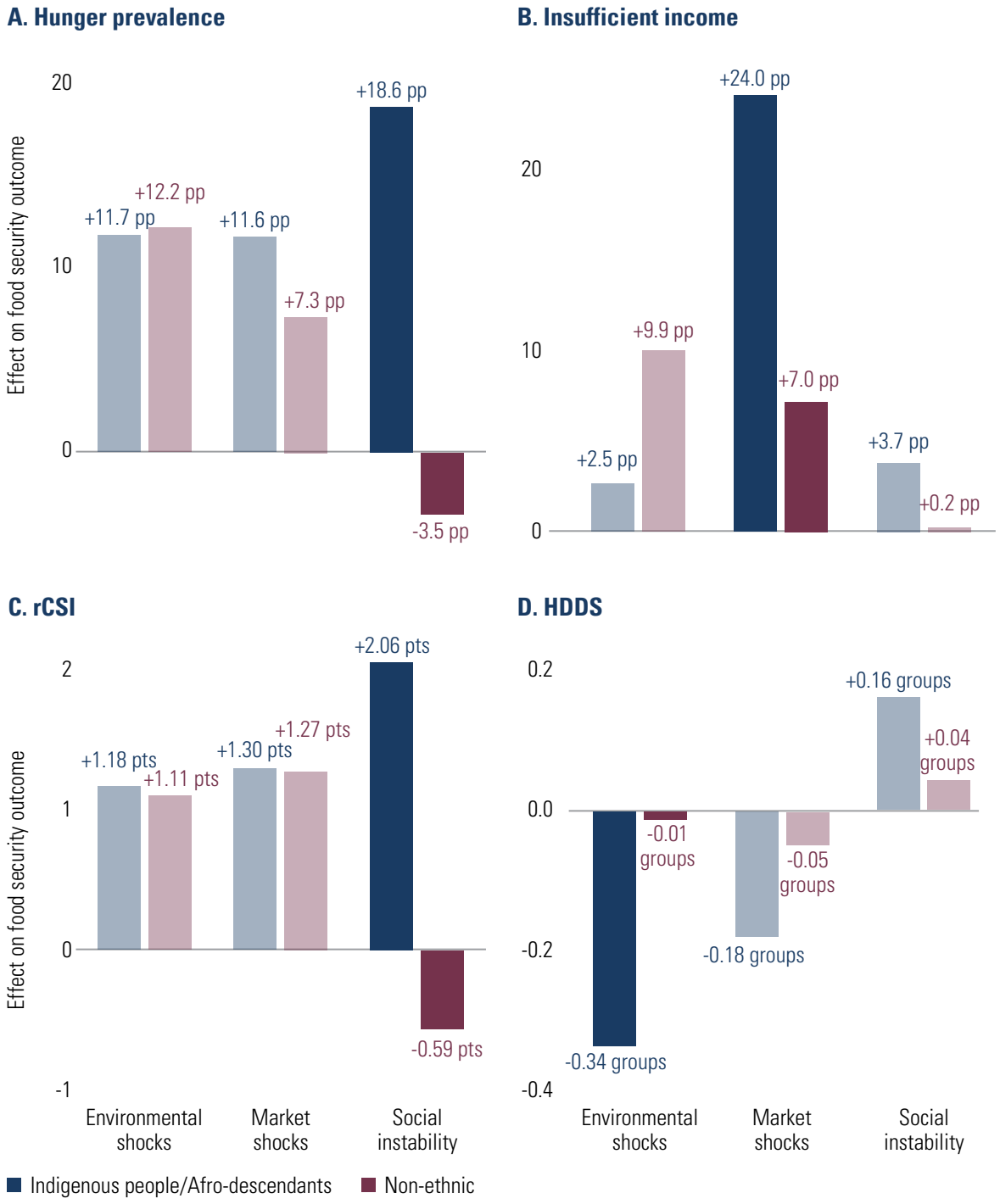
Women-led households are more food insecure but are able to defuse the impact of shocks, thanks to more established previous migration channels but also to potentially distorted intra-household dynamics (Figure ES6). Indigenous Peoples and Afro-Descendants are more income constrained, and are exceedingly vulnerable in the wake of social instability and environmental shocks (Figure ES7). As the dataset used was not designed to be representative along gender and ethnicity lines, these results should be considered descriptive of the specific sample analyzed.

FIGURE ES6. HETEROGENEOUS EFFECTS OF SHOCKS ON FOOD SECURITY, BY GENDER OF THE HOUSEHOLD HEAD



Notes: Each bar shows the estimated association between shock exposure (environmental, income, and social instability) and household head gender on food security outcomes (hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS), Female-headed households are the reference category: blue bars show the estimated association for female-headed households, while red bars show the corresponding estimate for male-headed households. All models control for municipal-level fragility and household characteristics (age, education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.

FIGURE ES7. HETEROGENEOUS EFFECTS OF SHOCKS ON FOOD SECURITY, BY SELF-REPORTED ETHNICITY



Notes: Each bar shows the estimated association between shock exposure (environmental, income, and social instability) and ethnic group status on food security outcomes (hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS), Indigenous people, or Afro-descendant households are the reference category. Green bars show the estimated association for the reference group, while gray bars show the corresponding association for the comparison group. All models control for municipal-level fragility and household characteristics (age, gender, education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.

C. INSTITUTIONS AND POLICIES

The institutional ecosystem in NCA sees the coexistence of strong regional institutions and well-established national actors. The SICA framework provides a solid foundation for countries to address shared challenges related to food security, disaster risk management, and long-term resilience. At the national level, all three countries have institutions in charge of policy-making and program implementation on these same issues, although the level of coordination and comprehensiveness of food security interventions varies by country. All three countries display at least some experience in promoting agriculture insurance among smallholders, and they have social protection mechanisms with varying degrees of shock responsiveness and anticipation. Across countries, specific governance frameworks have been developed on migration and displacement, as well as for diaspora and return migration.

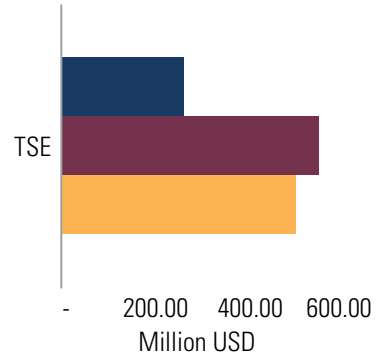
NCA countries have historically been responding to shocks and food security crises with a range of producer support, consumer support, and general services support measures (Figure ES8). However, while total government expenditure positively impacts agricultural performance, the various types of support do not all have the same level of impact on the agricultural sector, in terms of the efficacy of public action. In particular, increasing the share of expenditures committed to public goods and services is less distortionary and more effective than subsidizing the provision of private goods and services or market price support. The general thrust in NCA has been to favor direct producer support to the detriment of food consumers. Furthermore, expenditures on general services support have lagged in terms of volume (vis-à-vis the contribution of agriculture to the economy) and diversification.

Overall, the policy ecosystem displayed by NCA can address the food security impacts of shocks in fragile areas, but there are opportunities for enhancing its long-term vision. Improving inter-agency coordination, strengthening joint regional responses, and shifting the structure of agriculture support could enable large efficiency gains that can drive sustainability, equity, and resilience.

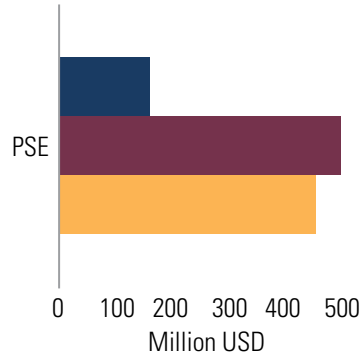
Photo Credits: Alexandre Laprise / Shutterstock

FIGURE ES8. AGRICULTURE SUPPORT ESTIMATES IN NCA COUNTRIES, LATEST AVAILABLE YEAR

Panel A:Total Support Estimate (TSE)



Panel B: Producer Support Estimate (PSE)



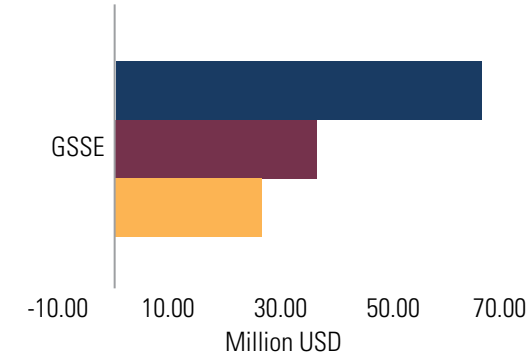
Panel C: Consumer Support Estimate (CSE)

Honduras 2017 Guatemala 2018 El Salvador 2022

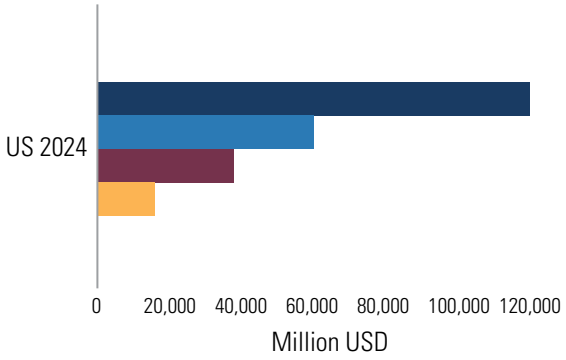
Honduras 2017 Guatemala 2018 El Salvador 2022

El Salvador 2022 Guatemala 2018 Honduras 2017

Panel D: General Support Services Estimate (GSSE)



Panel E: Benchmark – United States of America



Honduras 2017 Guatemala 2018 El Salvador 2022 TSE CSE PSE GSSE

Notes: TSE: Total Support Estimate; PSE: Producer Support Estimate; CSE: Consumer Support Estimate; GSSE: General Support Services Estimate. Latest available year: Honduras 2017, Guatemala 2018, El Salvador 2022, United States of America 2024. Source: Own elaboration, based on Agrimonitor data (consulted March 2026) from https://agrimonitor.iadb.org/es/resultados-por-paises?country=pe&tab=agriculture.

D. RECOMMENDATIONS

A well-designed system of policies and investments can prevent temporary stress from becoming a crisis, while supporting resilience and local development. This is particularly salient in light of recent El Niño forecasts for late 2026, which threaten severe disruptions to food security and livelihoods in NCA countries. Pre-identified shock-response mechanisms that translate early warnings into early action, targeting vulnerable households and accounting for socio-demographic specificities, can preserve assets and human capital before coping thresholds are crossed. Meanwhile, interventions in ex-ante risk management, climate adaptation, and local governance, focusing on the provision of public goods and services and leveraging regional coordination, can reduce the structural vulnerabilities that amplify the impact of adverse events.

Beyond national boundaries, coordinating and promoting a regional agenda for food security and stability can play a major role in strengthening resilience in Northern Central America. The SICA and its network of sectoral institutions represent a powerful platform for coordinating regional policy initiatives and maintaining consistent, best practice approaches, aligning country efforts while preserving national ownership. Regional data coordination via SICA would also allow for the improved collection of comparable cross-country information on agrometeorological, production, price, and food security data, to enable both policymakers and households to improve planning, risk management, and early action in the face of shocks.

TABLE ES2. SUMMARY OF RECOMMENDATIONS

RECOMMENDATIONS FOR SHOCK RESPONSE

RECOMMENDATION	REGULATORY	INVESTMENTS	INSTITUTIONS
Move from early warning to early action to protect food consumption before coping strategies deteriorate Strengthen the connection between existing early warning platforms and national programs (adaptive social protection, food assistance, and agricultural support).	Small, transparent set of triggers and standard operating procedures (SOPs) for action. Triggers to include economic and agricultural stress signals alongside climate indicators. SOPs to anticipate fragility-related transmission channels with market-access stress proxies.	Improve interoperability between monitoring systems (agroclimatic, prices, nutrition), strengthening simple dashboards and decision routines, and ensuring delivery channels can scale quickly. Where feasible, pre-arranged financing with rapid-disbursement instruments.	**El Salvador:** DGPC, social protection programs. **Guatemala:** SESAN (SINASAN), other relevant ministries. **Honduras:** SAG (UTSAN), SEDESOL (SIRBHO registry). **Regional integration opportunities:** CEPREDENAC, CAC, SISCA Dry Corridor Anticipatory Action Framework.
Ensure existing food security programs are accessible to low-visibility shock affected households, including returnees and failed migrants Use existing national	Simple rules for (i) temporary top-ups and temporary enrollment during stress periods,(ii) simplified re-enrollment protocols for returnees; (iii) protection and secure data-handling protocols;	Expand and regularly update registry coverage in the most shock-exposed municipalities, including "shock-ready" targeting; enable emergency enrollment protocols; pre-authorize	**El Salvador:** MAG, DGPC. **Guatemala:** SESAN, MAGA, delivery agencies. **Honduras:** SAG (UTSAN), SEDESOL (SIRBHO).

RECOMMENDATION	REGULATORY	INVESTMENTS	INSTITUTIONS
platforms to reach households that are high-need but poorly captured by standard eligibility rules.	(iv) time-bound eligibility mechanisms that recognize transitory vulnerability.	simplified payment and verification procedures for temporary benefits; strengthen interoperability between registries, food security monitoring systems, and payment platforms.	**Regional integration opportunities:** CEPREDENAC, SISCA, minimum common standards for (i) defining stress signals, (ii) sharing timely data, (iii) translating signals into national temporary, time bound responses.
Institutionalize food security crisis preparedness through pre-agreed escalation protocols Food Security Crisis Preparedness Plans (FSCPPs) to translate validated crisis assessments into predictable decisions, financing pathways, and operational scale up.	Co-development process across government, as well as humanitarian and development partners; establish rules for crisis recognition, coordination procedures, escalation protocols.	Focus on operational readiness to implement FSCPP, including (i) analytical and coordination readiness, (ii) integration into annual budget and contingency planning; (iii) testing operational readiness and FSCPP activation	**El Salvador:** MAG, DGPC. **Guatemala:** SESAN, MAGA, INSIVUMEH, CONRED. **Honduras:** SAG (UTSAN), SEDESOL, COPECO. **Regional integration opportunities:** CEPREDENAC, CAC, SISCA COSEFIN, regional fiscal and disaster risk financing coordination for pre-arranged liquidity options complementing national contingency budgets; inform POLSAN operationalization.
Incorporate gender, IP/AD, and youth responsive design into short term food security responses Ensure that assistance reaches women effectively, while temporarily activating complementary opportunities for youth in high pressure contexts and adopting culturally-appropriate approached for IP/AD. Address the safety and do-no-harm dimension.	Women as preferred transfer recipients; enrollment processes, payment schedules, and delivery modalities to account for women's care responsibilities and safety constraints; limited, time-bound youth and IP/AD support package to be activated in priority areas during periods of stress.	Adapt payment and communication systems so women can receive transfers directly; last mile outreach and grievance feedback mechanisms to ease exclusion risks and intra household constraints; shock-response packages to include small, flexible funding windows to support time bound youth opportunities; culturally appropriate IP/AD strategies that can be deployed rapidly during periods of stress.	**El Salvador:** MAG, social protection programs, ISDEMU, INJUVE. **Guatemala:** MAGA, MIDES, SEPREM, CONJUVE, CODISRA, FODIGUA, DEMI. **Honduras:** SAG, SEDESOL, SEMUJER, INJUVE, DINAFROH CONAPOA. **Regional integration opportunities:** CAC (POLSAN), SISCA.

RECOMMENDATIONS FOR ENHANCED RESILIENCE			
RECOMMENDATION	**REGULATORY**	**INVESTMENTS**	**INSTITUTIONS**
Strengthen agricultural insurance as an ex-ante instrument for livelihood protection and food system resilience Agricultural insurance to address aggregate production and income stress, to be introduced alongside social protection and food assistance within a risk layered financing strategy.	Define clear, transparent, predictable policy framework for publicly supported agricultural insurance, specifying target segments, shocks covered, role and limits of premium subsidies, rules for payout triggers, and relationship to post-disaster assistance.	Allow insurance to function at scale over time through (i) farmer registries, (ii) payment infrastructure, (iii) risk information platforms (weather and production indices, price monitoring), (iv) institutional capacity for product design, supervision, and monitoring. Provide complementary services that turn payouts into recovery.	**El Salvador:** MAG. **Guatemala:** MAGA. **Honduras:** SAG. **Regional integration opportunities:** CEPREDENAC, COSEFIN through CCRIF.
Repurpose agricultural support toward public goods and services Refocus public support on extension services, climate smart practices, soil and water management, and market infrastructure, rather than relying on inefficient or poorly targeted subsidies and market price support.	Gradually replace input subsidies with (e-) vouchers, avoid trade restrictions (including non-tariff barriers), decouple support from production.	Rural market infrastructure and storage; local feeder and market connectivity; irrigation where economically and environmentally appropriate; extension services and support for the adoption of climate-smart and nutrition-smart agriculture practices. Complement with consumer support measures that can be activated when abnormal food price pressures emerge.	**El Salvador:** MAG (CENTA), MH, line ministries, local governments. **Guatemala:** MAGA (DICORER), MINFIN, MINECO, line ministries, local governments. **Honduras:** SAG (DICTA), SEFIN, SDE, local governments. **Regional integration opportunities:** CAC, SIECA, COSEFIN.
Strengthen territorially anchored livelihood resilience in high migration corridors Combine productive alliances, climate resilience, and local governance, integrating climate resilience fragility considerations into a single, location-based approach.	Defining priority corridors and municipalities, bundle sector actions into a single territorial plan with shared objectives (food security, income stability, connectivity, and resilience), assign clear coordination roles across agencies.	Integrated investment packages to reduce volatility, including productive alliances and value-chain linkages, small-scale infrastructure that reduces exposure (drainage, water systems, slope stabilization where relevant), and connectivity investments (roads, bridges, and	**El Salvador:** MAG, MH, line ministries, local governments. Guatemala: **MAGA,** MINFIN, line ministries, local governments. **Honduras:** SAG, SEFIN, line ministries, local governments.

RECOMMENDATION	REGULATORY	INVESTMENTS	INSTITUTIONS
		logistics) that prevent isolation and price spikes after hazard events.	**Regional integration opportunities:** CAC (POLSAN update), SIECA.
Align national efforts through existing regional platforms to address shared food security risks Use existing regional platforms to align analysis, definitions, and decision inputs to reduce duplication, improve comparability, and accelerate cross-country learning, while preserving national ownership over policy choices and implementation.	Harmonized minimum package of indicators and thresholds used for risk bulletins, guidance on how those bulletins map to country-level actions (SOP templates that can be adapted nationally), and agreed principles for safe labor mobility (rights protections, recruitment transparency, portability/ return support).	Shared analytics and learning for trigger calibration and response design improvement, scaling regional risk financing options that complement national budgets and enable rapid action after agreed triggers, joint proposals for multi-country resilience investments in shared high-risk corridors, where cross-border market disruption and mobility patterns are most pronounced.	**El Salvador:** MAG, General Directorate of Civil Protection, line ministries, MH. **Guatemala:** SESAN (SINASAN), MAGA, MIDES, line ministries, CONRED, INSIVUMEH, MINFIN. **Honduras:** SAG (UTSAN), SEDESOL, line ministries, COPECO, SEFIN. **Regional integration opportunities:** CEPREDENAC, COSEFIN, CAC (POLSAN).

BOX ES1. GUIDING PRINCIPLES AND GOOD PRACTICES FOR HUMAN MOBILITY POLICIES

This report looks at migration as a distress-driven response to shocks, whose effectiveness at reducing food insecurity is mixed. Recommendations, as such, intentionally focus on shock response and enhanced resilience rather than at the governance and management of migration. With this caveat in mind, recent analysis on human mobility approaches for Latin America and globally allows for the identification of a set of guiding principles and good practices that can be relevant for NCA countries:

- Basic rights and protection: guarantee the basic rights of all people on the move, regardless of status.
- Agency, dignity, and non-discrimination: protect the dignity and agency of migrants and displaced persons, and prevent discrimination.
- Participation and voice: enable participation mechanisms so people on the move and host communities can influence decisions.
- Active, integrated management with a development perspective: manage human mobility actively and comprehensively, with a strategic development perspective.
- Inclusion through national systems and support to host communities: integrate people on the move into national systems and strengthen services in receiving communities.

Source: World Bank, 2024b; Acosta et al., 2025.

1 | INTRODUCTION

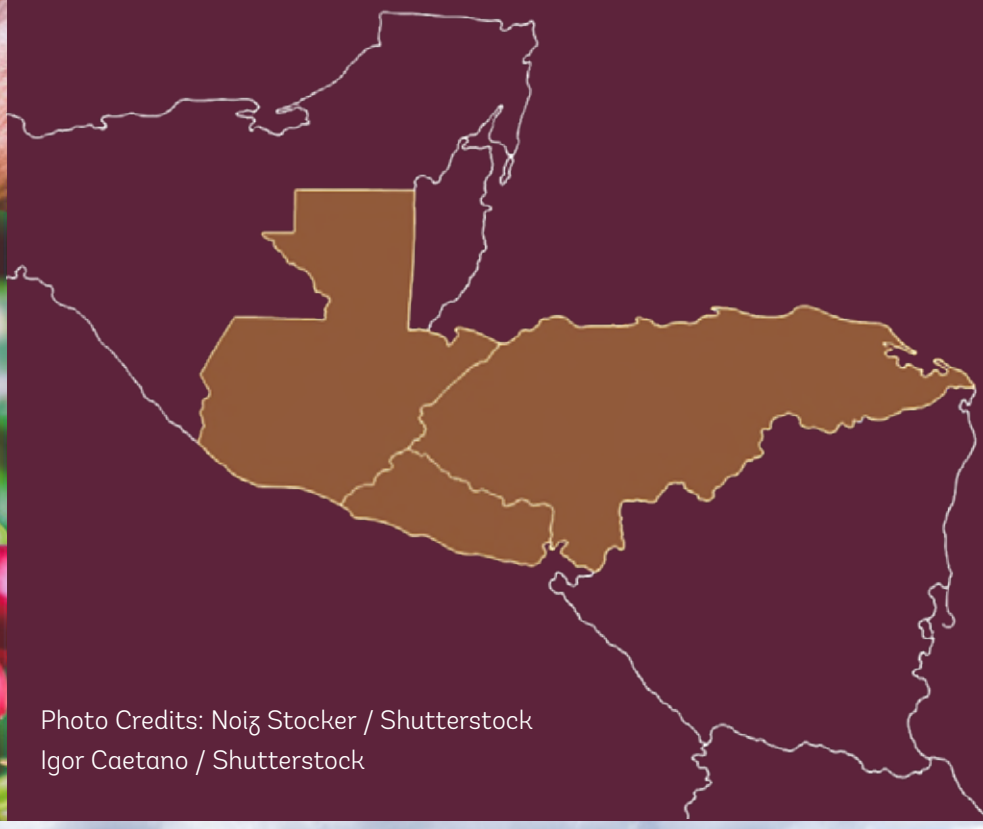
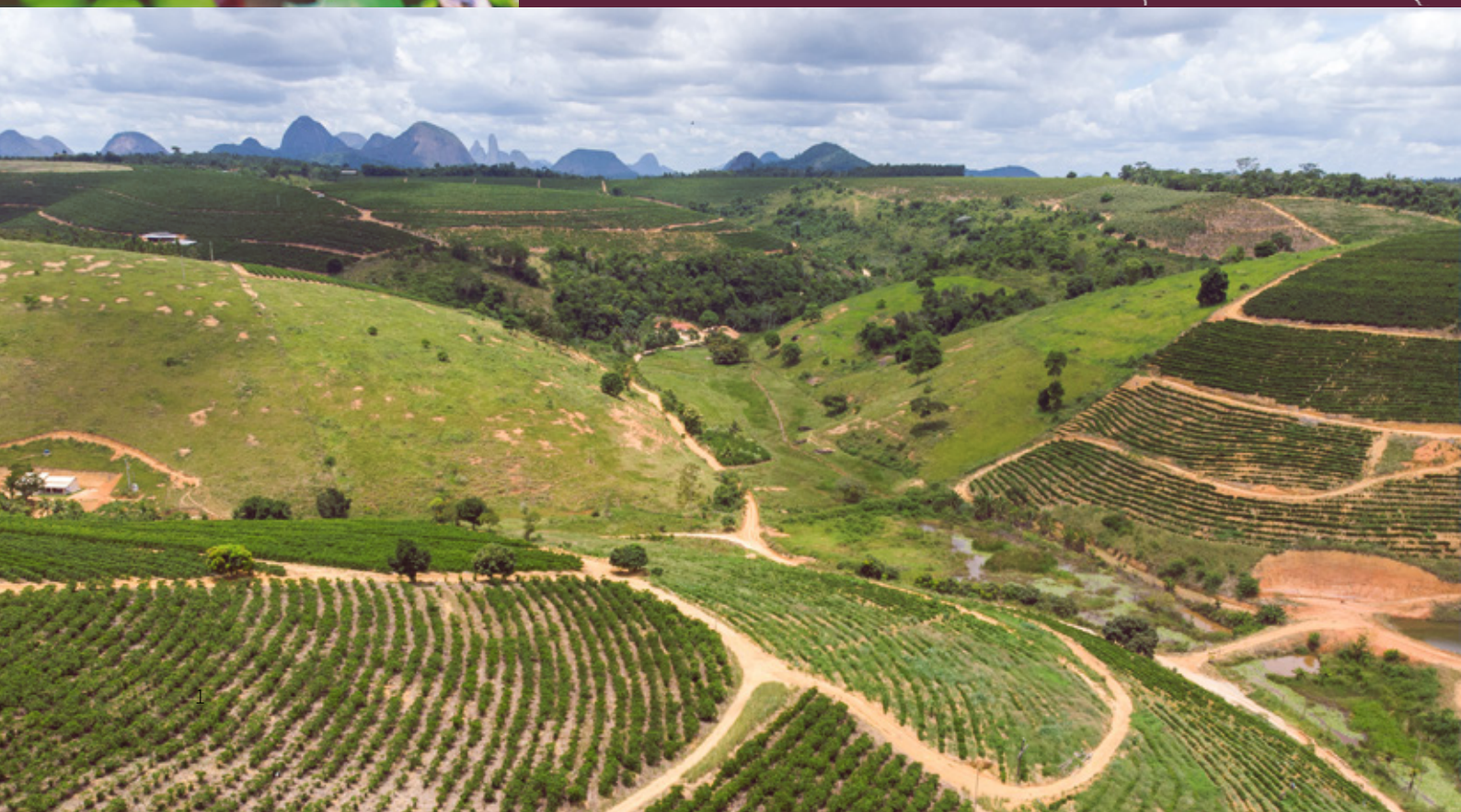


Photo Credits: Noiz Stocker / Shutterstock
Igor Caetano / Shutterstock



In recent years, food insecurity has been a pervasive problem in Northern Central America (NCA). Over the past few years, the NCA region (composed of El Salvador, Guatemala, and Honduras) has witnessed a sharp rise in food insecurity – and alongside it, a surge in people seeking to migrate in search of better livelihoods. The COVID-19 pandemic dealt a severe blow to household incomes and food access in Latin America, substantially increasing the rate of food insecurity (from 17% pre-pandemic to 24% post-pandemic; FAO, 2023): in NCA countries, combined pressures from the pandemic and subsequent food and fertilizer price shocks triggered comparable spikes, with severe food insecurity almost doubling (from 14.2% to 23.5%) in Honduras (Perego et al., 2024). During this period, many households faced rising food prices, job losses, and declining incomes, factors that emerged as key predictors of worsening food insecurity (Hernandez-Velasquez et al., 2022).

In this context, migration has emerged as one of the main strategies households consider in order to cope with deteriorating living conditions. According to an International Organization for Migration (IOM, 2022) survey in El Salvador, Guatemala, and Honduras, 24% of households had at least one international migrant, while 43% reported that they would like to migrate permanently if given the opportunity. In both cases—actual and aspirational migration—more than 75% of motivations are linked to the search for better employment opportunities or to a lack of jobs, and over 20% are associated with insufficient income to meet basic needs or purchase food. Migration pressures are particularly evident within the Central American Dry Corridor, where high levels of poverty and malnutrition coincide with their location along a major migration route toward the United States (IOM, 2022). Drought and crop failures, back-to-back hurricanes (such as Eta and Iota in 2020), the economic ravages of the pandemic, and ongoing violence and insecurity have combined to create a breeding ground for both food crises and waves of migration. Families in rural villages across the region face an untenable choice: stay and risk hunger or embark on a dangerous journey north (Deza & Ruiz-Arranz, 2022).

Long-standing fragility is often seen as a cause and an effect of food insecurity and migration in the region. NCA is prone to natural disasters and extreme weather events that have destroyed infrastructure, reduced agricultural output, and displaced populations (the Red Cross estimates that natural disasters displaced at least 1.5 million Central Americans),[1] and recent research (Linke et al., 2023) has shown that more people from El Salvador, Guatemala, and Honduras migrated to the US between 2012 and 2018 following unusually dry spells during growing seasons. NCA countries exhibit some of the highest rates of violence in the world, with many households living in environments where safety and well-being are constantly at risk. This has multi-faceted reverberations on food production, from preventing farmers from accessing inputs and selling produce, to resulting in the destruction of crops, to pushing farmers to abandon production. Relatedly, fragility is a strong driver of migration: the UN Refugee Agency estimates that, by the end of 2022, more than 1 million people had either fled to neighboring countries or been internally displaced within the region.[2]

This study seeks to better understand the interlinked dynamics of fragility, food insecurity, shocks, and migration in NCA (see Boxes 1.1, 1.2, and 1.3). The focus is on the three countries (Guatemala, Honduras, and El Salvador), which

[1] https://www.ifrc.org/press-release/americas-five-million-more-people-extreme-poverty-and-highly-exposed-disasters-after

[2] https://www.unrefugees.org/emergencies/central-america/

together illustrate how the complex drivers of out-migration are shaped by the fragility faced by territories, shedding light on critical "push" factors such as lack of food and economic security and exposure to repeated environmental, market, and social instability shocks.[3] While migration can also constitute a rational household income diversification strategy, the focus of this work is on the factors affecting forced migration as a reactive coping mechanism at times of crisis. The core motivation of the study is to generate evidence that can help governments and development partners design and implement policies and investments more effectively – to reduce hunger, build resilience to shocks, and thus address one root cause of forced migration.

This report is intended to reach a broad audience of policy makers, program administrators, development professionals, and academics in NCA and in the broader development community. The contents of this report are based on information derived from a wide range of sources, including original household survey data, data analysis from secondary sources, interviews with key informants from the public and private sector as well as development partners, several focus groups with local stakeholders, and literature reviews. The structure of the report is as follows. The study starts by providing context and motivation, followed by an outline of the conceptual framework and research approach. Next, it describes the data and methods used, including an original household survey conducted across three countries.[4] The report then presents findings, beginning with descriptive patterns and moving on to the results of econometric analyses testing key hypotheses, supplemented by qualitative evidence from the focus group discussions and key informant interviews. Finally, the report addresses recommendations and provides concluding remarks.

BOX 1.1. FRAGILITY

Fragility is commonly understood within the broader framework of Fragility, Conflict, and Violence (FCV). The three elements are frequently interrelated and mutually reinforcing. Within this framework, fragility refers to contexts where institutional capacity is weak and where the state or society has limited ability to manage risks, respond to shocks, or provide basic services to the population. Such situations are often associated with long-standing social, economic, political, security, or environmental vulnerabilities that undermine resilience and stability.

In this study, fragility is operationalized through two key dimensions that capture structural vulnerabilities at the territorial level:

- The first dimension reflects exposure to disaster risks, including hazards such as droughts and indicators of water stress that affect livelihoods and food production.
- The second dimension captures social fragility, reflected in the incidence of violence, insecurity, and conflict-related risks.

Together, these dimensions characterize the vulnerability of territories and help explain how shocks translate into food insecurity and migration pressure.

[3] Environmental shocks include droughts, floods, storms, landslides, or seismic events. Market shocks capture disruptions to employment, income, agricultural production, assets, remittances, inputs, or market access. Social instability shocks include violence, displacement, forced recruitment, threats, or confrontations between armed groups. Cf. chapter 3 for more details.

[4] The Methodological Annex summarizes the study's methodology; complete technical annexes are available online (link).

BOX 1.2. FOOD AND NUTRITION SECURITY

The United Nations' Committee on World Food Security (CFS) defines food security as follows: "Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life." This standard definition divides food security into four further components: availability; access; utilization; and stability of the food supply:

- Availability refers to the physical presence of food that could be acquired by a population, either through production or by importation, but does not imply that the population in fact has access to it.
- Access refers to having the means to obtain that food, whether by purchase, or granted by an institution such as a school-feeding program or food stamps, or by local production for sale, barter, or direct consumption.
- Utilization represents the extent to which a household or individual receiving the food can extract nutritional benefit from it to lead healthy lives. The obstacles to physiological utilization include low nutritional quality of the food, food safety issues such as spoilage and biological or chemical contamination, potable water quality, and compromised health, which can limit the full absorption of the food's caloric, vitamin, and mineral content.
- Stability of the food supply refers to the absence of discontinuities and disruptions in the supply chain occasioned by such things as pandemics, military hostilities, natural disasters, embargos, port strikes, terrorist attacks, shipping interruptions, or shortages elsewhere in the world caused by economic upheavals such as those triggered by warfare or cataclysmic weather events.

More recently, the concept of food security has been expanded to include the notion of nutrition security. The World Bank defines nutrition security as "the ongoing access to the basic elements of good nutrition, i.e., a balanced diet, safe environment, clean water, and adequate health care (preventive and curative) for all people, and the knowledge needed to care for and ensure a healthy and active life for all household members."

Situations of food insecurity can arise that can be chronic or acute, or both. Chronic food insecurity arises when there is persistent food insecurity in a given area, even in absence of exceptional circumstances, in terms of a persistent shortfall in the quantity (i.e. energy/caloric intake) and quality (i.e. micro-nutrients) relative to a minimum daily intake required for the population to lead a healthy life. This shortfall can arise because of a chronic lack of available food supplies (whether produced domestically or imported) in a given country of an adequate quality, or where there is an inability for a large share of the population to access such food supplies or to process such foods nutritionally (inadequate utilization). Acute food insecurity arises when exceptional circumstances prompt a reduction in food availability, access, utilization or stability (e.g., due to armed conflict, natural disasters, or sudden sharp increases in global food prices), resulting in an acute spike in food insecurity as populations cannot access or afford the minimum quantity and quality of daily intake required for a healthy life.

BOX 1.3. MIGRATION

Migration is the movement of people away from their usual place of residence to a new place of residence, either across an international border or within a State (IOM, 2024). There is no universally agreed definition of "migration" or "migrant", but there are several widely accepted definitions that have been developed in different settings. For example, the United Nations Department of Economic and Social Affairs (UN DESA) defines a long-term migrant as a person who lives outside their country of origin for at least 12 months.

For demographic and analytical purposes, migration is generally classified into two main types:

- International migration occurs when people cross national borders to live in another country for a minimum period of time.
- Internal migration refers to movements that take place within the borders of a country. A common form is rural–urban migration, when individuals move from rural areas to urban locations within the same country.

Both forms of migration are relevant in the context of Central America, where households may move within national territories or across borders in response to economic pressures, environmental shocks, insecurity, or limited livelihood opportunities.

In this study, migration is examined through self-reported migration behavior and migration intentions, distinguishing between internal migration and international migration.

Photo Credits: Fishman64 / Shutterstock

2 | EXPLORING THE INTERSECTION BETWEEN FRAGILITY, FOOD SECURITY, AND MIGRATION IN NORTHERN CENTRAL AMERICA

Photo Credits: David Peinado Romero / Shutterstock
Gonzalo Bell/ Shutterstock

2.1. WHY DO SHOCKS TRANSLATE INTO HUNGER—AND WHY DOES THAT MATTER FOR MIGRATION?

The relationship between food insecurity and migration has increasingly come into focus in global research and policy-making. When people cannot feed their families, they often move. Hunger and desperation have fueled population movements throughout history. Previous studies have confirmed that poverty and food insecurity are key drivers of migration in low- and middle-income countries (Ayala & Meier, 2017; Poole et al., 2021). Households facing repeated food shortages are more likely to have someone planning to migrate, as migration becomes part of households' coping strategies. (Choithani, 2020; Ruiz-Soto et al., 2021).

However, the poorest and most food-insecure may lack the means to migrate, creating an "aspiration–ability gap." Migration requires resources (whether for legal channels such as visas, documentation, and travel costs, or for illicit ones such as payments to smugglers) as well as the opportunity cost of a working family member leaving. When hunger is accompanied by extreme asset poverty, a household might want to migrate but be unable to finance it. International evidence supports this migration constraint theory: migration intentions rise with food insecurity, but actual migration is often lower among those in the most profound distress (Smith & Floro, 2020; Sadiddin, et al. 2019; de Hass, 2021; Carling, 2018). This underscores why tackling food insecurity can both alleviate human suffering and reduce unmanaged migration: when basic needs are met, individuals with legitimate migration needs have access to safe, and well-managed migration options (Smith & Floro, 2020).

Shocks and stressors play a central role in this equation. Shocks such as natural disasters, economic crises, or surges in violence can rapidly deteriorate a poor household's food security status and thereby act as immediate triggers for migration (Devarajan & Jack, 2007). In Central America, droughts linked to climate change have decimated harvests in the Dry Corridor, hurricanes and floods have wiped out assets, coffee price collapses have slashed incomes, and gang violence has displaced communities (Imbach et al., 2017). Each shock can push poor households from food insecurity into outright hunger, thereby accelerating the decision to migrate in search of stability. This study particularly focuses on how multiple shocks interact: many families are hit by not one but several compounded shocks (for example, losing a job followed by a hurricane), which is likely to overwhelm traditional coping mechanisms and significantly heighten the urge to migrate.

Crucially, the impact of these shocks is shaped by fragility and governance. The term "fragility" in this context refers to areas characterized by weak institutional presence, conflict or violence, and high exposure to climate change – essentially, places where the social contract and coping capacity are already strained (Sou et al., 2021). Communities simultaneously exposed to climate risks and conflict or institutional fragility experience significantly more severe impacts from the same shock compared to more stable areas, due to limited recovery capacity and constraints in the provision of assistance by authorities (Ben Bih et al., 2025). These high-fragility contexts can become epicenters of both humanitarian crises and out-migration. Recent global evidence identifies conflict and social insecurity as the primary drivers of acute food insecurity for over 145 million people across 19 countries, while extreme weather events were the primary driver for another 16 countries (FAO, WFP & GNAFC, 2026). Similarly, recent analyses on the nexus between disaster and fragility, conflict and violence show that disasters in fragile contexts produce disproportionately severe humanitarian and food security impacts,

because they hit populations whose institutional and coping capacities are already eroded (Ben Bih et al., 2025).

The motivation of this study is to unpack these layers – to see how structural fragility, sudden shocks, and household decisions intertwine. While most of the existing literature on NCA countries examines bilateral relationships in isolation (shocks and food insecurity, food insecurity and migration, or migration and remittances), this limits the ability to capture the full household-level pathways connecting these dynamics or the interactions between multiple shocks and coping strategies. Moreover, the existing literature fails to capture the effect of compounded shocks over time, as well as the dual function migration both as an outcome of food insecurity and as a coping mechanism in its own right. The contribution of this study is to address this gap directly by simultaneously capturing shock exposure, food security outcomes, and migration dynamics within the same households, enabling an integrated analysis of these interconnected pathways. The study also incorporates fragility as a key conditioning factor, identifying the heterogeneous impacts that emerge across different contexts. By doing so, the report aims to inform interventions that are conflict-sensitive and climate-informed, ensuring aid reaches those most at risk of being trapped in a vicious cycle of fragility, hunger, and displacement.

Photo Credit: Maria Fleischmann / World Bank

2.2. A REGION UNDER PRESSURE: KEY INDICATORS OF FOOD INSECURITY, FRAGILITY, AND MIGRATION IN NORTHERN CENTRAL AMERICA

The NCA region (Guatemala, Honduras, and El Salvador) concentrates a set of interrelated vulnerabilities that position it as one of the main hotspots of food insecurity in Latin America. Between 2014–2016 and 2022–2024, the prevalence of moderate or severe food insecurity increased from 42.2% to 45.5% in El Salvador and from 42.7% to 48.8% in Guatemala, while in Honduras it remained persistently high at around 41% (FAO, 2026). These trends are accompanied by equally severe nutritional outcomes: Guatemala records the highest prevalence of child stunting in Latin America, at 44.6% among children under five; Honduras ranks third with 17.9%; and El Salvador reports 9.4% (FAO, 2026).

These conditions are not static; they are driven and periodically intensified by the accumulation of climate, economic, and violence-related shocks that households in the region have limited capacity to absorb. The 2023–2024 El Niño phenomenon reduced rainfall to forty-year lows across much of the Dry Corridor, with crop losses ranging from 25% to 75% in affected areas (WFP, 2024). At the same time, sustained increases in international food and fertilizer prices since 2022 have raised agricultural input costs and eroded the purchasing power of rural households (Perego et al., 2024). In terms of security, despite a significant decline in homicide rates, they remain among the highest in the region—reaching up to 30 cases per 100,000 inhabitants (OECD, 2025; UNODC, 2023)—and nearly 320,000 people remain internally displaced across the three countries (UNHCR, 2025). When shocks of different types systematically overlap (as they do in the Corridor), their effects on food security are amplified rather than merely additive (Ceballos, 2014).

In this context of persistent vulnerability, international migration has become a structural strategy for households to manage risk and sustain their livelihoods. The combined diaspora of Guatemala, Honduras, and El Salvador exceeds 3.75 million international migrants, and remittance inflows account for between 19 and 26 percent of GDP in these countries (World Bank, 2026; United Nations, 2024). The overwhelming majority of migrants (78 percent for Honduras, 88 percent for El Salvador, and 98 percent for Guatemala) reside in the United States, with Canada and Spain as the next most common destinations outside the region (UN Department of Economic and Social Affairs International Migrant Stock, 2020). Survey-based evidence shows that food-insecure households are three times more likely to formulate concrete migration plans than food-secure households (WFP, 2021), and that declining agricultural productivity, the search for employment, and insufficient income to meet basic needs are among the main drivers of emigration in the Corridor (WFP, 2017; IOM, 2022).

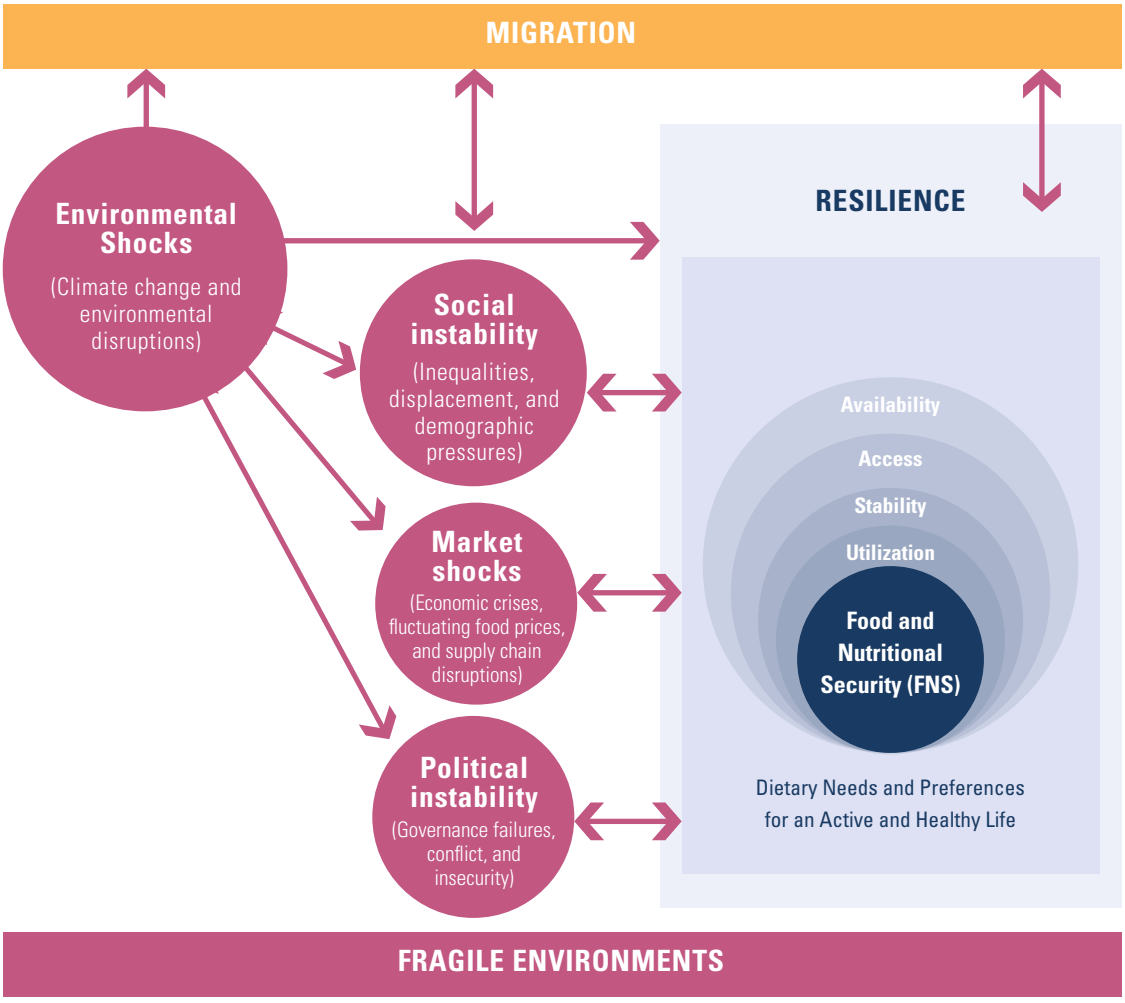
This pattern is embedded within a broader context of structural fragility. In the region, approximately 4.6 million people require humanitarian assistance due to the persistence of natural disasters, violence, and displacement, which exacerbate humanitarian crises and are reflected in country-level fragility profiles (OCHA, 2025a). All three countries are classified within the "Alert" or "High Alert" categories of the Fragile States Index (Fund for Peace, 2025). Similarly, the OECD (2025) identifies differentiated fragility profiles across the region: Guatemala is classified as a high-fragility country, with particularly acute challenges in the human dimension and rising poverty in rural areas and among Indigenous and Afro-descendant populations; Honduras has transitioned from high to medium-low fragility, although environmental and security-related fragilities continue to threaten recent progress; and El Salvador exhibits medium-low fragility, with relative resilience in the economic and human dimensions, but persistently high levels of social fragility.

3 | THE HYPOTHESES AND QUESTIONS THAT GUIDE THIS REPORT

Photo Credits: Maria Fleischmann / World Bank
Vivid imagery / Shutterstock

The analysis in this report stems from a unified framework capturing the full sequence from shocks to food insecurity, migration decisions, and back to food security outcomes. The analysis is grounded in the premise that food and nutrition security (FNS) in fragile contexts is not the result of isolated factors, but rather of the simultaneous interaction of multiple shocks—environmental, economic, political, and social—that shape both household vulnerability and their capacity to respond over time. Especially in fragile settings, shocks rarely occur independently; instead, they tend to accumulate and reinforce one another, progressively eroding livelihoods, weakening resilience, and reducing households' ability to secure stable and adequate access to food. Within this framework, migration emerges as an adaptive response. On the one hand, food insecurity deterioration increases pressure to migrate. On the other hand, previous migration experience within the household can help mitigate food insecurity and strengthen resilience through remittances and income diversification (Figure 1). These effects, however, are heterogeneous and depend on households' access to resources, social networks, and migration opportunities.

FIGURE 1. THE ROLE OF MIGRATION AND THE INTERPLAY OF FRAGILITY AND VULNERABILITY IN SHAPING FOOD AND NUTRITION SECURITY



Source: Authors' elaboration, adapted from Ayala & Meier (2017), Poole et al. (2021), and Sou et al. (2021).

Within this framework, the analysis is organized around three interconnected hypotheses. The first examines the cumulative effects of multiple shocks on FNS, considering both the intensive and extensive margins of exposure. Specifically, it posits that households exposed to environmental shocks (such as droughts, floods, and hurricanes), market disruptions (such as price volatility, income instability, and supply chain breakdowns), and social instability (such as governance failures, conflict, and displacement) experience more severe and persistent declines in FNS. The second hypothesis addresses the dual role of migration as a coping strategy and long-term resilience mechanism against shocks and food insecurity: food insecurity increases the intention to migrate, and can provide temporary relief to mitigate the adverse effects of accumulated shocks. Finally, the third hypothesis examines fragility as an amplifier of the shock-migration-food security pathway, positing that compounded vulnerabilities create further strain on shock-affected areas. These three hypotheses translate into a set of analytical questions that guide this report, with the aim of identifying operational implications for policy design in fragile, shock-prone settings.

TABLE 1. GUIDING HYPOTHESES AND ANALYTICAL QUESTIONS

HYPOTHESIS	ANALYTICAL QUESTION	CROSS-CUTTING
H1: Compounding shocks erode food and nutrition security	Q1: Which shocks are most associated with food insecurity? Q2: When do shocks become a crisis — do impacts compound after multiple shocks?	Q6: How do gender and ethnicity shape exposure, coping, and migration outcomes?
H2: Migration as a coping and a resilience strategy	Q3: Does food insecurity translate into pressure to migrate? Q4: Does migration ease food insecurity and shield against shocks?	
H3: Structural fragility as an amplification channel	Q5: How does fragility affect the shock–migration–food security pathway?	

Q1. WHICH SHOCKS ARE MOST ASSOCIATED WITH FOOD INSECURITY?

Shocks can impact food security through two immediate pathways: (i) shocks can reduce food availability by lowering production, disrupting local supply chains, or limiting households' access to food and markets; and (ii) shocks can affect food access by weakening purchasing power due to income losses or higher prices, even when food is available. That said, not all shocks lead to food insecurity through the exact same mechanisms, and policy responses are only effective when they address the specific impact channels. In this report, shocks are categorized into three broad types: climate events (e.g., droughts, floods, and crop losses); market and income disruptions (e.g., job loss, reduced earnings, and food price spikes); and social instability incidents (e.g., violence, threats, and political upheavals). The analysis examines which of these factors has the most significant impact on food security and why.

Q2. WHEN DO SHOCKS BECOME A CRISIS—DO IMPACTS COMPOUND AFTER MULTIPLE SHOCKS?

Repeated or compounding shocks can overwhelm household coping capacity and turn stress into crisis. Many households can absorb a single adverse event by drawing down savings, adjusting consumption, or relying on informal support. However, when shocks recur, across seasons or within the same year, these buffers erode, and households may cross a coping threshold, resorting to strategies with long-term costs, such as selling productive assets, cutting meal frequency, or withdrawing children from school. This "tipping point" dynamic is central to early action because interventions delivered after households have depleted assets are typically more expensive and less effective. The analysis therefore examines whether food security outcomes deteriorate as shocks accumulate (0, 1, 2, 3+), and whether the marginal impact of additional shocks increases once households move from manageable stress to crisis conditions.

Q3. DOES FOOD INSECURITY TRANSLATE INTO PRESSURE TO MIGRATE?

Food insecurity does not automatically lead to migration, but it can sharply increase migration pressure when households see no viable local recovery pathway. Migration is often framed as an economic choice. Yet, in fragile, shock-prone settings, it can serve as a coping strategy in response to hunger, falling incomes, and the erosion of livelihoods. At the same time, the households facing the most severe deprivation may also be the least able to move, due to liquidity constraints, debt burdens, limited networks, or heightened risks along migration routes, creating an "aspiration–ability gap" in which intentions to migrate rise while actual migration remains constrained. The analysis thus examines how food insecurity and recent shocks relate to migration intentions and assesses whether barriers (e.g., financial, informational, and security-related) limit the translation of those intentions into realized migration, particularly among the most vulnerable households.

Q4. DOES MIGRATION EASE FOOD INSECURITY AND SHIELD AGAINST SHOCKS?

Migration can strengthen household resilience in the face of shocks, but its protective effects depend on who can migrate and under what conditions. When migration is feasible and connected to stable income flows, remittances can help smooth consumption, preserve diet quality, and reduce reliance on negative coping strategies, particularly in the aftermath of shocks. However, poorer households may face higher costs and risks, while the size and regularity of remittances can vary widely depending on destination, duration, and employment conditions. This report examines how migration history and remittances relate to key food security outcomes. The analysis also explores whether migration and remittances partially offset the food security impacts of shocks—helping explain not only whether shocks worsen food outcomes, but whether mobility is an effective mitigation strategy for some households.

Q5. HOW DOES FRAGILITY AFFECT THE SHOCK–MIGRATION–FOOD SECURITY PATHWAY?

Fragility can magnify the size of shocks' impacts, and it can also change the pathway through which shocks translate into food insecurity. Some communities face structural constraints that increase household vulnerability even before any shock occurs: high exposure to climate risks, insecurity, limited market connectivity, and weaker service delivery. In fragile settings, households typically start with weaker buffers (limited savings

and productive assets), face higher risks and transaction costs when coping (restricted mobility, disrupted markets, insecurity), and receive slower or less effective institutional support due to constrained service delivery. As a result, the same shock—whether climate-related, income-driven, or insecurity-related—can lead to sharper declines in food security and more harmful coping responses. At the same time, fragility can shape whether migration is a feasible adaptation strategy: in some contexts, insecurity and low connectivity constrain mobility and remittance flows, increasing the share of shock impacts borne directly through reduced consumption; in others, established migration networks may enable remittances that partially cushion food security losses. This report examines (i) whether shocks have systematically larger total effects in high-fragility areas and (ii) whether the composition of those effects differs—specifically, how much of the shock–food security relationship operates directly versus indirectly through migration and remittances.

Q6. HOW DO GENDER AND ETHNICITY SHAPE EXPOSURE, COPING, AND MIGRATION OUTCOMES?

Average effects can conceal who bears the most significant burden of shocks and food insecurity. While this report documents overall relationships between fragility, shocks, migration, and food security, outcomes are not evenly distributed across households. Gender, age, ethnicity, and other markers of vulnerability shape exposure to risk, access to resources, decision-making power, and the ability to migrate or receive remittances. For example, female-headed households may face different labor constraints, income opportunities, and safety risks; younger individuals may express stronger migration intentions; and Indigenous Peoples, Afro-Descendants, and other socially marginalized groups may encounter additional barriers to coping and recovery. The analysis examines heterogeneity to determine whether the relationships identified in the report differ systematically by gender and ethnicity, recognizing that resilience strategies—and constraints—are often structured by inequality.

Photo Credit: Salah Darwish / Unsplash

4 | DATA AND METHODS: A HOUSEHOLD-LEVEL LENS ON SHOCKS, FOOD SECURITY, AND MIGRATION

Photo Credits: Inspired By Maps / Shutterstock
Omri Eliyahu / Shutterstock

The analysis in this report hinges on a combination of quantitative and qualitative data collection and analysis methods. For the quantitative part, an original household survey was collected across El Salvador, Guatemala, and Honduras, collecting information on household socio-economic variables, agricultural activities, food and nutrition security, shocks and climate-related events, violence and safety, and migration and remittances. On the qualitative side, focus groups and key informant interviews were carried out in the three countries to generate context-specific insights to deepen the understanding of the social, cultural, and institutional dynamics shaping food security, migration, and fragility in Northern Central America. This chapter highlights the main analytical features of both approaches.

4.1. QUANTITATIVE ANALYSIS

Data for this report come from a sample of 1,291 households across El Salvador, Guatemala, and Honduras. The survey was structured to ensure that differences in fragility, shock exposure, and migration dynamics could constitute analytically comparable patterns across contexts. This section explains how sites were selected, how households were sampled, what was measured, and how data quality was safeguarded.[5]

4.1.1. SELECTING PLACES: MAKING FRAGILITY OBSERVABLE

The sampling design is structured around a fragility typology integrating two dimensions central to the study's framework:

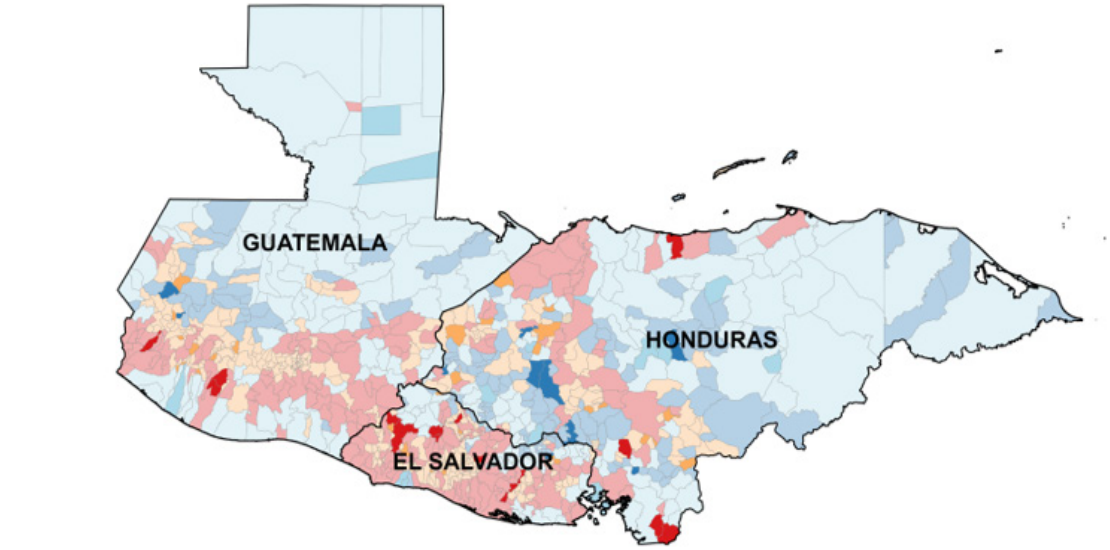
- **Disaster risk exposure:** water stress in crops and livestock, and drought probability affecting crops and livestock, sourced from the World Resources Institute (WRI); and historical counts of river floods, earthquakes, tsunamis, volcanic eruptions, cyclones, water scarcity events, wildfires, and extreme heat occurrences, sourced from the Global Disaster Risk Index (GDRI).
- **Social fragility:** historical counts of battles, protests, riots, and violence against civilians, sourced from the Armed Conflict Location and Event Data Project (ACLED).

A Principal Component Analysis (PCA) is applied separately to each dimension to construct composite scores at the municipal level. Municipalities are then classified as high or low on each dimension using the median as a cutoff, generating four distinct categories (see Figure 2) : Compounded Fragility (municipalities facing both elevated environmental and social fragility), High Environmental Fragility Only, High Social Fragility Only, and Low Fragility (municipalities with comparatively low levels of fragility across both dimensions). This sampling strategy was designed to allow the analysis to test whether food insecurity (measured by the Integrated Food Security Classification) operates differently across fragility profiles. In Guatemala, Honduras, and El Salvador, municipalities in rural and peri-urban areas are selected to reflect this variation, ensuring representation of different fragility profiles while maintaining feasibility for field implementation.

Photo Credit: Vic Hinterlang / Shutterstock

[5] A detailed technical description of the sampling strategy, questionnaire, and fieldwork protocols is available in the online technical annexes (Sampling Design, Questionnaire, and Fieldwork pages).

FIGURE 2. GEOGRAPHIC DISTRIBUTION OF SURVEY SITES BY FRAGILITY PROFILE



Notes: Municipal-level map showing surveyed municipalities in darker shades and non-sampled municipalities in lighter tones. Fragility is constructed at the municipal level by combining disaster risk exposure and social fragility. Disaster risk exposure is based on indicators of water stress and the probability of droughts affecting crops and livestock production. Social fragility is measured using historical data on violent events, including battles, protests, riots, violence against civilians, and related fatalities. A total of 56 municipalities were selected through stratified sampling to ensure representation across all fragility typologies.
Source: Authors, using original survey data and geospatial data from IPC, ACLED, GDRI, WRI.

In the sample, fragility profiles are unevenly distributed across the region, shaping each country's risk landscape. While social and environmental constraints are present throughout the region, their intensity varies across the study area. El Salvador and Guatemala have a higher proportion of households with High Social Fragility. In contrast, Honduras exhibits a different composition, concentrating a larger share of households in Low Fragility clusters and areas of High Environmental Risk. Notably, while El Salvador shows the highest concentration of Compounded Fragility settings, Honduras reports the lowest proportion in this category (see Table 2).

TABLE 2. DISTRIBUTION OF FRAGILITY TYPOLOGIES BY COUNTRY (%)

COUNTRY	LOW-LOW	HIGH DISASTER RISK ONLY	HIGH SOCIAL ONLY	HIGH-HIGH
El Salvador	5.7	15.8	43.2	35.2
Guatemala	10.9	16.7	50.2	22.2
Honduras	37.0	34.6	17.1	11.4

Notes: The table reports the percentage distribution of municipalities across four fragility typologies within each country. Fragility typologies are constructed at the municipal level by combining indicators of disaster exposure risk (e.g., water stress and drought probability) and social fragility (e.g., violent events and related fatalities). Percentages sum to 100 within each country.
Source: Authors' calculations.

4.1.2. SAMPLING HOUSEHOLDS: FROM VILLAGES TO FAMILIES

Once municipalities are defined, the survey follows a multi-stage probability sampling approach.

- Primary sampling units (PSUs): villages or local communities are randomly selected within each fragility stratum (municipalities), ensuring representation across fragility profiles.

- Household selection: within each selected PSU (village), households are randomly sampled.

This clustered design balances statistical rigor and operational feasibility in fragile and rural environments. Cluster sizes (the number of households selected within each village) are calibrated to limit design effects while maintaining cost-effectiveness in dispersed communities. The final sample includes 1,291 households across Guatemala (432), Honduras (422), and El Salvador (437). The distribution allows cross-country comparison while preserving sufficient variation within countries to assess fragility profiles and shock exposure. Importantly, stratification also ensured representation of female-headed households, enabling gender-disaggregated analysis.

4.1.3. WHAT IS MEASURED: CONNECTING EXPOSURE, OUTCOMES, AND RESPONSES

The survey questionnaire was developed in collaboration with several partner international organizations engaged in the food security-migration-fragility spectrum, including the World Food Programme (WFP), the Food and Agriculture Organization of the United Nations (FAO), the International Organization for Migration (IOM), the United Nations Refugee Agency (UNHCR). The questionnaire was purpose-built to capture the whole pathway from shocks to food outcomes and migration decisions within the same household.

In particular, the survey includes:

- **Household characteristics: i**nformation on demographic composition, characteristics of the household head, education, agricultural activities, and assets.

- **Food and nutrition security outcomes:** complementary indicators capturing food access, coping behavior, and diet diversity. Hunger is coded as a binary indicator based on whether the household reported experiencing hunger or compromising food consumption in the previous 30 days. Insufficient income is constructed from the household's reported ability to cover food expenses over the same period. The reduced Coping Strategy Index (rCSI) summarizes the frequency and severity of food-related coping behaviors in the previous 30 days, including relying on cheaper foods, reducing portions, skipping meals, reducing the number of meals, or borrowing food; the index ranges from 0 to 56. Dietary diversity is measured through the Household Dietary Diversity Score (HDDS), based on the number of food groups consumed by the household in the previous 30 days; the score ranges from 0 to 9 food groups.

Photo Credit: Barbara Zandoval / Unsplash

- **Shock exposure:** self-reported household exposure to environmental, market, and social instability shocks during the previous three years.[6] Environmental shocks include events such as droughts, floods, storms, landslides, or seismic events. Market shocks capture disruptions to employment, income, agricultural production, assets, remittances, inputs, or market access. Social instability shocks capture both events directly experienced by the household and events observed in the community, including violence, displacement, forced recruitment, threats, or confrontations between armed groups.

- **Migration dynamics:** household-level indicators of previous migration, migration intentions, remittance receipt, destinations, migrant characteristics, and perceived constraints to migration. Previous migration captures whether at least one household member has migrated, while remittance receipt is measured over the previous 12 months. Migration intentions capture whether the household expresses a preference or intention to move to another municipality or country.

Working in fragile contexts required adaptive management. Data collection was carried out between July and September 2025 using the World Bank's Survey Solutions CAPI platform, which allowed for real-time validation checks and centralized monitoring. Enumerators received structured training not just on survey protocols, but also on how to handle sensitive topics such as hunger, insecurity, and migration intentions. Field supervision involved daily data reviews, the implementation of validation rules within the questionnaire, and protocols designed to minimize inconsistencies and missing values. Field teams collaborated with local leaders to build trust, emphasized the importance of anonymity and confidentiality, and permitted respondents to skip sensitive questions when necessary. These safeguards were essential to ensuring both data quality and respondents' safety (See Box 4.1).

4.1.4. IDENTIFYING PATTERNS, MECHANISMS, AND HETEROGENEITY

The study integrates descriptive visualizations and multivariate econometric models to address the report's guiding analytical questions. In each case, the analysis begins with descriptive statistics and visual diagnostics to establish baseline patterns, such as comparing food security outcomes between households with and without migration experiences or examining migration intentions in relation to shock exposure. This initial step provides valuable insights, validates key distributions, and informs model specifications. Building on this, the study estimates multivariate regression models that align with the guiding analytical questions:

- Q1–Q2 (Which shocks are most associated with food insecurity, and when do shocks become a crisis?): Food security outcomes are modeled as a function of shock exposure. The analysis includes indicators for shock type (climate, income, and social instability shocks) and a categorical measure of shock intensity (0, 1, 2, 3+

[6] Between July 2022 and September 2025, Honduras, Guatemala, and El Salvador were hit by a combination of intensifying environmental and social shocks. On the environmental side, recurring tropical storms and floods — most notably Tropical Storm Julia (2022), widespread flooding in Guatemala (2023), and Storm Sara in Honduras (2024) — caused widespread displacement and infrastructure damage, while persistent drought in the Central American Dry Corridor drove food insecurity to crisis levels. El Niño conditions in 2023–2024 worsened both droughts and heatwaves, before a shift to La Niña brought above-normal rainfall and heightened storm risk. On the social side, all three countries continued to grapple with chronic violence and social and institutional instability. Honduras maintained a prolonged state of emergency from December 2022, El Salvador's state of exception entered in force since March 2022, and Guatemala experienced an institutional and electoral crisis in 2023.

shocks) to test for cumulative deterioration as shocks accumulate. To examine amplification, interaction terms between shocks and fragility indicators are incorporated to assess whether the same shock produces larger impacts in higher-fragility contexts.

- Q3 (Does food insecurity translate into pressure to migrate?): Migration intentions are modeled as a binary outcome (1=intends to migrate; 0=otherwise). The main predictors include food insecurity indicators (e.g., hunger experience), shock exposure, and household controls, with country fixed effects. The analysis also tests whether shocks intensify migration pressure among food-insecure households.

- Q4 (Does migration ease food insecurity and shield against shocks?): The relationship between migration, remittances, and food security is examined by reversing the perspective: food security measures are treated as the outcomes, while migration metrics like previous migration experience and remittance receipt serve as key predictors. To improve inference, the models control for significant household and country fixed effects. Since migration and food security can influence one another, the estimates in this section are descriptive and should not be interpreted as causal. To further examine underlying mechanisms, the analysis incorporates mediation analysis[7] to assess whether shocks influence food security indirectly by inducing mobility responses—i.e., whether shock-induced migration and associated remittance flows partially offset shock-related losses.

- Q5 (How does fragility affect the shock–migration–food security pathway?): Regression analysis is used to identify the differential effects of shocks on food security as well as on migration intentions in high fragility areas. High fragility areas are identified by a binary outcome (1=compounded fragility; 0=otherwise). The correlation between food security outcomes and migration as a buffer against shocks is also studied by applying linear regression and mediation analysis with heterogeneous effects across fragility types.

- Q6 (How do gender and ethnicity shape exposure, coping, and migration outcomes?): Differential patterns across gender and ethnicity lines are study with heterogeneity analysis, focusing on differences between female- vs. male-headed households and households self-identifying as Indigenous or Afro-Descendants vs. the rest of the sample.

Across models, linear regression analysis is used to explore each guiding question. In order to improve the precision of the estimates, and in some cases to correct for potential bias induced by observable confounders, the analysis systematically controls for a broad range of socio-demographic, location, and other covariates, depending on the specific outcome considered. As mentioned, the analysis for Q4 and Q5 complements linear regression with mediation analysis. Across all models, robust standard errors clustered at the municipality level are reported to account for correlated exposure within communities. More details on the analytical framework are available in the online technical annexes.

[7] Mediation analysis is a statistical method used to identify and explain the mechanism or process by which an independent variable X affects a dependent variable Y through an intermediate variable M (a "mediator"). It determines whether X affects Y directly, indirectly, or both, exploring the "how" or "why" of a relationship (see e.g. Iacobucci, 2008).

BOX 4.1. TRANSPARENCY AND FURTHER DOCUMENTATION

This section provides only a high-level overview of the study design. Full technical details and supporting outputs, are included in the study's Annex II, which consolidates the complete documentation and interactive dashboards used in the analysis:

- Sampling Design – Explains the stratified, multi-stage sampling framework, including fragility-based stratification (environmental and social), selection of primary sampling units, household-cluster procedures, and sample-size/design-effect assumptions.
- Questionnaire – Provides the complete survey instrument, including modules on demographics and livelihoods, food security (FIES and dietary diversity), shock exposure and coping, migration history and intentions, and remittance flows.
- Fieldwork Documentation – Describes survey implementation using the Survey Solutions CAPI platform, including enumerator training and supervision protocols, and the quality-control and safety procedures applied during data collection.
- Data integrity checks – Present internal consistency and completeness diagnostics that document data quality and support transparency on the reliability of the dataset used in this report.
- Descriptive statistics – Provides a structured descriptive profile of the sample and key variables (food security outcomes, shocks, migration, and remittances), serving as the empirical baseline for interpreting the main results.
- Findings dashboards (by hypothesis) – Presents the main findings in an interactive format aligned with the hypothesis structure (Fragility Profiles; Migration Intent; Migration & Food Security; Integrated Framework—including IV and mediation).

Readers seeking to replicate the study or review methodological detail and outputs in greater depth are encouraged to consult the supplementary online annex. https://jcmunozmora.github.io/wb_migration_foodsecurity

4.2. QUALITATIVE ANALYSIS

Qualitative analysis techniques were deployed to capture context-specific insights into how shocks, food insecurity, and migration are experienced at the household and community level. Qualitative analysis was used to deepen the understanding of the social, cultural, and institutional dynamics, to complement and enhance the interpretation of quantitative findings by providing grounded perspectives on household decision-making, community resilience, and institutional responses. Focus group discussions (FGDs) and key informant interviews (KIIs) were carried out in the same three countries as the survey, and were designed to triangulate quantitative findings with first-hand accounts of coping strategies, community responses, and institutional bottlenecks.

The qualitative evidence reported in this study is derived from 21 FGDs across rural communities and 35 KIIs with local authorities, civil society organizations, and development partners. The evidence was collected between February and March 2026 (see Box 4.2). FGDs sought to capture a diverse range of experiences, including agricultural livelihoods, households linked to migration and remittances, returnees and failed migrants, vulnerable peri-urban households, youth seeking employment, women-led farmers, Indigenous and Afro-Descendant households in rural contexts. KIIs engaged participants from: (i) public institutions

linked to human rights, social development, or food security; (ii) international agencies implementing or supporting programs related to food access, climate resilience, or migration; (iii) NGOs and CSOs working directly with local communities; and (iv) independent experts with technical expertise in food and nutrition security, migration, fragility, or territorial development.

BOX 4.2. THE QUALITATIVE COMPONENT

- Focus Group Discussions (FGDs): 21 groups across the three NCA countries, 178 participants total. Groups were stratified by gender, age cohort, and migration history to surface distinct perspectives on shocks, coping strategies, and migration decisions.
- Key Informant Interviews (KIIs): 35 in-depth, semi-structured interviews with community leaders, municipal officials, NGO and humanitarian agency staff, and sector specialists, capturing institutional perspectives on shock exposure, household responses, and institutional bottlenecks.

Sessions were recorded with informed consent, transcribed verbatim in Spanish, and coded thematically in NVivo 14 by two independent coders (inter-coder agreement $\kappa = 0.78$). Identifiers were removed prior to analysis, and protocols permitted respondents to skip sensitive questions when necessary. Full methodological details—including instruments, sampling frames, fieldwork protocols, ethical safeguards, and limitations—are presented in Annex II of this report.

5 | WHAT THE EVIDENCE SHOWS

Photo Credits: Alira Vale / Shutterstock
Hencer Oliva / Adobe Stock

This chapter reports the findings from the analysis organized around the guiding questions described in Chapter 3. It begins by presenting descriptive statistics of sampled households, followed by the empirical patterns and estimated relationships related to the analytical questions. The evidence is complemented by relevant insights gathered through the qualitative analysis. While the analysis relies on multivariate regression models and performs several robustness checks, it does not fully address potential endogeneity concerns such as reverse causality: as such, results in this chapter should be interpreted as correlations (credible evidence on associations, pathways, and relative importance) rather than as definitive causal evidence. Similarly, as the household survey was not designed to be representative along gender and ethnicity lines, heterogeneity analysis is to be considered descriptive of the specific sample considered.

5.1. DESCRIPTIVE STATISTICS: CHARACTERIZING SAMPLE HOUSEHOLDS

Sociodemographic Profiles

Table 3 presents the sociodemographic characteristics of surveyed households. The sample comprises 1,291 households distributed approximately evenly across Guatemala (n = 432), Honduras (n = 422), and El Salvador (n = 437). About half of households are male-headed (49.2%), with the percentage being highest in Guatemala. Household heads are predominantly adults between 36 and 60 years of age (52.2%), a pattern that is consistent across the three countries. Educational attainment is low across the sample, although with notable cross-country differences, with El Salvador showing the highest proportion of household heads with no formal education (19.8%) and incomplete primary education (49.9%) - meaning that nearly seven in ten household heads fall below complete primary schooling. Across the full sample, fewer than 2% attained tertiary education. Households have an average size of 4.3 members, including 1.6 children under the age of 18. Overall, 43.1% of households identify as belonging to Indigenous or Afro-descendant groups, with Guatemala reporting the highest share (47.0%). Agriculture is the main economic activity (36.9%), particularly in Honduras (44.5%), and 84.1% of households report ownership of land or housing. Average monthly per capita income is USD 75.6, with Honduras reporting the highest average (USD 82.6).

TABLE 3. HOUSEHOLD CHARACTERISTICS BY COUNTRY

	COUNTRY			
VARIABLE	GUATEMALA	HONDURAS	EL SALVADOR	TOTAL
N	432	422	437	1,291
Household Head				
Male-headed (%)	55.6%	48.8%	43.2%	49.2%
Age of HH head				
Under 18 years	0.0%	0.0%	0.2%	0.1%
18–35 years	29.6%	28.0%	20.4%	26.0%
36–60 years	51.2%	54.9%	50.6%	52.2%
60 years or older	19.2%	17.1%	28.8%	21.8%

	COUNTRY			
VARIABLE	GUATEMALA	HONDURAS	EL SALVADOR	TOTAL
Education level				
Never attended school / No formal education	17.0%	9.1%	19.8%	15.4%
Incomplete primary education	26.3%	41.5%	49.9%	39.3%
Completed primary education	27.0%	29.1%	10.6%	22.1%
Incomplete secondary education	10.7%	6.4%	2.1%	6.4%
Completed secondary education / High school	14.9%	9.3%	14.9%	13.1%
Post-secondary technical/ vocational certificate	1.4%	0.0%	0.2%	0.5%
Incomplete university education	0.9%	1.7%	0.9%	1.2%
Completed university degree (Bachelor's)	1.4%	2.6%	1.4%	1.8%
Postgraduate degree (Master's or Doctorate)	0.2%	0.2%	0.2%	0.2%
Household Composition				
Total members (mean, SD)	4.6 (2.1)	4.4 (1.8)	4.0 (2.0)	4.3 (2.0)
Children under 18 (mean, SD)	1.8 (1.5)	1.7 (1.3)	1.2 (1.2)	1.6 (1.4)
Indigenous/Afro-Descendants (%)	47.0%	37.4%	43.2%	43.1%
Employment and Assets				
Household participates in agriculture (%)	55.8%	64.7%	54.9%	58.4%
Owns land or house (%)	85.3%	90.5%	76.6%	84.1%
Per capita income, USD (mean, SD)	**70.8 (76.3)**	**82.6 (125.2)**	**73.7 (99.2)**	**75.6 (102.0)**

Notes: The table reports household-level descriptive statistics for Guatemala, Honduras, and El Salvador. Variables include household head characteristics (gender, age, education), household composition, assets and employment, and per capita income (USD). Means and percentages are shown as appropriate. N indicates the number of households in each country.
Source: Authors' calculations.

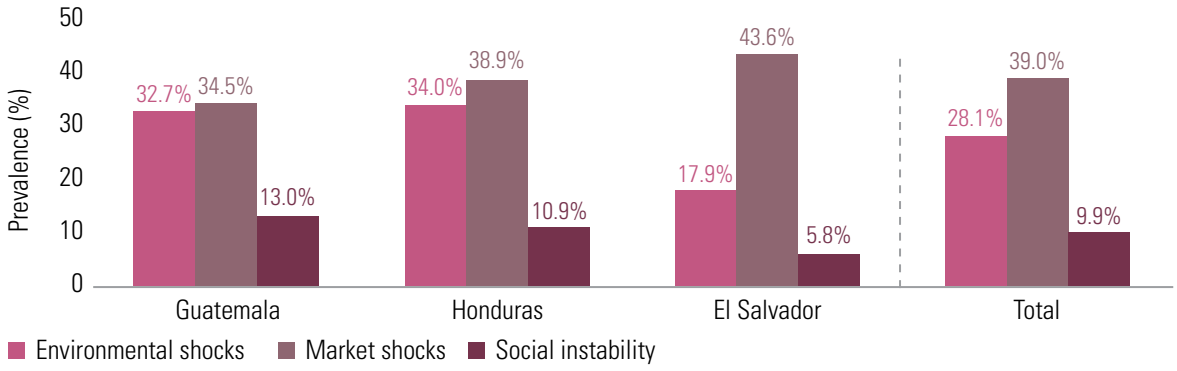
Prevalence and Intensity of Shocks

The distribution of shocks—both by type and by cumulative intensity—varies across the three countries (see Figure 3). Panel A shows that income shocks (which capture income or production losses such as, job loss, crop failure, business closure) are the most prevalent in the sample, reaching their highest level in El Salvador (43.6%), followed by Honduras (38.9%) and Guatemala (34.5%). Environmental shocks (capturing natural disasters e.g., droughts, floods, hurricanes) display the greatest variation across countries, with prevalence ranging from 17.9% in El Salvador to 34.0% in Honduras. Social instability (reflecting exposure to violence and insecurity, for instance displacement, threats, extortion) displays values ranging from 13.0% in Guatemala

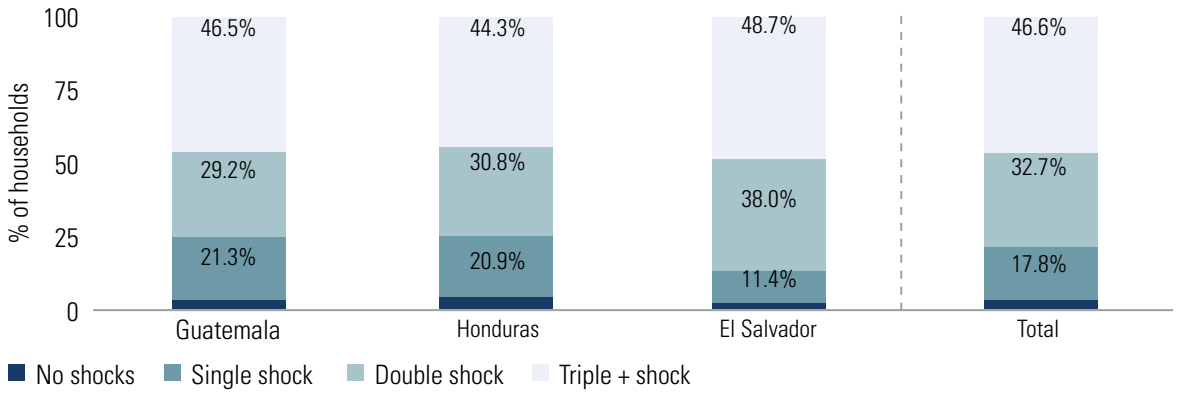
to 5.8% in El Salvador. Panel B of the figure shows that more than half of households in all the three countries report having experienced at least a shock in the previous year. In Guatemala and Honduras, around one in five households faces double exposure (29.2% and 30.8%, respectively), while in El Salvador this share is higher (38.0%). By contrast, exposure to three or more shocks is more common in Guatemala and Honduras (21.3% and 20.9%, respectively) than in El Salvador (11.4%).

FIGURE 3. SHOCK EXPOSURE, BY COUNTRY

A. Shock prevalence by country



B. Shock frequency by country



Notes: Panel A shows the percentage of households reporting exposure to environmental, income, and social instability shocks in the last three years. Environmental shocks include natural disasters (e.g., droughts, floods, hurricanes); income shocks capture income or production losses (e.g., job loss, crop failure, business closure); and social instability shocks reflect exposure to violence and insecurity (e.g., displacement, threats, extortion). Panel B presents the distribution of households by number of shocks (none, single, double, or triple+ shocks). Percentages are calculated at the household level for surveyed municipalities in El Salvador, Guatemala, and Honduras, as well as for the full sample. Source: Authors' calculations.

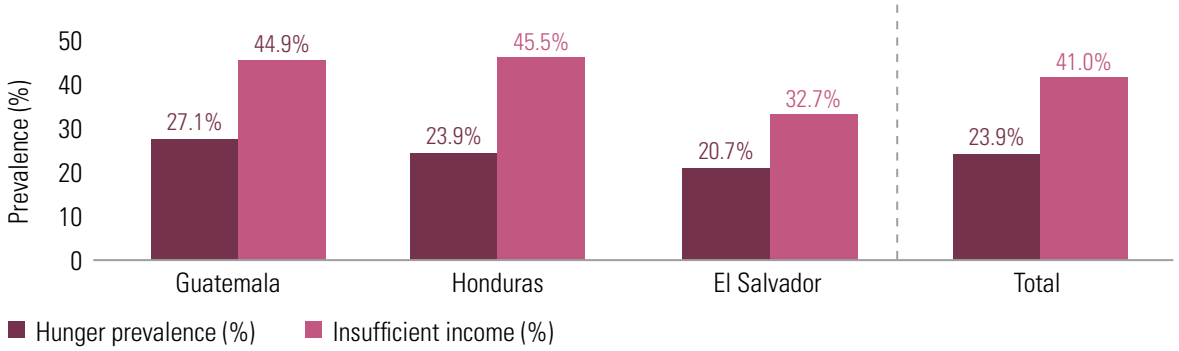
Food and Nutrition Insecurity

Figure 4 presents a snapshot of food and nutrition security measures across the three countries. Overall, a quarter of the sample reports having experienced hunger in the past 30 days (Panel A), with Guatemala recording the highest prevalence of hunger (27.1%). A striking 41% of the sample reports not having sufficient income to cover food expenses (the highest prevalence being 45.5% in Honduras). Panels B and C of the figure present complementary measures to better frame the implications of these patters: Panel B shows the use of coping strategies through the reduced coping strategy indicator, which is used as an index of the severity of the food insecurity faced

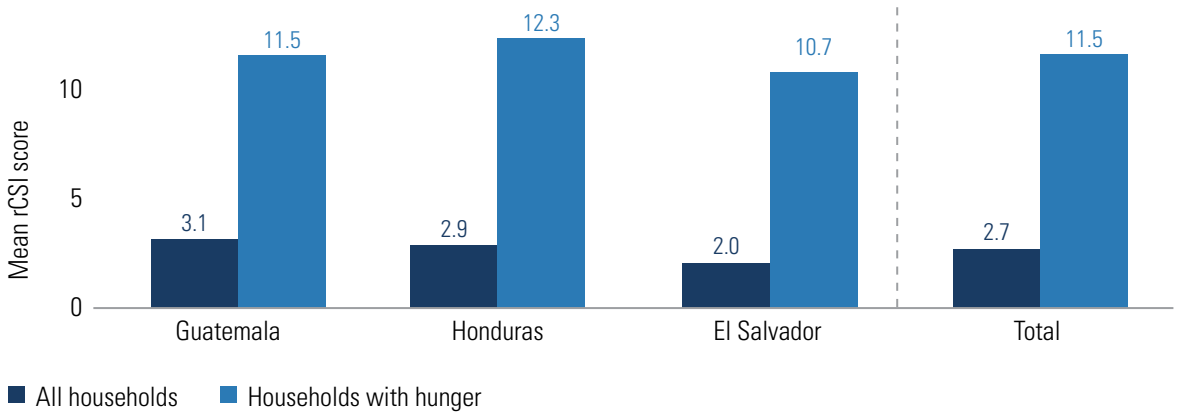
by a household and is in fact four times higher for households reporting hunger); Panel C reports the household dietary diversity score (HDDS), which sheds some light on the nutritional intake of the household (while not accounting for specific intra-household dietary allocations).

FIGURE 4. FOOD AND NUTRITION INSECURITY, BY COUNTRY

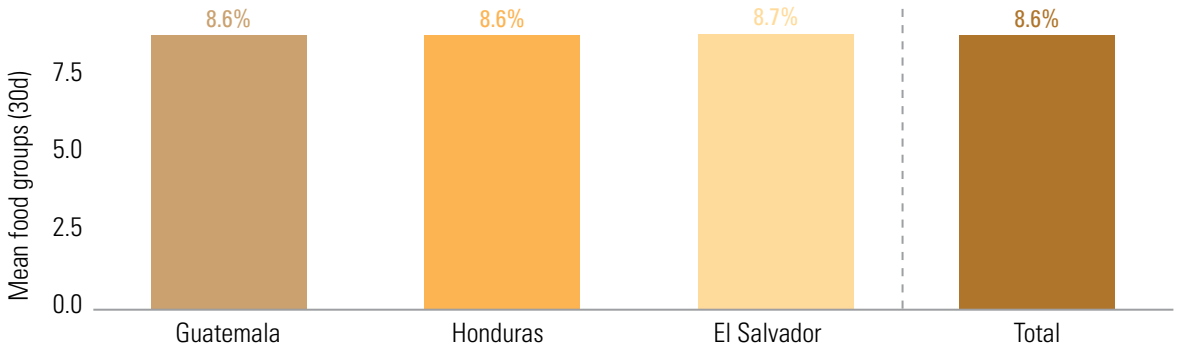
A. Food insecurity indicators



B. Coping strategies (rCSI)



C. Dietary diversity (HDDS)

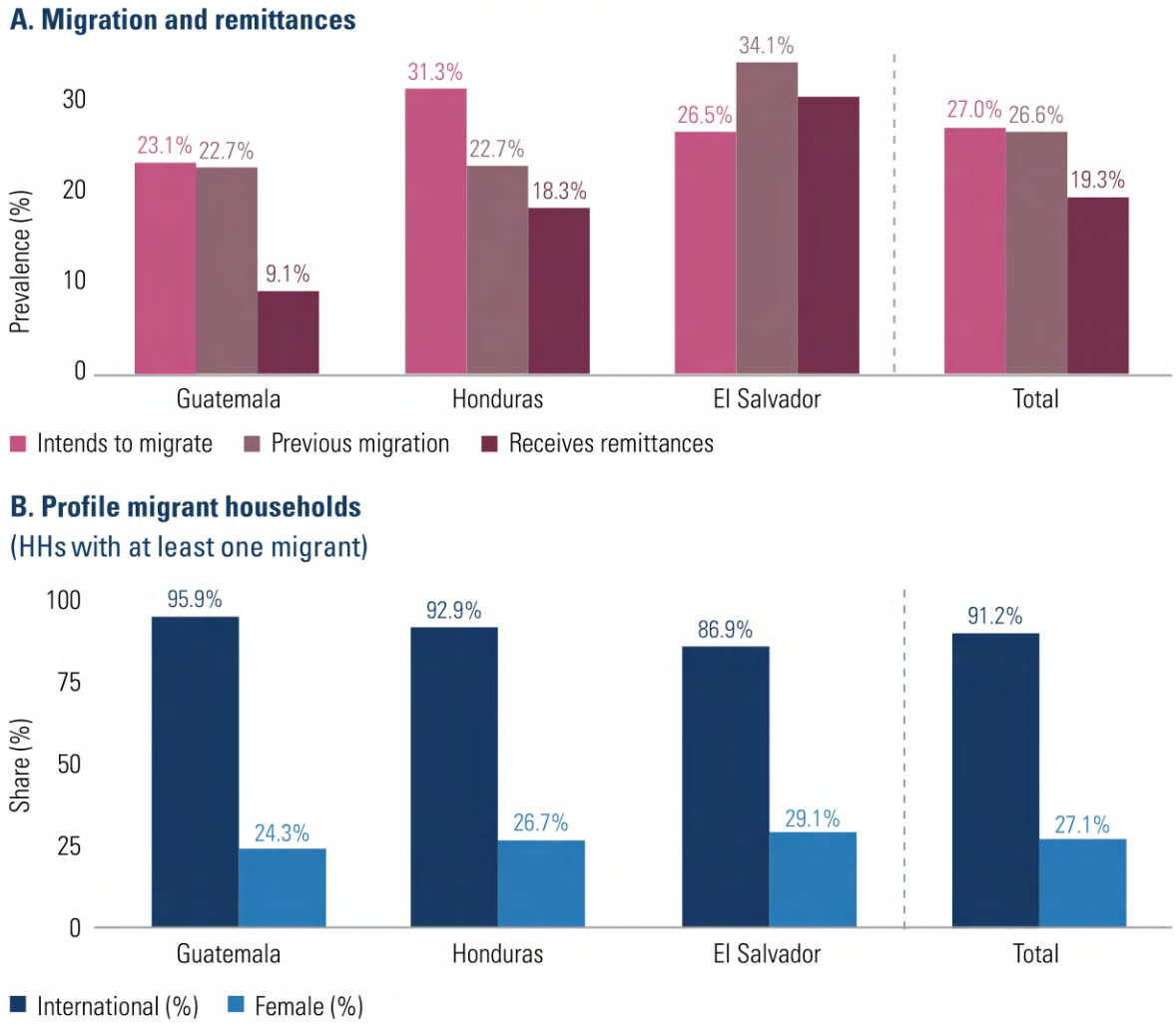


Notes: Panel A reports the prevalence of hunger and insufficient income to cover food needs in the previous 30 days. Panel B presents the Reduced Coping Strategy Index (rCSI), which captures the frequency and severity of food-related coping behaviors, for all households and for those reporting hunger. Panel C shows the Household Dietary Diversity Score (HDDS), measured as the number of food groups consumed. All indicators are calculated at the household level for surveyed municipalities in El Salvador, Guatemala, and Honduras, as well as for the full sample.
Source: Authors' calculations.

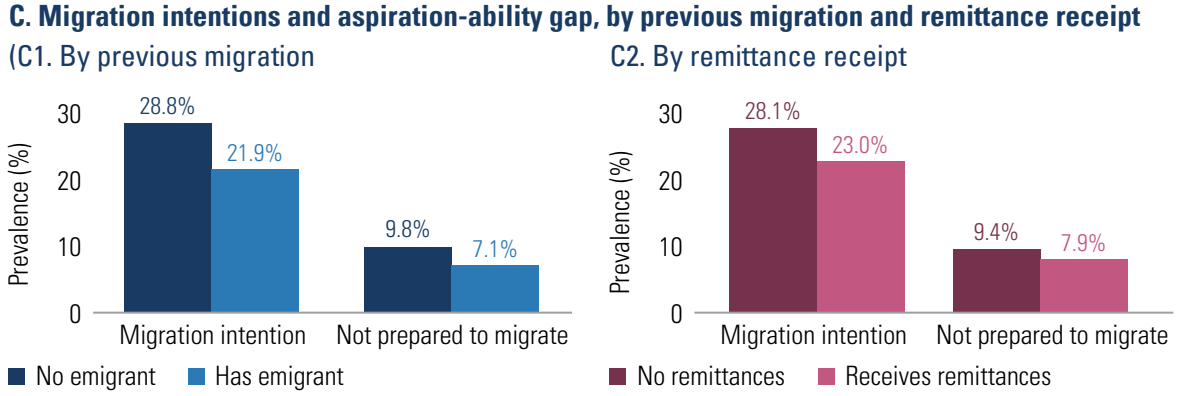
Migration and Remittances

Migration is a widespread phenomenon across the three countries. In Panel A of Figure 5, more than a quarter of the sample reports intending to migrate and having household members who migrated. Remittance receipt is reported by a lower proportion of households (19%), which can be partly explained by likely underreporting of this type of income source. El Salvador exhibits the highest prevalence of prior migration (34.1%) and remittance receipt (30.4%), reflecting the most established migration profile among the three countries. Honduras, by contrast, records the highest migration intentions (31.3%), despite lower levels of prior migration (22.7%) and remittances (18.3%). Guatemala reports the lowest values across all three dimensions, with a particularly marked gap between prior migration (22.7%) and remittance receipt (9.1%). Panel B of the figure shows that, among households with at least one migrant, migration is predominantly international (91% of the full sample). Migration also appears to be a predominantly male phenomenon across the three countries, although females consistently make up around a quarter of the migrant pool. In Panel C, households with prior migration experience or remittance receipt display on average a lower intention to migrate and a slightly lower aspiration-ability gap, compared to households with no migrant members or not receiving remittances.

FIGURE 5. MIGRATION AND REMITTANCES, BY COUNTRY



C. Migration intentions and aspiration-ability gap, by previous migration and remittance receipt



Notes: Panel A shows the percentage of households reporting migration intentions, previous migration experience, and receipt of remittances. Migration intentions refer to households with at least one member planning to migrate, while previous migration indicates households where at least one member has migrated. Panel B presents the profile of households with at least one migrant, including the share of migrants who are international and female. Panel C shows the percentage of households reporting migration intentions and the share of households that report not being willing to migrate due to migration constraints (including inability to finance, lack of documentation, or perceived migration risks): Panel C1 disaggregates by having emigrant members, Panel C2 by remittance receipt. Percentages are calculated at the household level for surveyed municipalities in El Salvador, Guatemala, and Honduras, as well as for the full sample.
Source: Authors' calculations

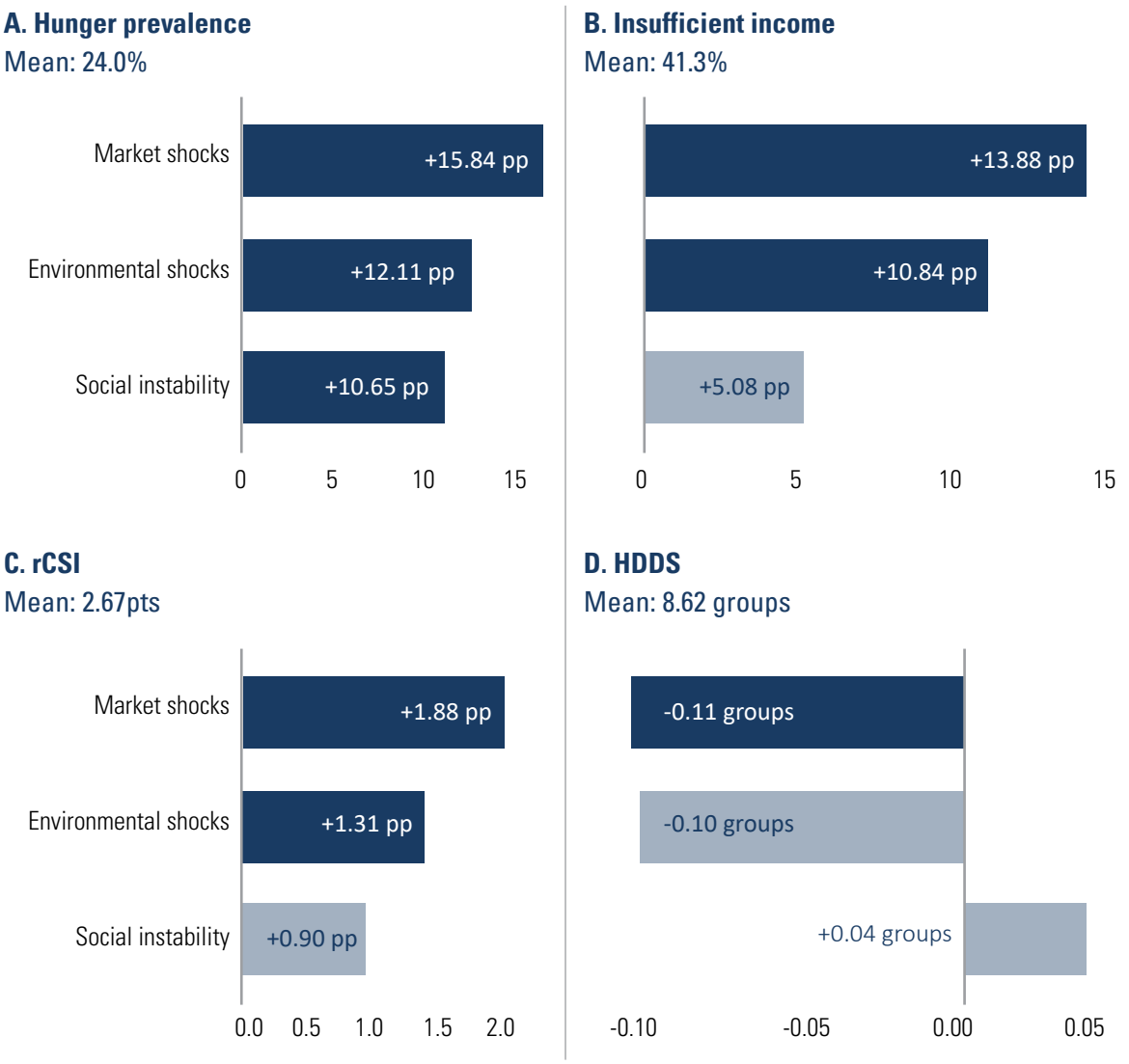
5.2. Q1: WHICH SHOCKS ARE MOST ASSOCIATED WITH FOOD INSECURITY?

Results of regression analysis show that shock exposure is strongly and statistically significantly associated with food insecurity (Figure 6).[8] All else equal, market shocks are associated with the most significant marginal deterioration in food security outcomes: exposure to this type of shocks is correlated with an increase in the probability of experiencing hunger by 15.1 percentage points (p.p.), a 66% increase relative to the mean prevalence of hunger in the full sample. Experiencing an environmental shock is associated with a 12.11 pp increase in the probability of experiencing hunger (50.5% relative to the sample average), while social instability shocks are associated with a higher likelihood of hunger by 10.7 pp (44.6% relative to the mean). Insights gathered from the qualitative fieldwork reveal food access to be a more binding constraint than food availability, with compounded challenges in specific months like January where accumulated holiday spending and back-to-school costs (uniforms, supplies, transport) combine - often pushing households into the adjustment ladder before the agricultural calendar would predict. Looking at additional measures of food and nutrition insecurity, both income and environmental shocks are correlated with a higher use of coping strategies, and income shocks are also associated with a smaller in size but statistically significant reduction in household dietary diversity. The impact of negative shocks on dietary diversity is described by households themselves as a near-ritualized hierarchy—protein first, dairy second, staples preserved—that protects energy intake at the cost of nutritional quality, with the heaviest long-term burden falling on children.

> *"The first thing that gets cut is meat, then milk, in the end only beans remain."*
> — FGD households, Guatemala
>
> *"We just think about filling up, not about nourishing."*
> — FGD youth seeking employment, Guatemala

[8] The self-reported nature of shock exposure introduces a known limitation: households that coped poorly with a shock are more likely to recall and report it, and poorer households may report higher shock exposure partly because they are less able to absorb even moderate adverse events (see Heltberg et al., 2014). To partly control for this bias, the analysis controls for plausibly exogenous markers of well-being such as land and housing ownership.

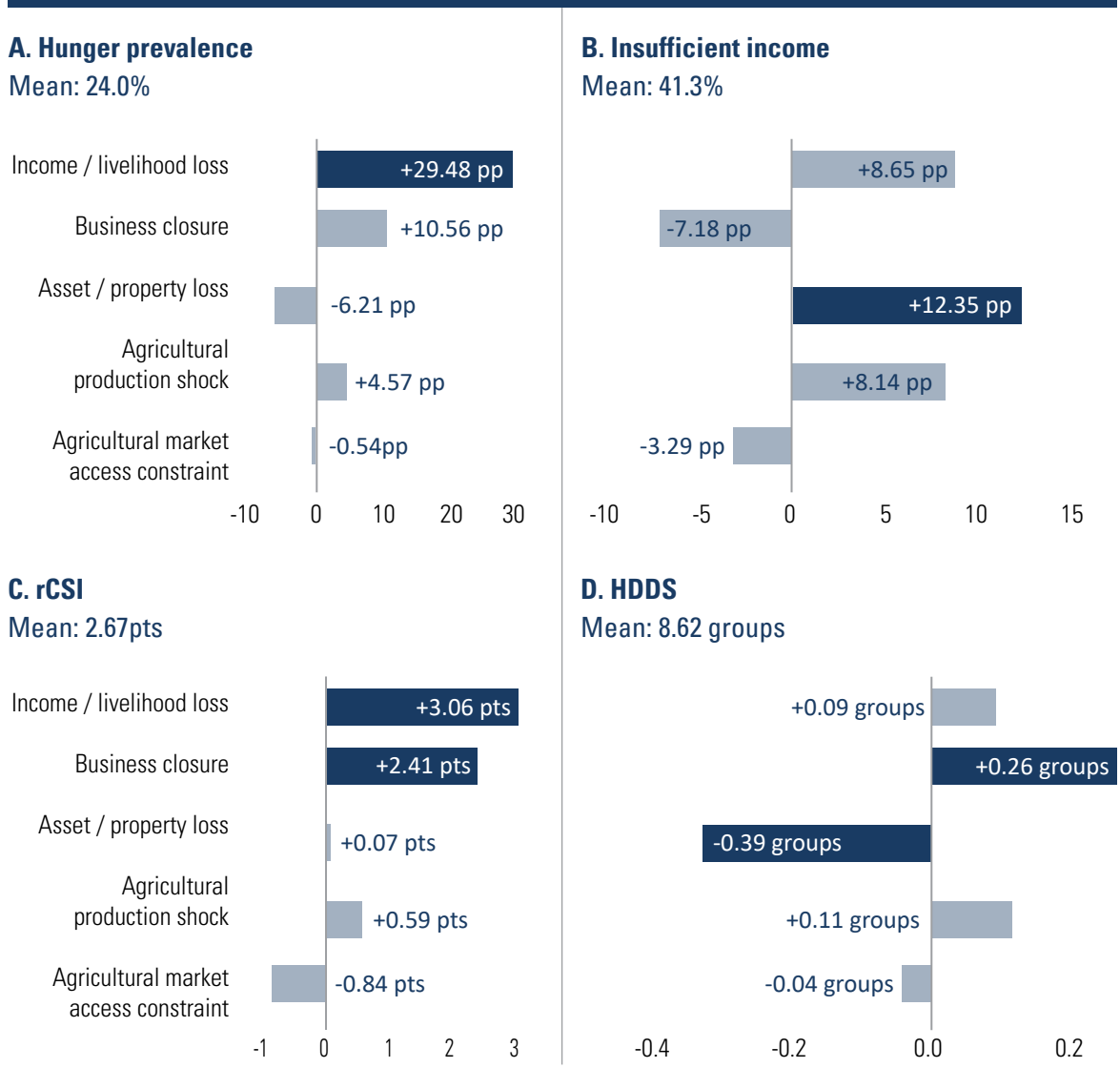
FIGURE 6. ESTIMATED EFFECTS OF SHOCKS ON FOOD INSECURITY



Notes: Each bar shows the estimated coefficient from a separate regression of the indicated shock on hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (points), and HDDS (food groups). The mean of each dependent variable is reported in the panel titles. All models control for municipal-level fragility and household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate estimates that are not statistically significant at the 10% level.
Source: Authors' calculations.

Disaggregating shock types by more granular sub-categories provides additional insights on the most impactful events faced by shock-exposed households. When income shocks are disaggregated (Figure 7), the association with hunger risk is concentrated in income and livelihood losses, which are also linked to an increased use of coping strategies. In contrast, asset losses appear to be associated with a higher probability of having insufficient income to cover food needs and with a decline in household dietary diversity. Disaggregating environmental shocks (Figure 8) reveals that floods, seismic events, and droughts are significantly associated with a higher risk of hunger and greater use of coping strategies. Fieldwork interviews also report that at times even nominal wage gains can be absorbed by the rising cost of the basic food basket, with real food access deteriorating through the effect of price shocks.

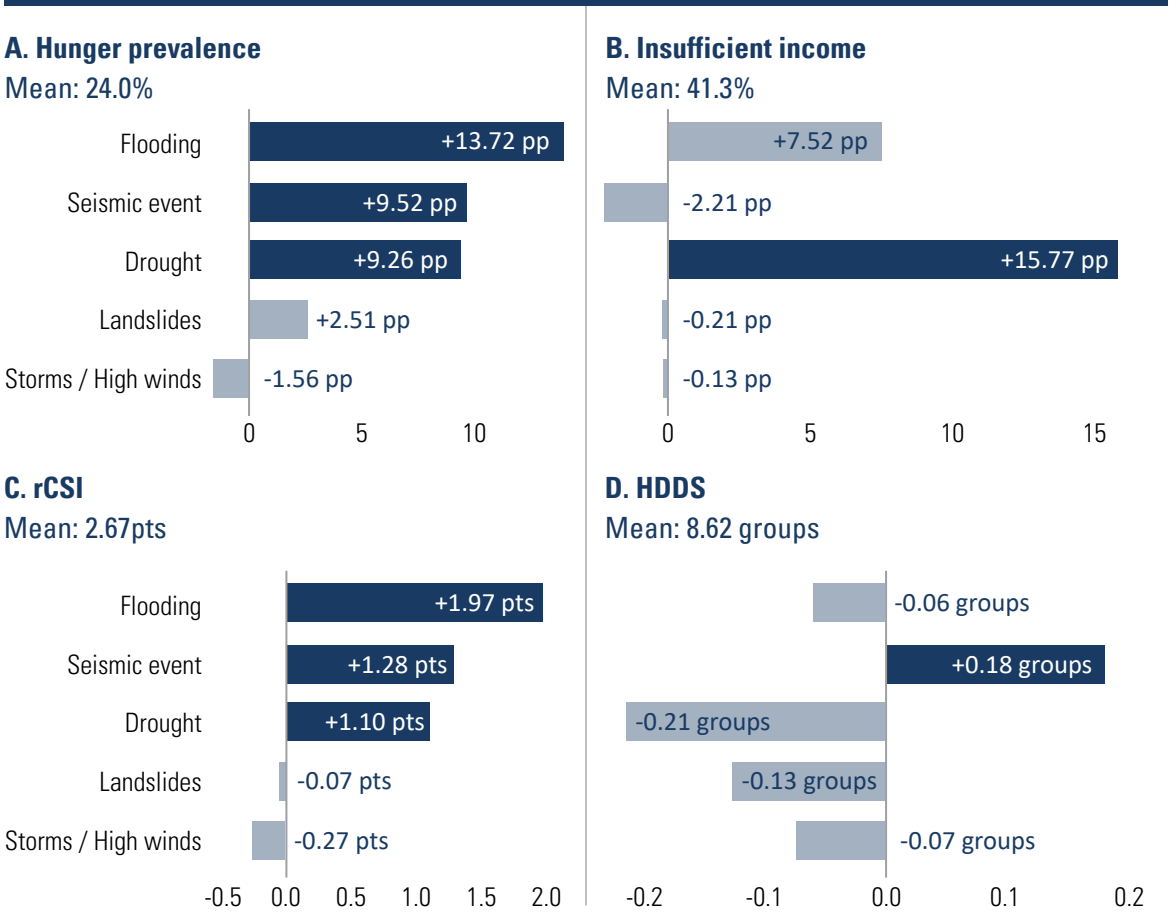
FIGURE 7. ESTIMATED EFFECTS OF DISAGGREGATED INCOME SHOCKS ON FOOD INSECURITY



Notes: Each bar shows the estimated coefficient from a separate regression of the indicated shock on hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (index points), and HDDS (food groups). The mean of each dependent variable is reported in the panel titles. Shocks are defined at a more granular level: income/livelihood loss includes job or income loss and reductions in transfers; business closure refers to the shutdown or bankruptcy of a household enterprise; asset/property loss captures loss or destruction of housing, land, or other assets; agricultural production shocks include crop or livestock losses due to environmental or biological factors; and agricultural income access constraints reflect difficulties accessing inputs or selling production. All models control for municipal-level fragility and household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate estimates that are not statistically significant at the 10% level.
Source: Authors' calculations.

Photo Credit: SALMONNEGRO-STOCK / Shutterstock

FIGURE 8. ESTIMATED EFFECTS OF DISAGGREGATED ENVIRONMENTAL SHOCKS ON FOOD INSECURITY



Notes: Each bar shows the estimated coefficient from a separate regression of the indicated environmental shock on hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (index points), and HDDS (food groups). The mean of each dependent variable is reported in the panel titles. Environmental shocks include events such as flooding, droughts, seismic activity, landslides, and storms. All models control for municipal-level fragility and household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate estimates that are not statistically significant at the 10% level.
Source: Authors' calculations.

5.3. Q2. WHEN DO SHOCKS BECOME A CRISIS—DO IMPACTS COMPOUND AFTER MULTIPLE SHOCKS?

Cumulative exposure to shocks is associated with a progressive deterioration in food security. Table 4 descriptively illustrates how the concurrence of multiple shocks (independent of shock type) amplifies household vulnerability. Average hunger likelihood rises from 16.4% among households with no shocks to 26.6% with one shock, 34.3% with two shocks, and 50% among those exposed to three or more types of shocks.[9] A similar deterioration over the number of shocks can be observed for not having sufficient income to meet food needs, use of coping strategies, and dietary diversity. Regression analysis reported in Figure 9 confirms that the accumulation of shocks is statistically significantly associated with a progressive, linear deterioration in food security reflected in higher hunger prevalence, a greater probability of insufficient income

[9] The triple+ shock category comprises only 38 households. Estimates for this group have wider confidence intervals and may lack the statistical power to precisely characterize the distribution of outcomes at this exposure level.

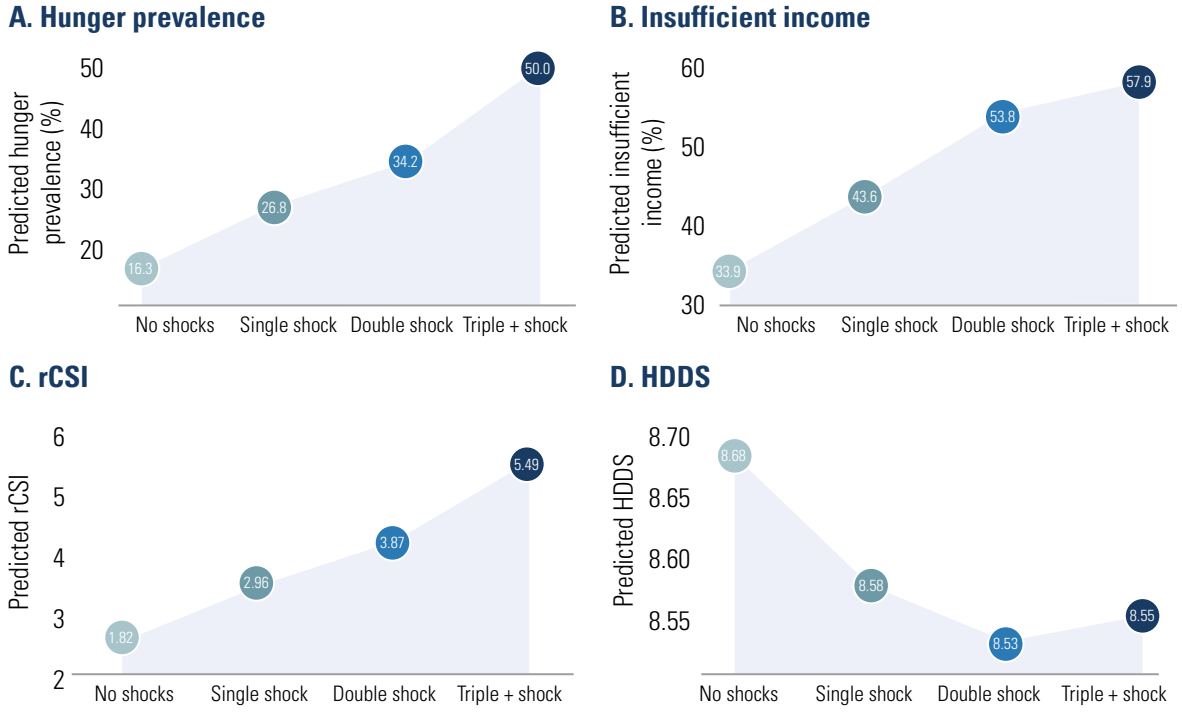
to cover food needs, and greater reliance on coping strategies. Dietary diversity, by contrast, follows a different pattern: the largest decline occurs between no exposure and a single shock, while additional shocks do not appear to have statistically significant effects.

TABLE 4. FOOD INSECURITY, BY SHOCK FREQUENCY

SHOCK FREQUENCY	N	HUNGER (%)	INSUFFICIENT INCOME (%)	MEAN rCSI	MEAN HDDS
No shocks	601	16.4	33.6	11.31	8.69
Single shock	422	26.6	43.4	11.54	8.58
Double shock	230	34.3	53.0	11.92	8.53
Triple+ shock	**38**	**50.0**	**57.9**	**11.28**	**8.55**

Notes: The table presents descriptive statistics by shock intensity, defined as the number of distinct shock types experienced by the household in the last three years (none, single, double, or three or more). Hunger refers to the percentage of households that reported experiencing hunger in the previous month. Insufficient income reflects households reporting incomes that are inadequate to cover food needs. rCSI is the Reduced Coping Strategy Index. HDDS denotes the Household Dietary Diversity Score (number of food groups consumed). N indicates the number of households in each category.
Source: Authors' calculations.

FIGURE 9. ESTIMATED EFFECTS OF SHOCK FREQUENCY ON FOOD INSECURITY



Notes: The figure presents predicted values from regression models estimating the association between shock frequency (single, double, and triple+ shocks) and food security outcomes, using households with no shocks as the reference category. All models control for municipal-level fragility, household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Effects are statistically significant for Hunger prevalence (Panel A), Insufficient income to cover food needs (Panel B), and rCSI (Panel C), whereas estimates for HDDS (Panel D) are significant only for a single shock.
Source: Authors' calculations.

BOX 5.1. VOICES FROM THE FIELD: WHEN HARDSHIPS COMPOUND

The regression evidence of compounded shocks—where multiple simultaneous stressors generate additive impacts on food security—finds a clear qualitative correlate in household narratives of chronic stress. Participants rarely describe a single shock event; they describe accumulated burden. Psychological toll, intra-household tension, and the sense of being permanently "on the edge" emerge as recurrent mechanisms.

"One lives with that stress every day, thinking whether there will be food tomorrow."
— FGD households, El Salvador

"All these elements of economic vulnerability have a repercussion inside households… and what we see is an increase in intra-family violence."
— KII NGO, El Salvador

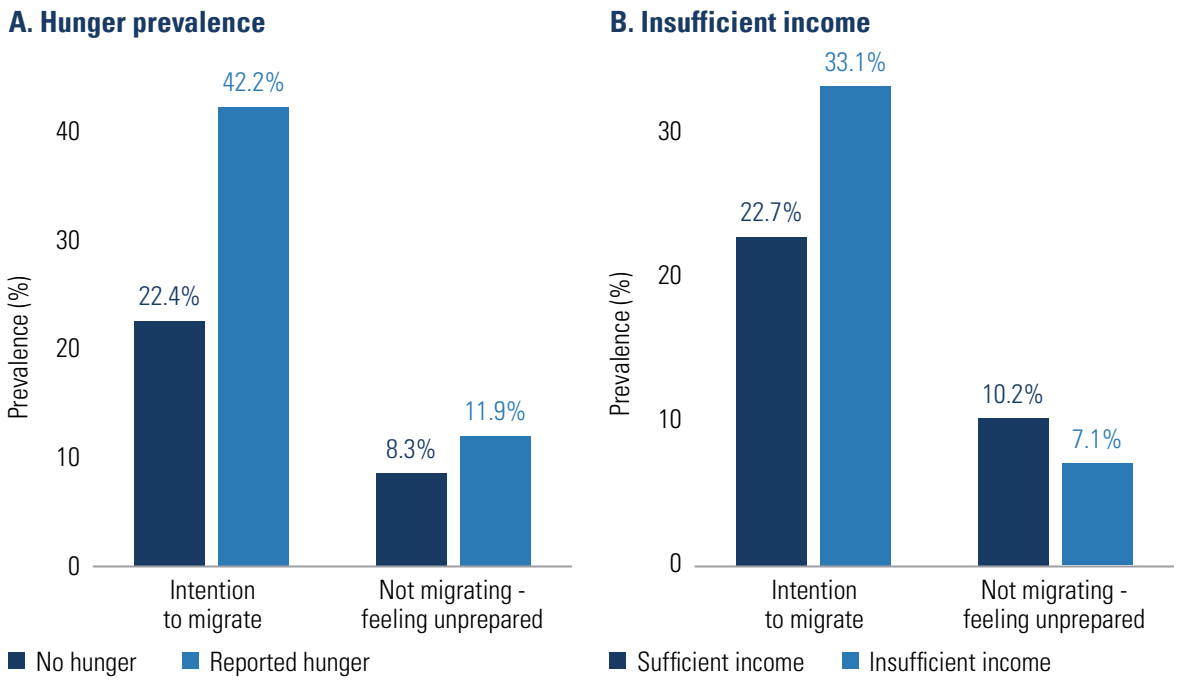
"When income drops, we first remove fruit and meat."
— FGD women, Honduras

These voices highlight that stress is cumulative and manifests beyond food insecurity itself, spilling into mental health and domestic relations. Once a household crosses an implicit tipping point—where coping capacity is exhausted—the next shock triggers disproportionate harm, including violence within the home. Qualitative narratives locate this threshold operationally at approximately two to three consecutive shocks.

5.4. Q3. DOES FOOD INSECURITY TRANSLATE INTO PRESSURE TO MIGRATE?

Food insecurity and shocks are strong predictors of migration aspirations. As shown in Figure 10, 42.2% of households experiencing hunger report an intention to migrate, almost twice the prevalence recorded among households not facing hunger. Similarly, households with insufficient income to cover food needs report higher migration intentions (33.1%, compared with 22.7% among those with sufficient income). Regression analysis in Figure 11 confirms that experiencing hunger is the strongest food-security-related predictor: hunger prevalence is statistically significantly correlated with an increased probability of intending to migrate by 16.5 pp, equivalent to a 61% increase relative to the regional average of 27%. Other food insecurity indicators point in the same direction: insufficient income and greater reliance on coping strategies increase migration intentions, while higher household dietary diversity reduces them. In Panel A, abstracting from the direct effect of hunger, exposure to market shocks is associated with an increase in migration intentions by 9.5 pp (24% above the mean). Similar patterns are observed in the other panels when controlling for the direct effect of other food and nutrition security indicators. These magnitudes are consistent with a "financial access channel": when purchasing power deteriorates and access to food becomes uncertain, migration emerges as a potential coping strategy. This effect is best read as conditional on the prior exhaustion of a sequence of coping strategies (consumption adjustment, informal support networks, debt, and the sale of productive assets), a ladder that the qualitative fieldwork documents as a prerequisite before migration enters the household's choice set.

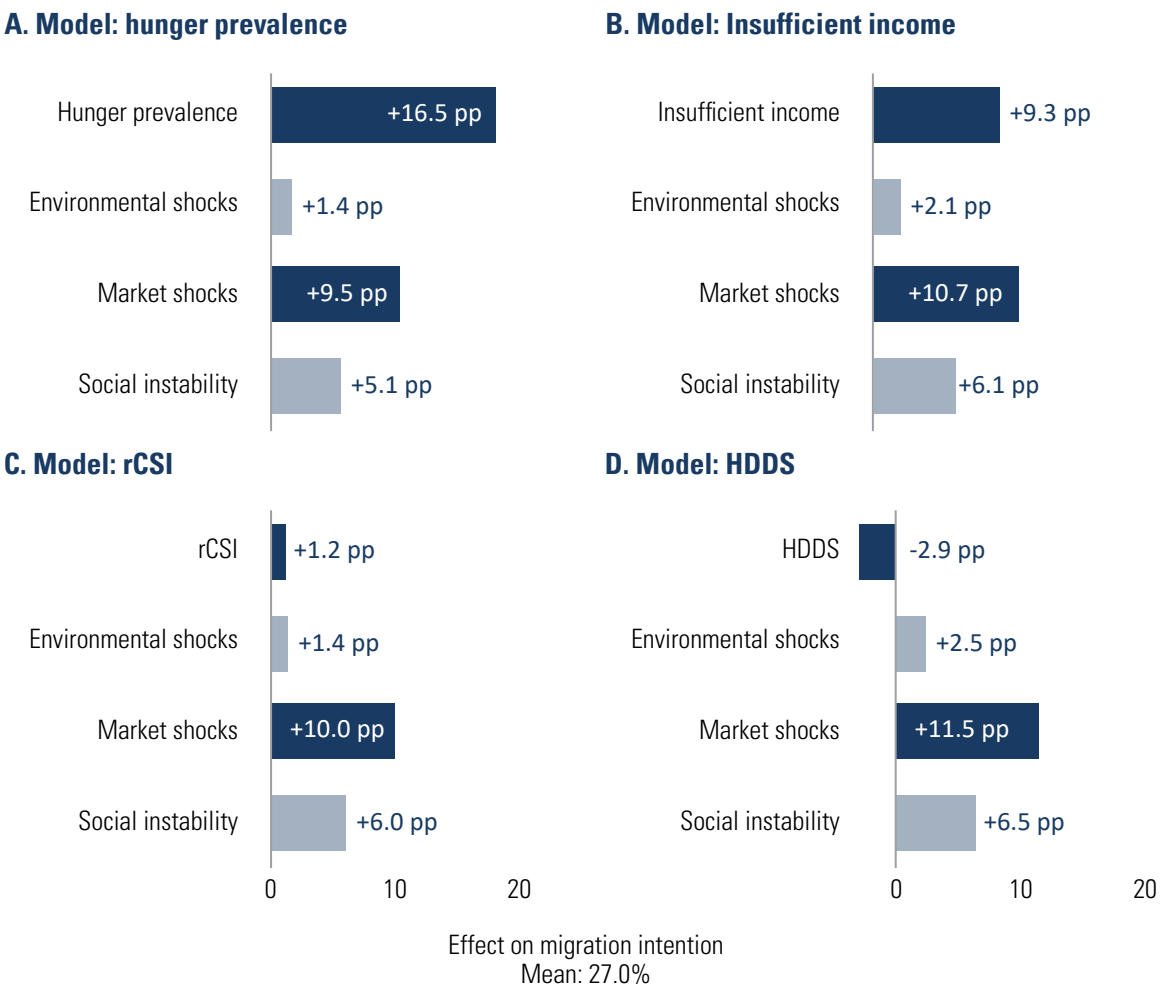
FIGURE 10. MIGRATION INTENTIONS AND CONSTRAINTS BY FOOD INSECURITY STATUS



Notes: The figure presents the percentage of households reporting migration intentions (internal or international) and the share of households that, despite preferring to remain in their current location, report doing so due to migration constraints. Constraints include inability to finance, the lack of documentation, or perceived migration risks. Percentages are shown separately by food insecurity status. Panel A compares households that reported experiencing hunger with those that did not. Panel B compares households whose income was insufficient to purchase food with those reporting sufficient income for food needs.
Source: Authors' calculations.

Photo Credit: David Peinado Romero / Shutterstock

FIGURE 11. ESTIMATED EFFECTS OF HUNGER AND SHOCKS ON MIGRATION INTENTIONS



Notes: The figure reports estimated coefficients from separate regression models of migration intentions. Each panel presents one model that includes the food insecurity indicator named in the panel, together with the three shock types: environmental shocks, market shocks, and social instability. The mean of the dependent variable is reported in the figure. All models control for municipal-level fragility and household characteristics, including age, gender, and education of the household head, household size, number of children, and land or housing ownership. Country fixed effects are included, and standard errors are clustered at the municipal level. Faded bars indicate estimates that are not statistically significant at the 10 percent level.
Source: Authors' calculations.

Photo Credit: Alexandre Laprise / Shutterstock

BOX 5.2. VOICES FROM THE FIELD: FORCED TO LEAVE

Survey results show food insecurity as a significant driver of migration intention, especially in high-fragility strata. Qualitative testimony specifies what actually triggers the decision: it is rarely a single hunger event, but a convergence of harvest failure, lost employment, and acute security threats.

"Yes, because at first it was to protect my children's lives."
— Mother, rural El Salvador

"There is no future here for the young."
— FG rural youth, Guatemala

"We leave out of necessity, not out of choice."
— FG returned migrants, Guatemala

"Before, the main reason for migrating was violence. It still matters, but it has moved down the list. The main reasons are now economic hardship and family reunification."
— KII NGO, El Salvador

Migration in this context is best understood as reactive (a response to the depletion of livelihood options) rather than aspirational.

Not all households are able to act on the migration pressure. Despite the evidence showing that food insecurity is associated with an increase in migration intentions, Figure 10 also reveals that food insecurity is linked with a gap between migration need and capacity: among households that do not intend on migrating, those experiencing hunger are more likely to report that they do not feel prepared to do so (11.9%, compared to 8.3% among food-secure households), citing financial or administrative constraints, as well as perceived risks associated with the journey. The fact that the relationship is reversed for households reporting insufficient income to buy food suggests that the channel may not even be predominantly financial, but rather driven by different dynamics, such as weaker networks or higher exposure to security risks. This observation is confirmed by the qualitative analysis, which shows that, for every household that leaves, many others remain—not because they choose to, but because the same conditions that prompt flight also foreclose it.

Photo Credit: Vivid imagery / Shutterstock

BOX 5.3. VOICES FROM THE FIELD: THE IMMOBILITY TRAP

Many households that may want to migrate lack the financial, social, or care-responsibility resources to do so. This group, invisible in administrative migration data, remains exposed to the very same shocks as the rest of its community, but lacks the coping option offered by migration.

"Leaving also costs money. If one doesn't even have enough for food, much less to pay for the journey."
— FGD men, El Salvador

"For many families the problem is not just wanting to migrate, but being able to gather the money needed to do it."
— KII international organization, Guatemala

"Smugglers charge more and more; it's impossible."
— FGD households, Guatemala

"One thinks of leaving but has to look after small children."
— Mother, El Salvador

"When relatives or acquaintances have already migrated, people usually have more information about how to do it or what to expect; when those networks don't exist, the process becomes far more uncertain."
— KII NGO, Honduras

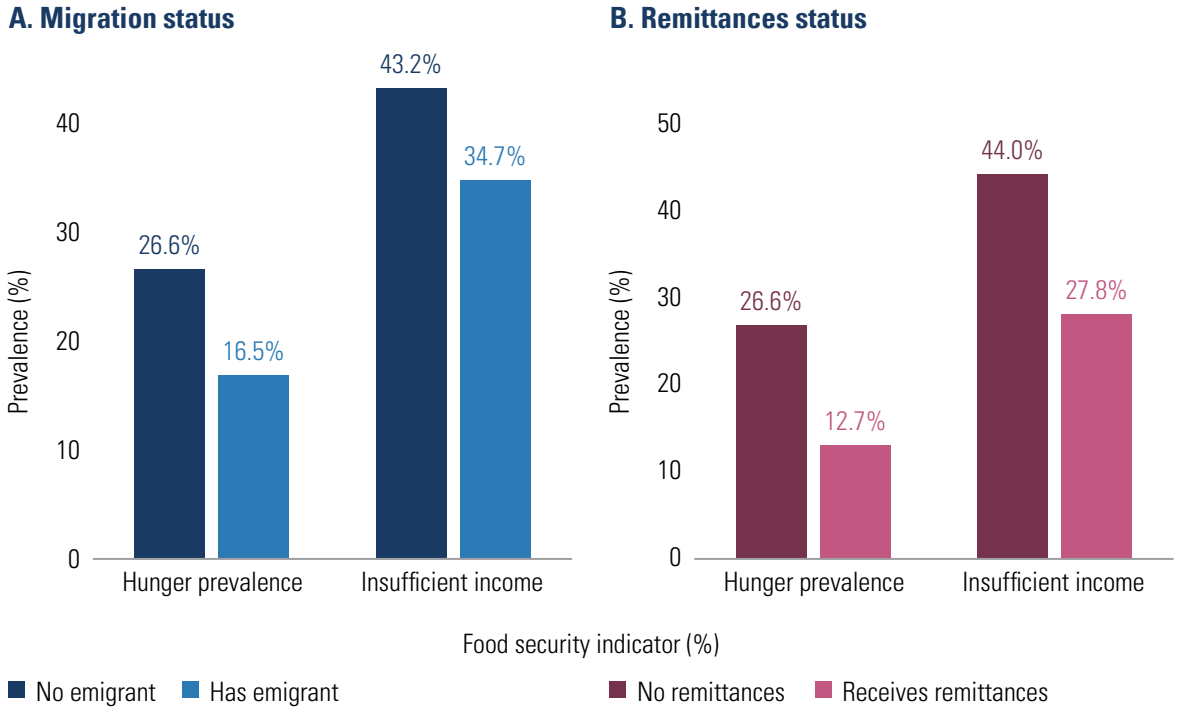
The intention–preparedness gap observed in the survey data reflects, in these voices, a structural trap. Issues such as collapsed household liquidity, information asymmetries, or the fear of violence leave a growing share of food-insecure households stuck in place. Unevenly distributed care burdens create further intra-household dynamics affecting the ability to migrate of specific household members vis-à-vis others.

5.5. Q4. DOES MIGRATION EASE FOOD INSECURITY AND SHIELD AGAINST SHOCKS?

Households with emigrant members or those receiving remittances consistently exhibit better food security outcomes (Figure 12). Descriptively, households with at least one emigrant report a lower prevalence of hunger (16.5%) and insufficient income to cover food expenditures (34.7%) compared to households without emigrants (26.6% and 43.2%, respectively). A similar pattern is observed for remittances: households that receive them report 12.7% hunger and 27.8% insufficient income to buy food, compared to 26.6% and 44.0% among those that do not. Field interviews confirm that remittances safeguard against the most severe margins of food insecurity (reduced meal frequency, skipped meals), with recipient households reporting most frequently changes in the composition of their food basket, without cuts to meal frequency. These differences persist across dimensions of food insecurity when running regression analysis (Figure 13). Remittance receipt is associated with statistically significant and sizeable improvements in food security status, including a reduction in the risk of hunger (–14.3 pp relative to a mean of 24.0%), a lower probability of having insufficient income to cover food needs (-15.7 pp relative to a mean of 41.3%), lower reliance on coping strategies (–1.72 rCSI points

relative to a mean of 2.6), and a modest increase in dietary diversity (+0.21 HDDS food groups relative to a mean of 8.62). Having an emigrant household member shows effects in the same direction, though of smaller magnitude (–10.4 pp in hunger, -7.9 pp in the probability of having insufficient income to cover food needs, –1.09 rCSI points, and +0.19 HDDS groups). Each additional migrant in the household is further associated with reductions in hunger (–5.8 pp), insufficient income to cover food needs (–4.4 pp) and coping (–0.61 rCSI points), as well as improvements in dietary diversity (+0.09 groups). The fact that the magnitude of these associations is larger for remittances than for migration experience per se suggests that the economic channel is the primary mechanism linking migration to food security outcomes.

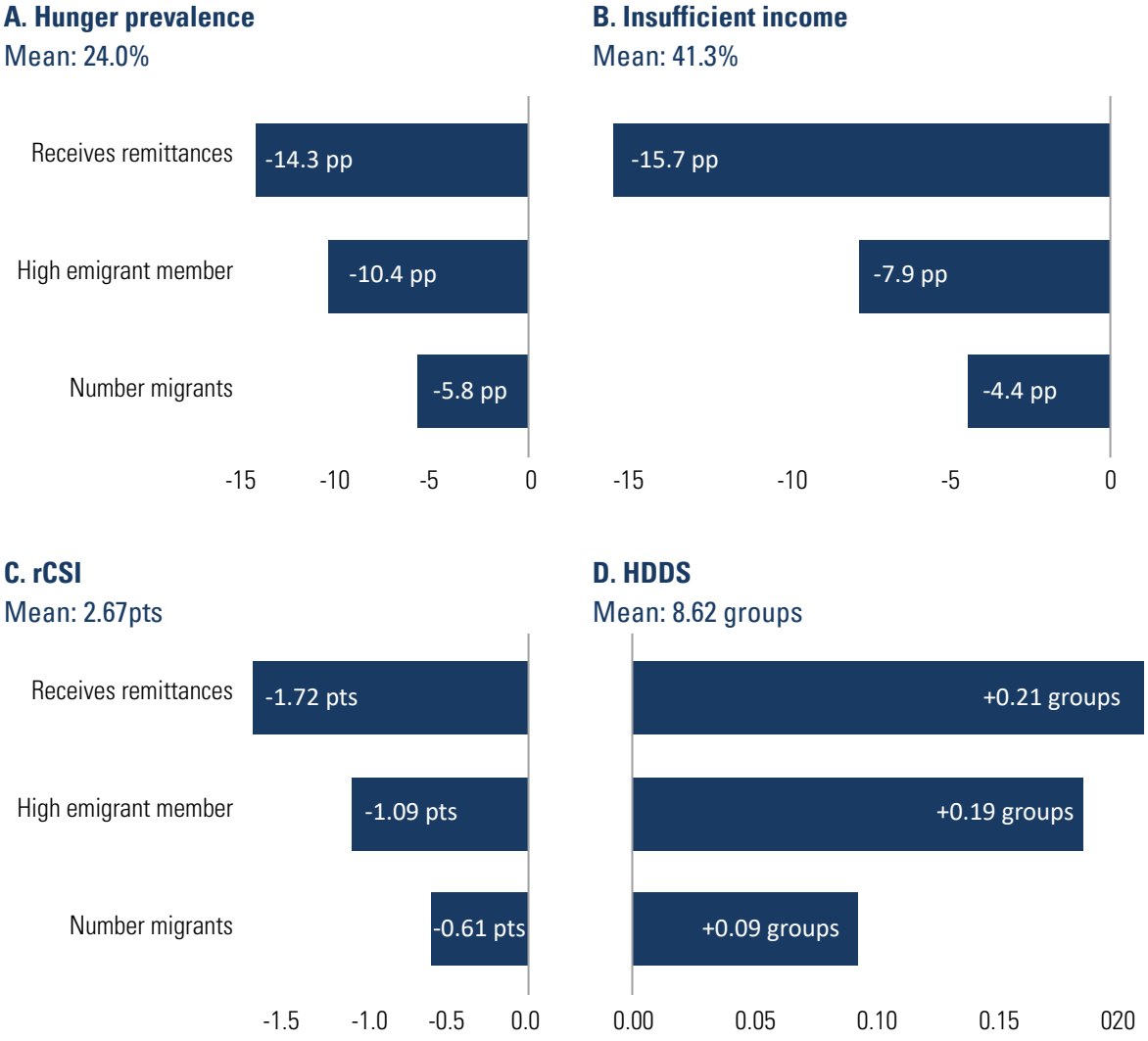
FIGURE 12. FOOD INSECURITY BY MIGRATION AND REMITTANCES STATUS (%)



Notes: Panel A compares the prevalence of hunger and insufficient income to purchase food among households with and without emigrant members. Panel B presents the same outcomes by remittances status. Hunger refers to households that reported experiencing hunger in the last month. Insufficient income indicates that households reported their income was not enough to buy food.
Source: Authors' calculations.

Photo Credit: Barbara Zandoval / Shutterstock

FIGURE 13. ESTIMATED EFFECTS OF MIGRATION AND REMITTANCES ON FOOD SECURITY

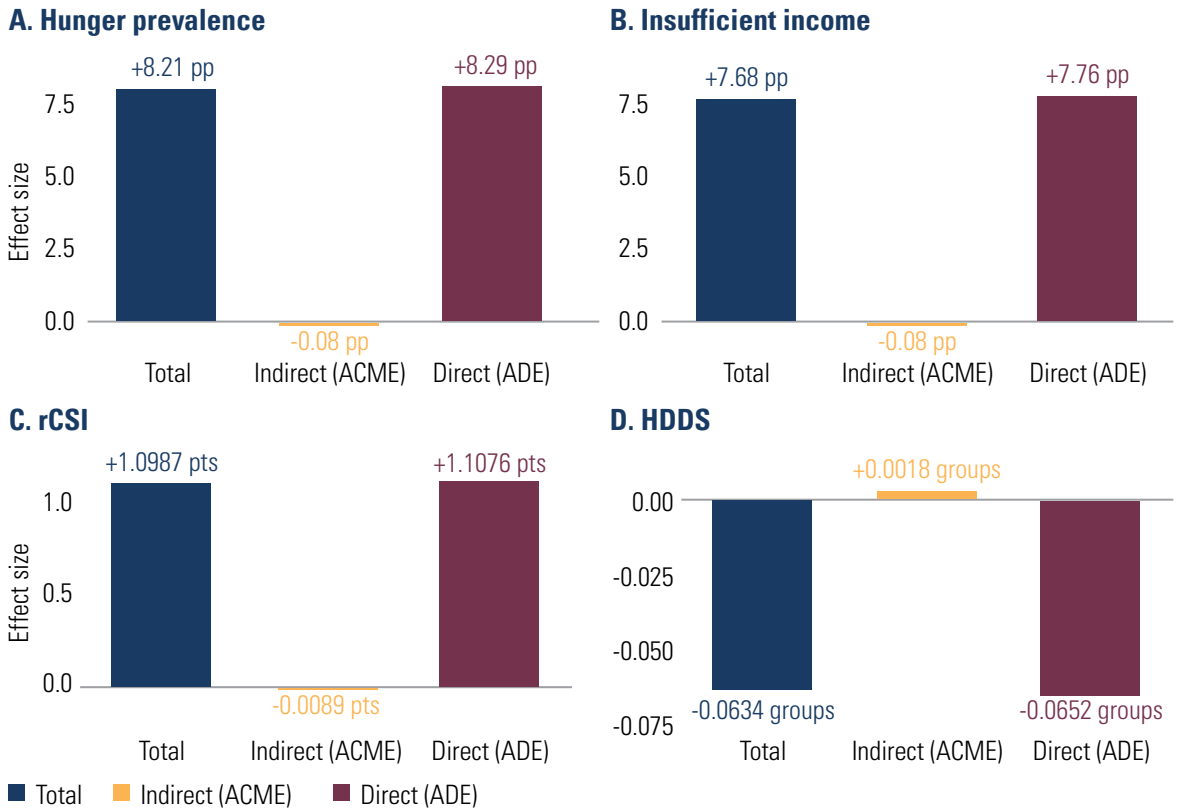


Notes: Each bar shows the estimated coefficient from separate regression models of hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (index points), and HDDS (food groups) on migration status (having an emigrant member, number of migrants) and remittance receipt. The mean of each dependent variable is reported in the panel titles. All models control for municipal-level fragility and household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. All estimated effects are statistically significant at the 10% level or higher.
Source: Authors' calculations.

Against this backdrop, a natural question is whether migration may operate as a channel through which shocks affect food security—i.e., whether migrating may be an effective coping strategy to restore food security in the face of shocks. Figure 14 reports the results of running mediation analysis on the question of whether the negative effect of (any type of) shocks on food insecurity may be attenuated because shocks first trigger migration, which in turn may improve households' food security. The figure shows that this is not the case: the share of the total effect explained by the migration pathway is indistinguishable from zero across hunger risk, coping strategies, and dietary diversity. This finding suggests that migration may not be an effective coping strategy

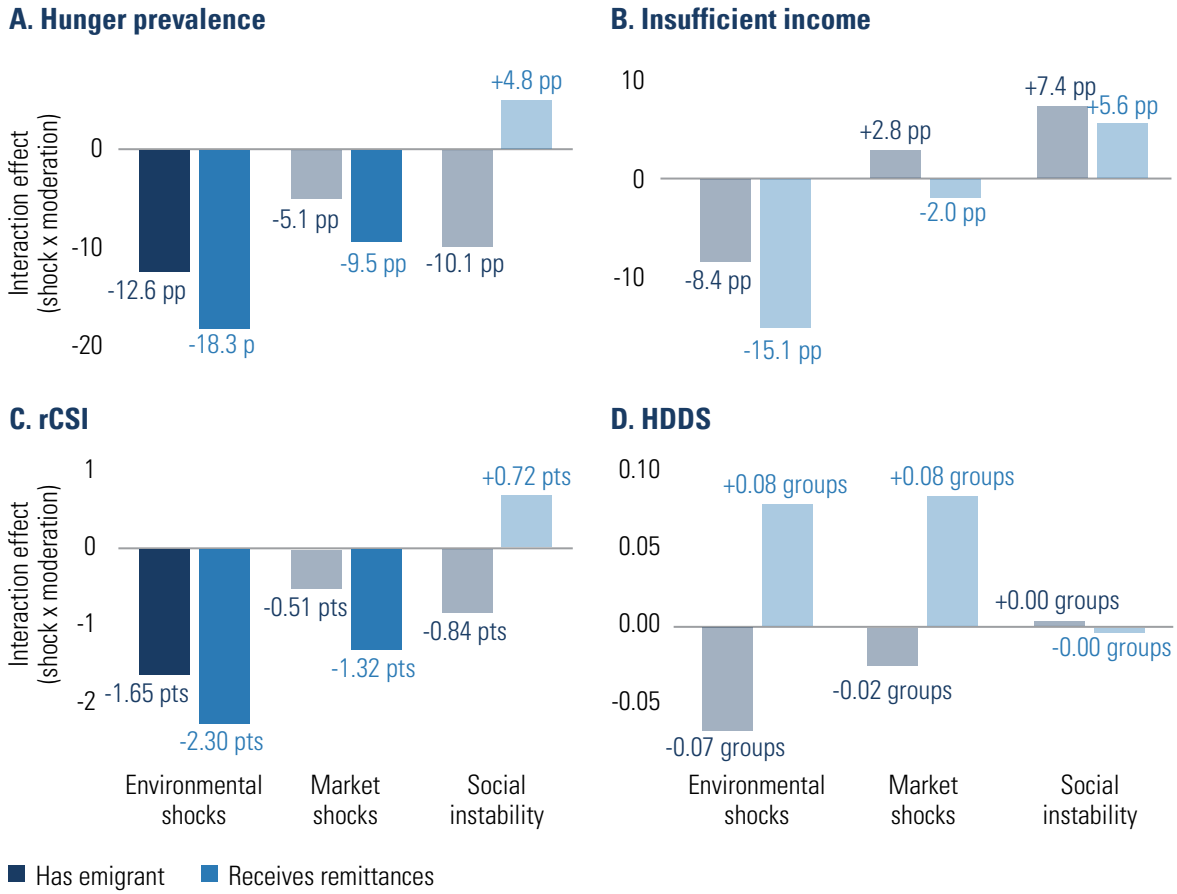
in the immediate aftermath of a shock affecting food security. When looking at the heterogenous food-security effects of shocks across families with migrants or receiving remittances, however, more consistent evidence of a buffering effect emerges (Figure 15): both having a migrant household member and receiving remittances are associated with large and significant reductions in the effect of environmental shocks on food security outcomes. Remittances also show a significant moderating effect on the association between income shocks and food insecurity, though smaller in magnitude. Taken together, these pieces of evidence suggest that, while "consolidated" migration experiences (households who have migrants living abroad who can and do send remittances) can support household resilience in the face of shocks, migrating per se may not be the answer to escape situations of stressed food security. The qualitative analysis, however, points to an important qualifier on the positive average effect of migration and remittances on food security, as households with migration networks remain exposed to remittance interruption and the emotional cost of separation. Remittances substitute for—rather than catalyze—local livelihood opportunities, and often generate dependency instead of real resilience capacity.

FIGURE 14. MEDIATION ANALYSIS: INDIRECT AND DIRECT EFFECTS OF SHOCKS ON FOOD SECURITY THROUGH MIGRATION



Notes: The figure presents the decomposition of the total effect of shocks on food security outcomes into indirect effects through migration (ACME) and direct effects (ADE). Outcomes include hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (index points), and HDDS (food groups). The indirect effect captures the extent to which shocks affect outcomes through changes in migration behavior, while the direct effect reflects the remaining impact not mediated by migration. All estimates are derived from mediation models controlling for municipal-level fragility and household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), including country fixed effects and clustering standard errors at the municipal level.
Source: Authors' calculations.

FIGURE 15. INTERACTION EFFECTS OF MIGRATION AND REMITTANCES ON SHOCK IMPACTS



Notes: Bars show the estimated interaction coefficient between each shock type and either having an emigrant household member or receiving remittances. The coefficients capture whether migration or remittance links moderate the association between shocks and food security outcomes. For hunger, insufficient income, and rCSI, negative coefficients are consistent with a buffering effect; for HDDS, positive coefficients are consistent with buffering. Models control for municipal-level fragility and household characteristics, include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.
Source: Authors' calculations.

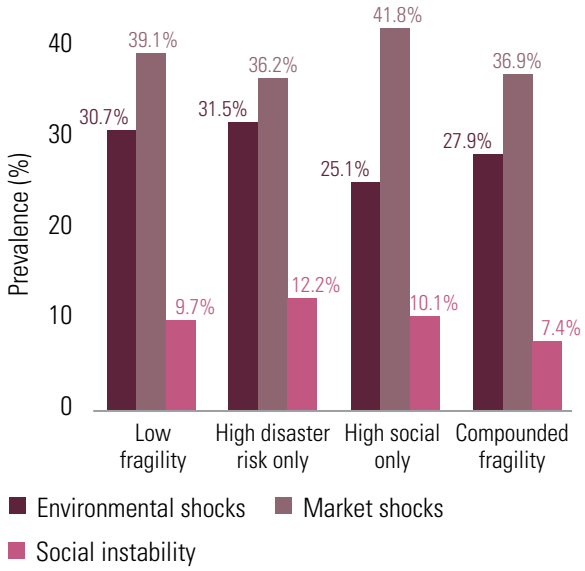
5.6. Q5. HOW DOES FRAGILITY AFFECT THE SHOCK–MIGRATION –FOOD SECURITY PATHWAY?

In the context of this report, fragility captures structural vulnerability, not shock probability. In the sample used for this report, exposure to shocks is broadly similar across fragility profiles: in Figure 16, areas with different fragility classifications (Low Fragility, High Disaster Risk only, High Social Fragility only, Compounded Fragility) show no substantial differences either in the level or frequency of shock exposure. Market shocks are the most frequent across all groups, and the distribution by number of shocks is comparable across categories, with roughly half of households reporting no exposure in each case. On the mechanical side, this pattern may reflect the fact that fragility typologies capture structural conditions at the municipal level, while shock exposure is measured at the household level over a specific reference period; as such, the two dimensions may not fully align in the observed data. In addition, because shock exposure is based on self-reported information, it may incorporate variation related to perception, recall, or the

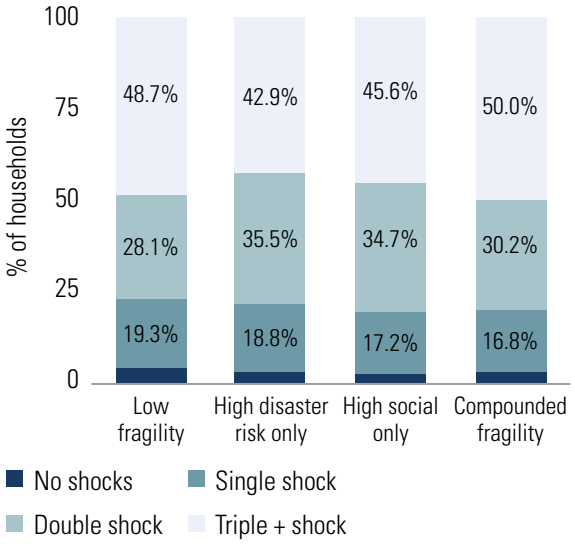
visibility of events. Despite similar levels of shock exposure, however, food security does vary across fragility types: in Figure 17, the prevalence of hunger is higher in municipalities characterized by Compounded Fragility, where it reaches 28.1%, compared to 19.9% in Low Fragility contexts. High Disaster Risk areas show similar levels of hunger risk, whereas High Social Fragility areas display hunger levels closer to those with Low Fragility. Overall, these patterns imply that looking at the fragility angle is important not because fragile areas are more prone to shocks, but because their vulnerability may make their recovery capacity weaker in the face of a shock.

FIGURE 16. SHOCK EXPOSURE, BY FRAGILITY PROFILE

A. Shock type prevalence by fragility profile

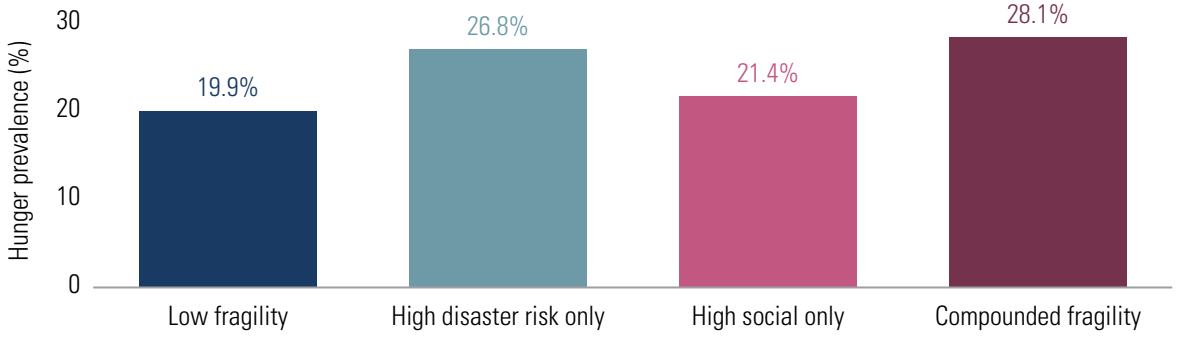


B. Shock frequency by fragility profile



Notes: Panel A shows the percentage of households reporting exposure to environmental, market, and social instability shocks in the last three years. Environmental shocks include natural disasters (e.g., droughts, floods, hurricanes); market shocks capture income or production losses (e.g., job loss, crop failure, business closure); and social instability shocks reflect exposure to violence and insecurity (e.g., displacement, threats, extortion). Percentages are calculated at the household level for surveyed municipalities across fragility profiles.
Source: Authors' calculations.

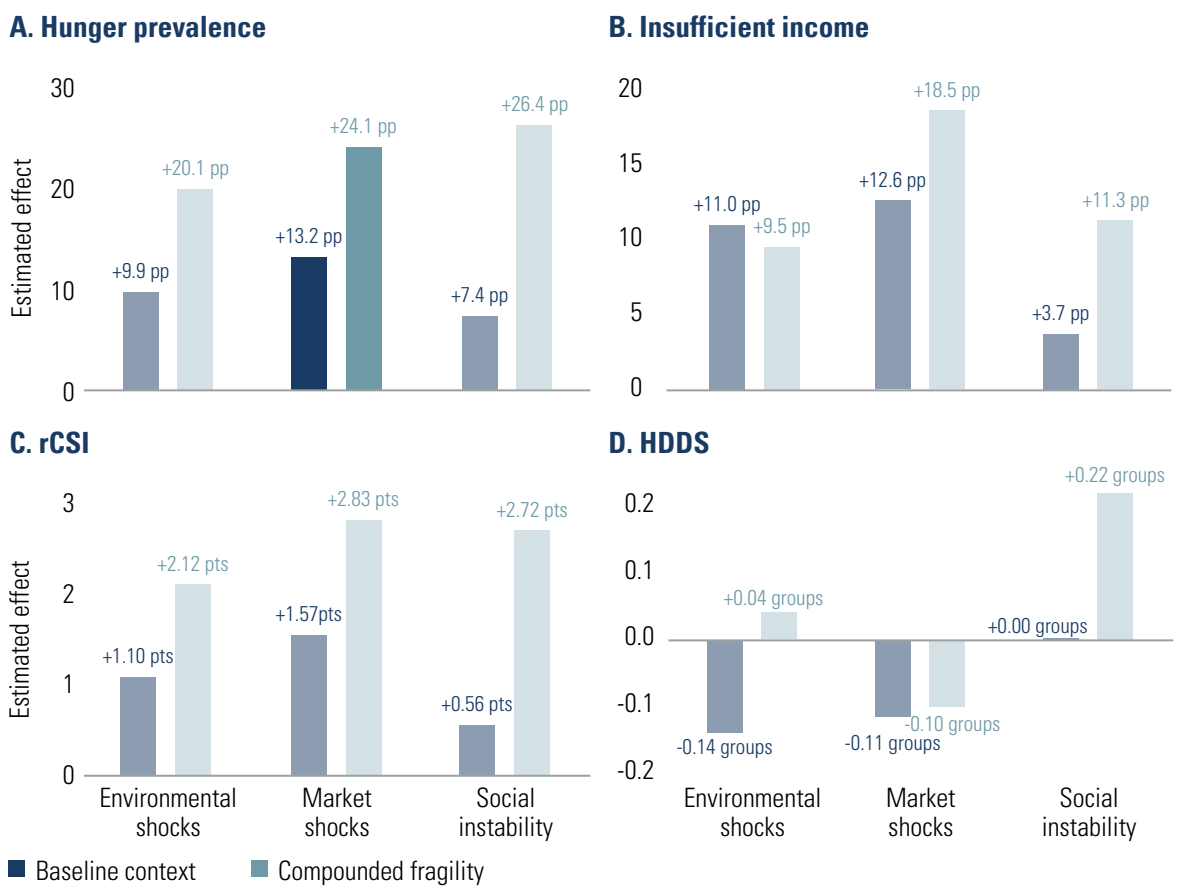
FIGURE 17. HUNGER PREVALENCE, BY TYPE OF FRAGILITY



Notes: Hunger prevalence refers to the percentage of households that reported experiencing hunger at least once in the past 30 days. Fragility typologies are constructed at the municipal level by combining indicators of disaster risk exposure and social fragility.
Source: Authors' calculations.

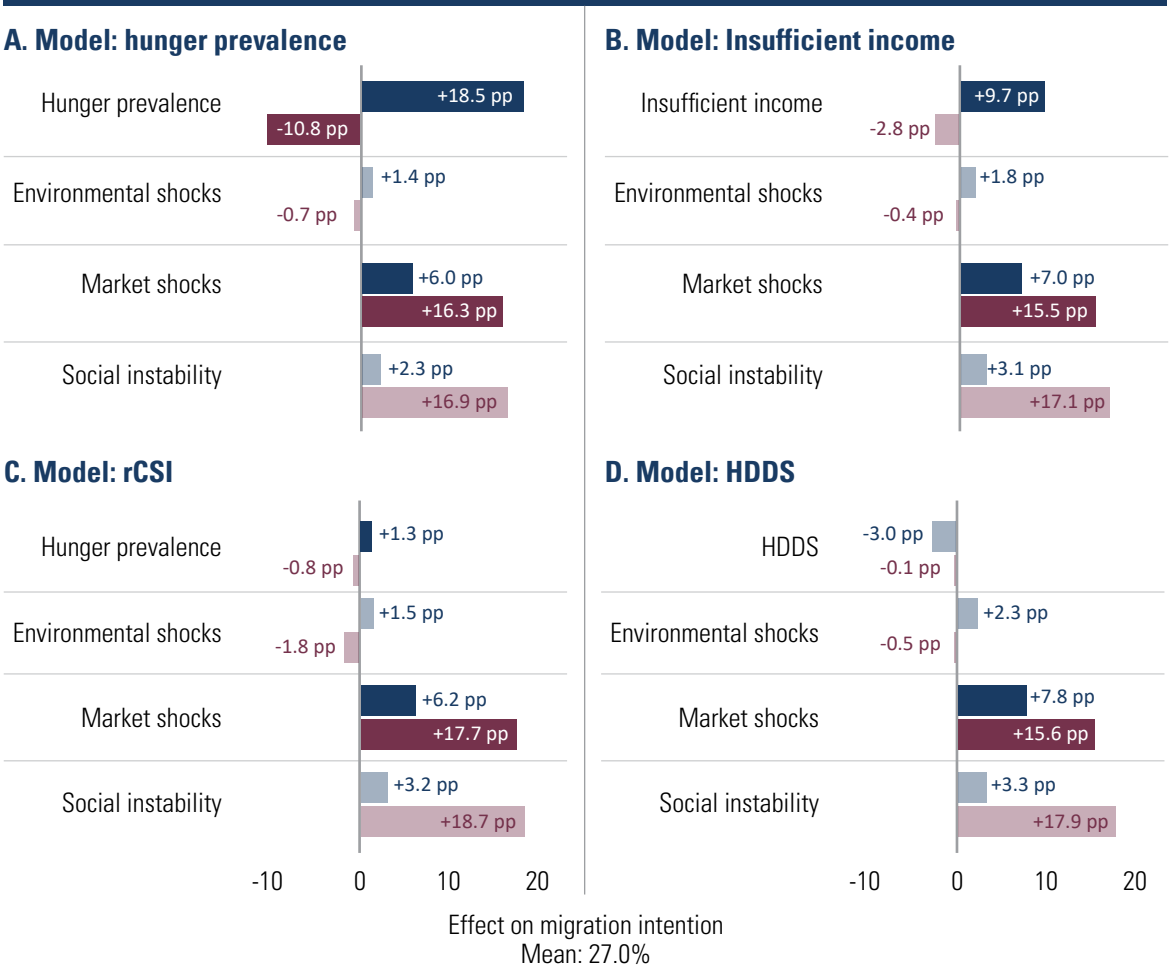
Consistent with this observation, fragility amplifies the extent to which income shocks translate into food insecurity as well as into migration intentions. As shown in Figure 18, in contexts of Compounded Fragility, income shocks are associated with a 24.1 pp increase in the risk of hunger, compared to 13.2 pp in lower-fragility settings, indicating that the combination of high exposure to environmental risk and social fragility erodes households' capacity to absorb economic disruptions. Coherently, municipalities in Compounded Fragility areas also see a significant and large differential in the relationship between income shocks and migration intentions, which appears more than double than in lower-fragility settings (Figure 19). Based on the qualitative fieldwork, the estimated amplification of shocks in high-fragility strata is also the result of degradation of public support itself. While food security programs formally exist in all the three countries, interviewees report that coverage is discontinuous, and that access is often rationed through informal networks rather than objective need-based criteria, to the detriment of households that are less well-connected. Reportedly, community solidarity partially fills the gap, but is insufficient during prolonged shocks.

FIGURE 18. ESTIMATED EFFECTS OF SHOCKS ON HUNGER RISK, BY FRAGILITY CONTEXT



Notes: Bars show the estimated association between each shock type and food insecurity outcomes within each fragility context. Blue bars correspond to households in baseline contexts, defined as areas not classified under compounded fragility. Red bars correspond to households in compounded fragility areas, defined as areas with both high environmental risk and high social fragility. For each shock type, the red bar represents the total association in compounded fragility contexts, while the difference between the red and blue bars captures the shock-by-compounded-fragility differential. All models control for household characteristics, include country fixed effects, and cluster standard errors at the municipal level. Faded bar pairs indicate cases where the shock-by-compounded-fragility interaction is not statistically significant at the 10% level.

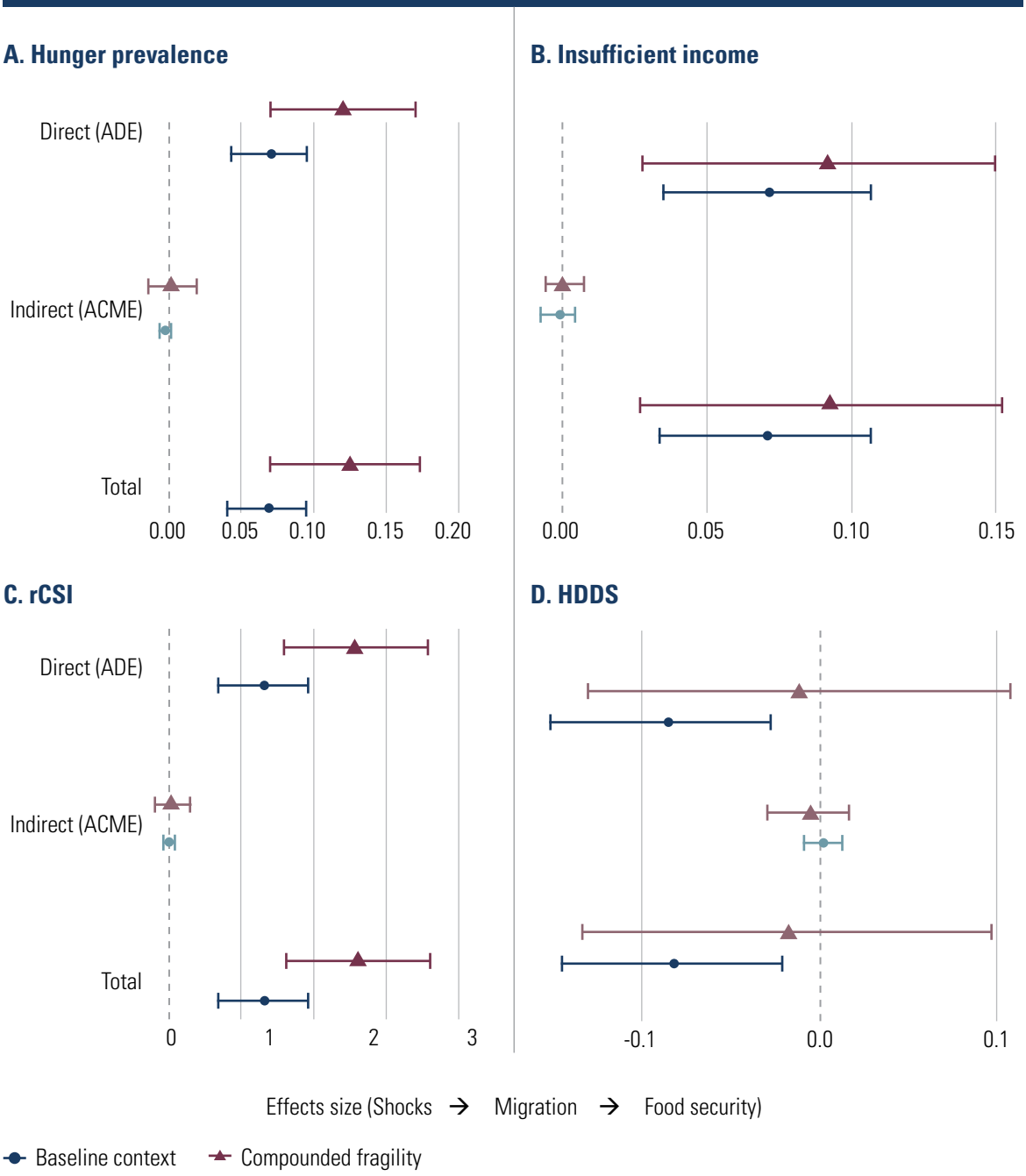
FIGURE 19. ESTIMATED EFFECTS OF SHOCKS ON MIGRATION INTENTIONS, BY FRAGILITY CONTEXT



Notes: Blue bars show the estimated association between each shock or food insecurity indicator and migration intentions in baseline contexts (i.e., those with low disaster risk exposure, low social fragility, or both). Red bars show the additional differential association in compounded fragility areas, estimated through interactions between each indicator and compounded fragility. The total association in compounded fragility contexts is the sum of the blue and red coefficients. Each panel uses a separate model for the food insecurity indicator shown in the panel title; in all models, that indicator and all shock types are interacted with compounded fragility. Models control for household characteristics, include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate coefficients that are not statistically significant at the 10% level.
Source: Authors' calculations.

Despite seeing amplified impacts of shocks on food insecurity and migration intentions, however, fragile areas are not characterized by a differential effect of migration either as coping or resilience strategy. Figure 20 shows the results of mediation analysis (on the question of whether the effect of shocks on food insecurity may be attenuated by migration) over different fragility areas, and identifies no differences between Compounded Fragility and other areas: migration continues not to be an effective coping strategy against shocks affecting food security. Even when looking at the food-security effects of shocks across families with migrants or receiving remittances, no heterogeneity is detected for Compounded Fragility areas (Figure 21): consolidated migration does not seem to be more effective as a resilience mechanism in highly fragile areas, despite more severe food security needs and migration pressures there. The only exception is for remittances, which may play a buffering role in Compounded Fragility areas on the probability that households have insufficient income to cover food needs.

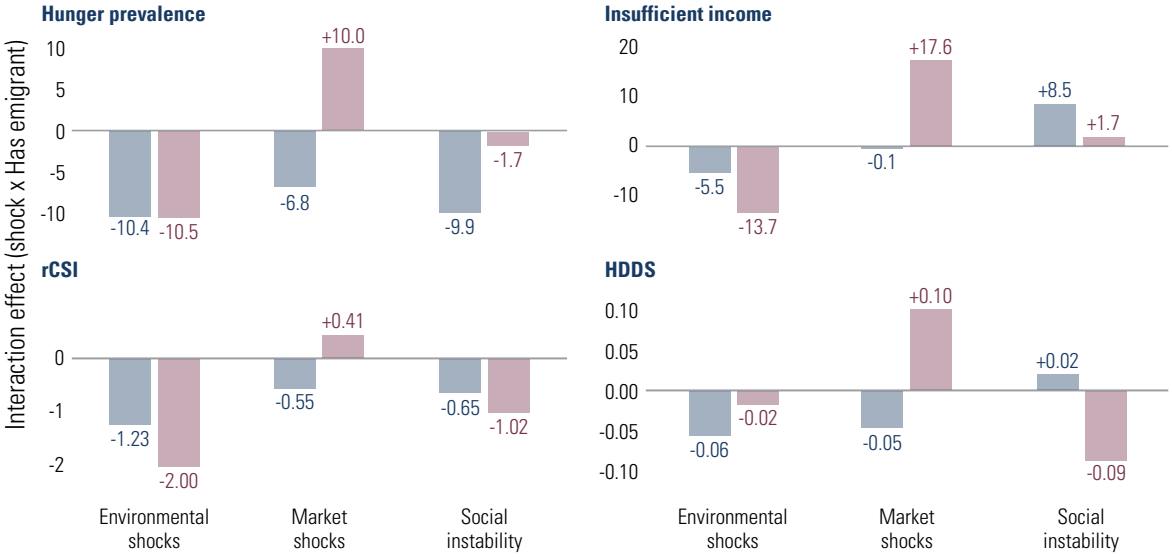
FIGURE 20. MEDIATION ANALYSIS: INDIRECT AND DIRECT EFFECTS OF SHOCKS THROUGH MIGRATION, BY FRAGILITY CONTEXT



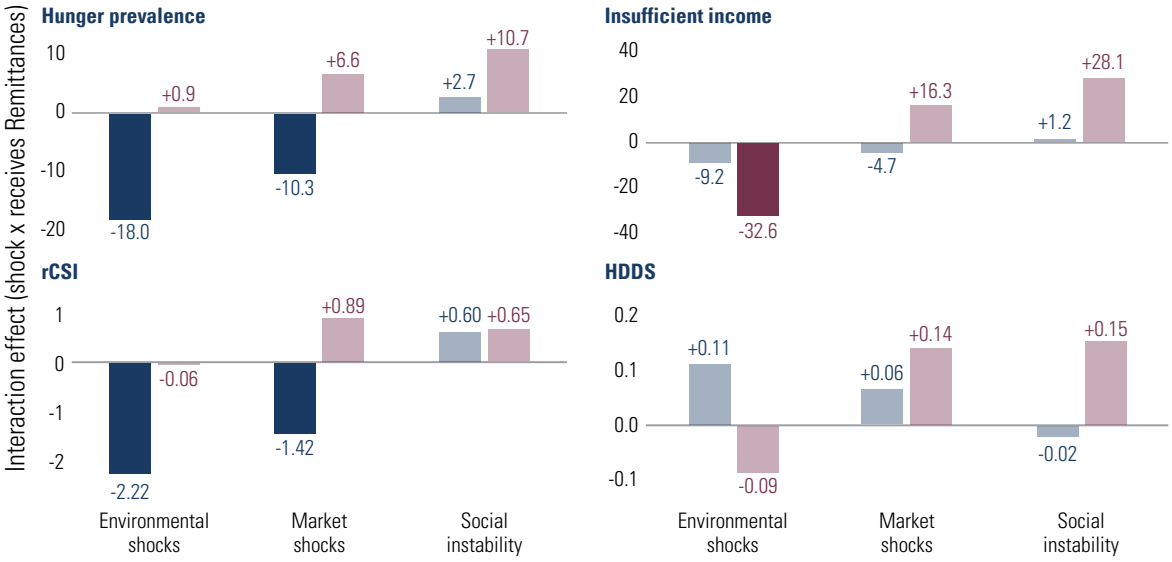
Notes: The figure presents the decomposition of the total effect of shocks on food security outcomes into indirect effects through migration (ACME) and direct effects (ADE), estimated separately by fragility context. Outcomes include hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (index points), and HDDS (food groups). The indirect effect captures the extent to which shocks affect outcomes through changes in migration behavior, while the direct effect reflects the remaining impact not mediated by migration. Blue markers show estimates for baseline contexts, defined as areas not classified under compounded fragility. Red markers show estimates for compounded fragility areas, defined as areas with both high disaster risk exposure and high social fragility. All estimates are derived from mediation models controlling for household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), including country fixed effects and clustering standard errors at the municipal level. Horizontal lines show 95% confidence intervals.
Source: Authors' calculations.

FIGURE 21. INTERACTION EFFECTS OF MIGRATION AND REMITTANCES ON SHOCK IMPACTS, BY FRAGILITY CONTEXT

A. Has emigrant



B. Receives remittances



Notes: Each bar shows the estimated interaction coefficient between shock exposure (environmental, income, and social instability) and migration status (having an emigrant member, Panel A) or remittance receipt (Panel B) on food security outcomes, including hunger prevalence (pp), insufficient income to cover food needs (pp), rCSI (index points), and HDDS (food groups). For hunger prevalence, insufficient income, and rCSI, negative coefficients are consistent with a buffering effect; for HDDS, positive coefficients are consistent with buffering. Blue (Panel A), or green (Panel B) bars show the estimated association between each shock and migration/remittances in baseline contexts. Red bars show the additional differential association in compounded fragility areas, estimated through interactions between each indicator and compounded fragility. Baseline context refers to all households not classified under compounded fragility (i.e., those with low disaster risk exposure, low social fragility, or both). All models control for household characteristics (age, gender, and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.
Source: Authors' calculations.

5.7. Q6. HETEROGENEITY ANALYSIS: HOW DO GENDER AND ETHNICITY SHAPE EXPOSURE, COPING, AND MIGRATION OUTCOMES?

Gender

Women-headed households are more food insecure, but respond better to shocks. While female-headed household report being on average slightly less exposed to shocks than male-headed ones (Figure 22), they display a higher risk of experiencing hunger (28.2% vs. 19.5%) and a greater likelihood of income being insufficient to buy food (44.8% vs. 37%), as well as a more intense use of coping strategies (average rCSI of 3.2 vs. 2.1, Figure 23). The interplay of shocks and food security outcomes (Figure 24) reflects the perception of women as being generally more accountable for what their families eat: environmental shocks trigger a much higher response (sixteen times higher) in terms of use of coping strategies among women-headed households than among men-headed households, which is reflected into no significant difference in the effect of the same shocks on hunger or dietary diversity. Similarly, living in a women-headed family is also associated with an attenuated impact of income shocks on household dietary diversity.

Women-headed households have more migrants, but do not face higher pressure to migrate in the face of shocks. Figure 25 on migration dynamics partly confirms anecdotal evidence on migration being more prevalent among men: female-headed households more frequently report having a migrant in their families (27.3% vs. 25.8%) and receiving remittances (22.1% vs. 16.5%), and display a higher prevalence of household members expressing migration intentions (28.0% vs. 25.8%). Based on focus group discussions, not all members of the family have the same possibilities to migrate, with intra-household migration decisions mediated by family responsibilities and gender social norms. In many cases, men tend to be considered as the most likely candidates for migration, whereas women tend to remain in the community due to their role in the care of the children, the administration of the household, and the daily management of household resources. At the same time, however, women-headed households do not see a disproportional increase in migration intentions as a response to food insecurity vis-à-vis their men-headed counterparts (Figure 26) – apart from the association between (lower) dietary diversity and migration intentions, which is higher for male-headed households. Interestingly, the effect of consolidated migration and remittances on food security does also not differ by gender of the household head (Figure 27).

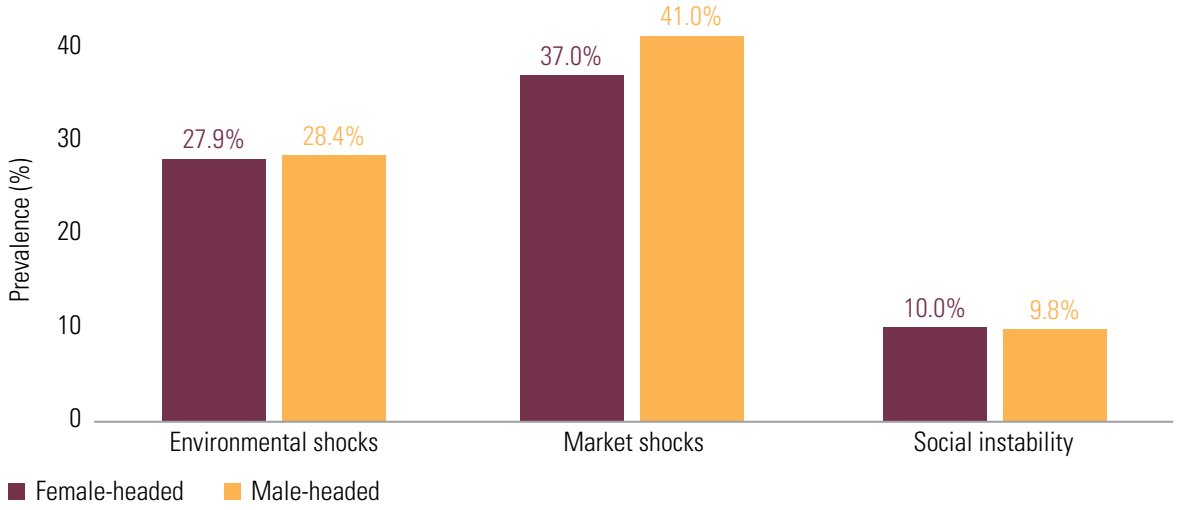
Overall, the evidence in this section seems to suggest that, despite higher baseline levels of food insecurity, women-headed households could be comparatively better equipped to deal with shocks and avoid them turning into a hunger crisis. Considering that the buffering effect against shocks of having migrants in the family and receiving remittances does not differ among women- and men-headed households, one could be tempted to attribute this apparent higher resilience to the more established migration linkages and remittances received by women-headed families. The fact that shocks trigger exorbitantly higher coping strategies among female-led households warrants however at least a word of caution about the intra-household dynamics that may lie behind that perceived resilience. Findings from

> *"I'd rather have my children think I've already eaten, so they eat more."*
> — Woman farmer, Guatemala

> *"In many households it is the women who seek the manner for the food to be enough for everyone, reorganizing the portions or adjusting what is prepared."*
> — KII, Organization community, Guatemala

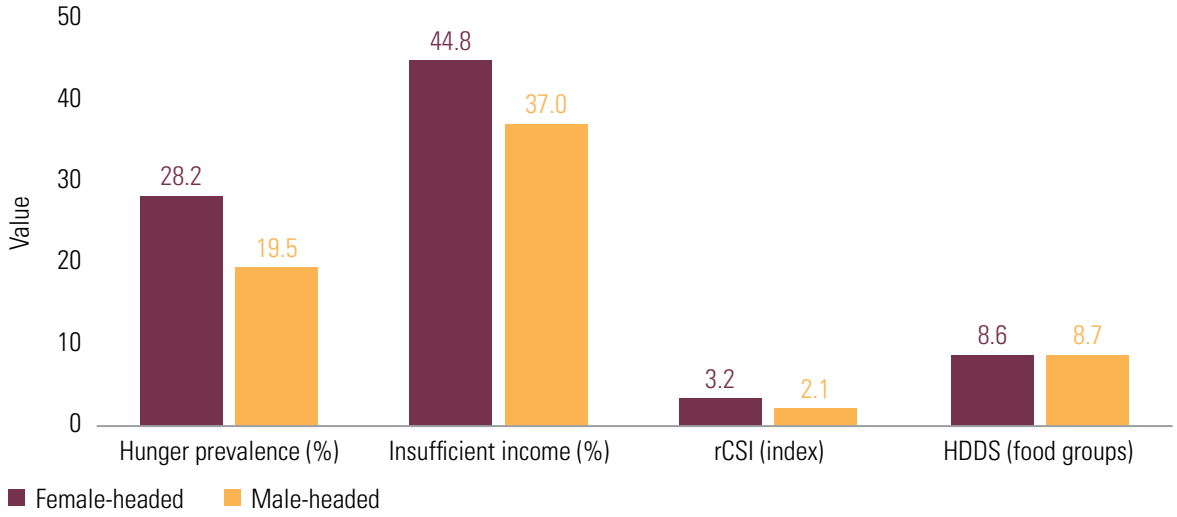
the qualitative work in fact demonstrate that women tend to more often skip food or reduce their own meal portions to ensure that the household (and especially children) is fed at times of crisis. The intra-household reallocation is invisible to aggregate measures but compounds over time into measurable maternal health and child-development consequences.

FIGURE 22. SHOCK EXPOSURE, BY GENDER OF THE HOUSEHOLD HEAD



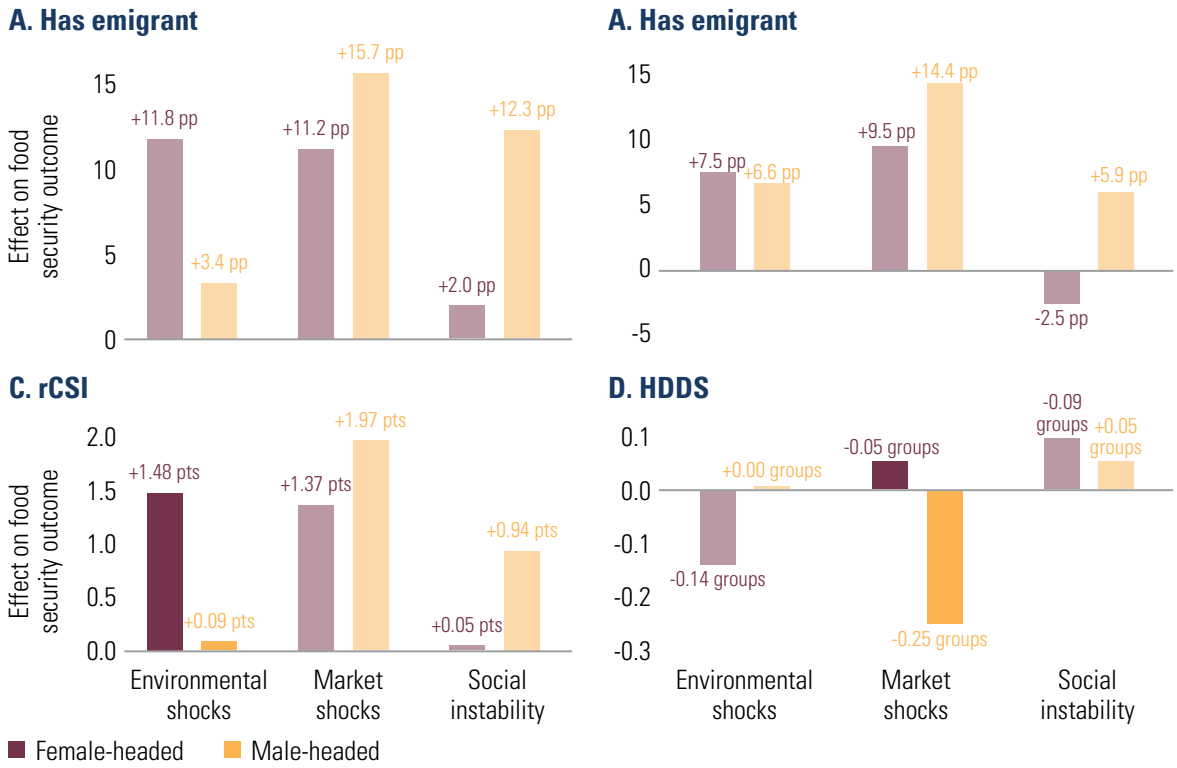
Notes: The figure shows the prevalence of households reporting exposure to environmental, income, and social instability shocks, by gender of the household head. Values represent the percentage of households reporting each type of shock.
Source: Authors' calculations.

FIGURE 23. FOOD AND NUTRITION INSECURITY, BY GENDER OF THE HOUSEHOLD HEAD



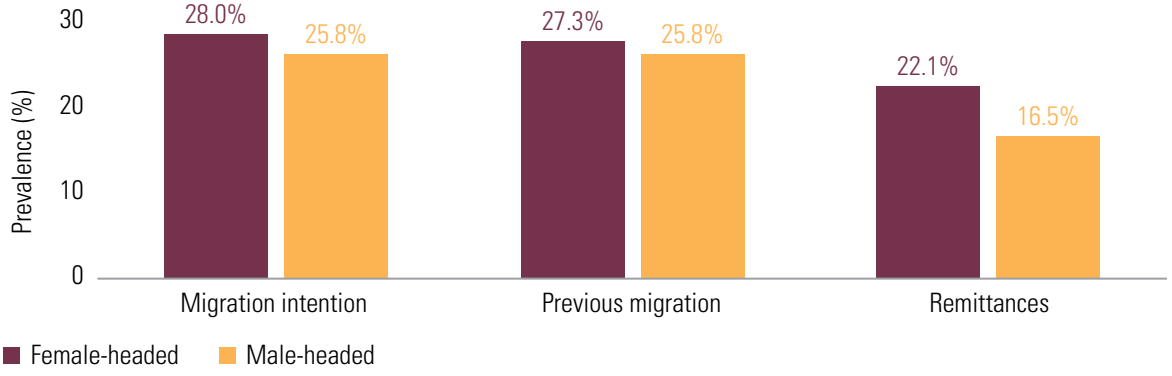
Notes: The figure compares food security outcomes between female-headed and male-headed households. Hunger prevalence and insufficient income refer to the percentage of households that reported experiencing hunger and having insufficient income to cover food needs in the last month. rCSI measures the frequency and severity of coping strategies adopted due to food shortages, and HDDS reflects the number of food groups consumed. Values represent group averages.
Source: Authors' calculations.

FIGURE 24. HETEROGENEOUS EFFECTS OF SHOCKS ON FOOD SECURITY, BY GENDER OF THE HOUSEHOLD HEAD



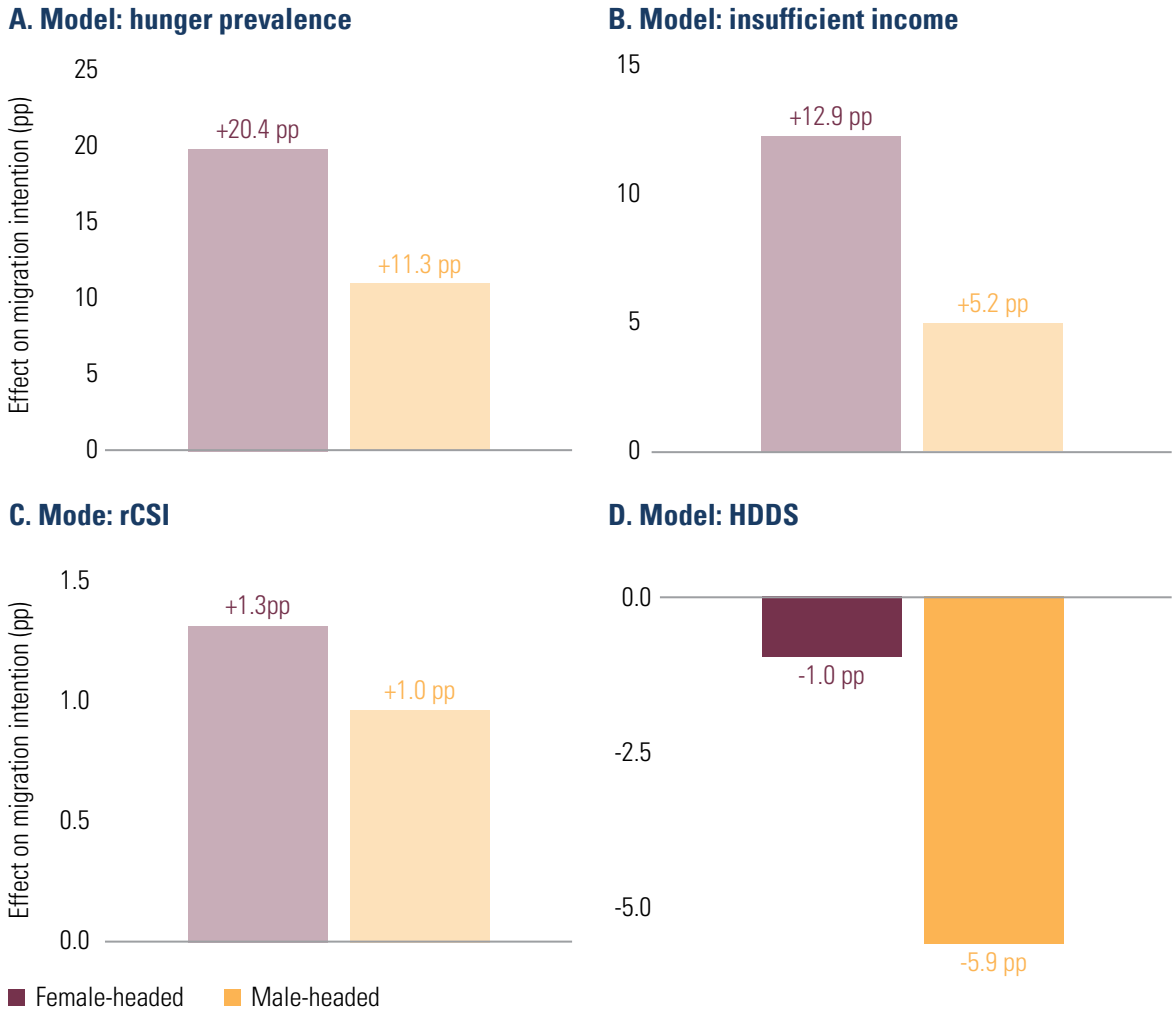
Notes: Each bar shows the estimated association between shock exposure (environmental, income, and social instability) and household head gender on food security outcomes (hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS), Female-headed households are the reference category: blue bars show the estimated association for female-headed households, while red bars show the corresponding estimate for male-headed households. All models control for municipal-level fragility and household characteristics (age, education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.

FIGURE 25. MIGRATION AND REMITTANCES, BY GENDER OF THE HOUSEHOLD HEAD



Notes: The figure compares migration-related indicators between female-headed and male-headed households. Migration intention refers to the share of households reporting plans to migrate (internally or internationally). Previous migration indicates whether at least one household member has migrated. Remittances refer to the share of households receiving transfers from migrants. Values represent group prevalence rates.
Source: Authors' calculations.

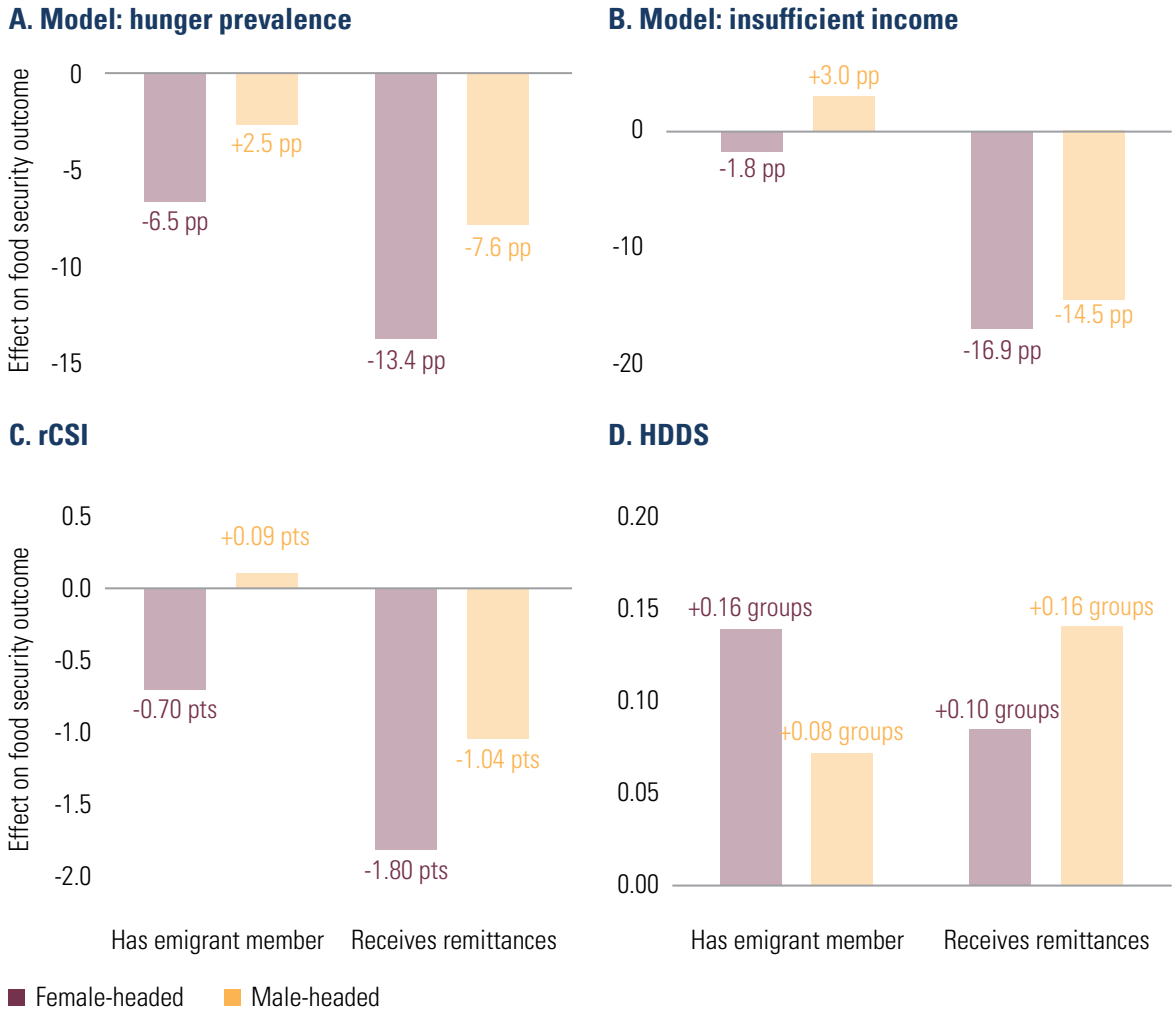
FIGURE 26. HETEROGENEOUS EFFECTS OF FOOD INSECURITY ON MIGRATION INTENTIONS, BY GENDER OF THE HOUSEHOLD HEAD



Notes: Each bar shows the estimated association between food insecurity indicators and migration intentions, by household head gender. Food insecurity indicators include hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS. Each panel is estimated from a separate model corresponding to the food insecurity indicator shown in the panel title. Female-headed households are used as the reference category. Female-headed households are the reference category: blue bars show the estimated association for female-headed households, while red bars show the corresponding estimate for male-headed households. All models control for municipal-level fragility, shock exposure, and household characteristics, include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate estimates that are not statistically significant at the 10% level.
Source: Authors' calculations.

Photo Credit: Vic Hinterlang / Shutterstock

FIGURE 27. HETEROGENEOUS EFFECTS OF MIGRATION AND REMITTANCES ON FOOD SECURITY, BY GENDER OF THE HOUSEHOLD HEAD



Notes: Each bar shows the estimated interaction effect between previous migration in the household and receipt of remittances, and household head gender on food security outcomes (hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS). Female-headed households are the reference category: blue bars show the estimated association for female-headed households, while red bars show the corresponding estimate for male-headed households. All models control for municipal-level fragility and household characteristics (age and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.

Photo Credit: Alira Vale / Shutterstock

Ethnicity

Households self-identifying as Indigenous Peoples or Afro-Descendants (IP/AD) display comparatively lower levels of food insecurity, but suffer disproportionately from shocks. In Figure 28, IP/AD households exhibit a higher exposure to income shocks (43.9% vs. 35.9%), whereas environmental and social instability shocks are slightly more pronounced among non-IP/AD households. Consistent with the higher exposure to income shocks, IP/AD households report a higher prevalence of insufficient income to cover food expenses; nevertheless, they report a slightly lower prevalence of hunger and use of coping strategies, and nearly identical dietary diversity compared to non-IP/AD households (Figure 29). The analysis of how shocks affect food security outcomes (Figure 30) reveals that market shocks have an effect on having insufficient income to buy food that is more than three times larger among IP/AD households. Moreover, IP/AD households overall appear substantially more vulnerable to social instability shocks, which are six times more likely to turn into hunger and result in a triple use of coping strategies than among non-IP/AD households. IP/AD households also exhibit a thirty-four higher reduction in dietary diversity in response to environmental shocks. This over-exposure is consistent with a dual-dependence structure documented qualitatively, in which auto-consumption covers basic grains but access to protein requires travel and external purchase, leaving the household simultaneously exposed to productive shocks and to price and input shocks – especially for households living in more remote communities. Environmental shocks are also reported to constrain safe water availability for food preparation, further impacting nutritional outcomes among IP/AD households.

IP/AD households report lower migration intentions and remittance receipt. In Figure 31, 26.6% of IP/AD households report migration intentions, versus 29.1% in other households. Despite prior migration experience being virtually identical between IP/AD and non-IP/AD households, the former report a significantly lower likelihood of receiving remittances than the latter (11.7% vs. 18.1%). Yet these differences in remittance access do not translate into differentiated effects in the food insecurity–migration pathway. Figures 32 and 33 show no systematic heterogeneity between IP/AD and non-IP/AD households in the extent to which food insecurity translates into migration intentions, nor in the buffering role of migration or remittances against food insecurity.

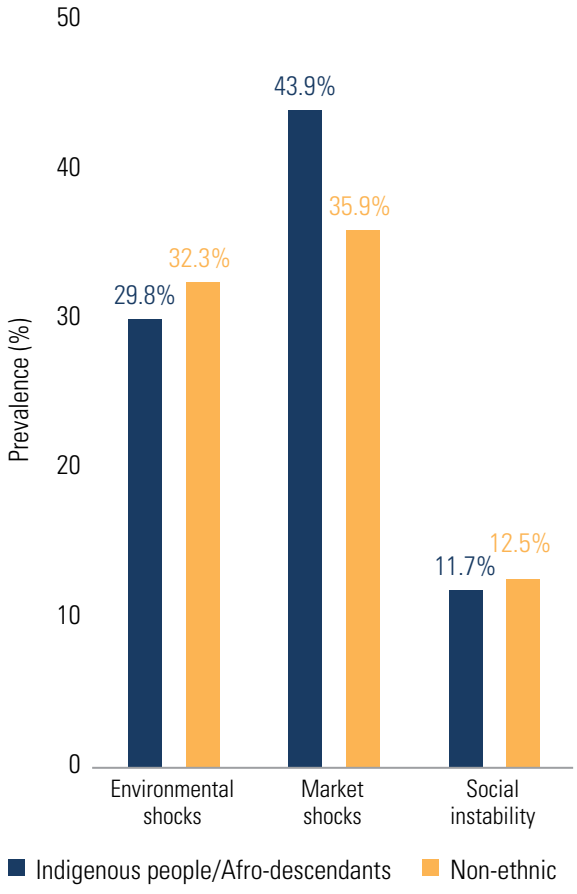
This section suggests that IP/AD households are overall more vulnerable to shocks than their counterparts. Ex ante, IP/AD households are more exposed to income shocks, which directly translate into income falls making it harder to feed themselves. Environmental shocks have a higher toll on IP/AD dietary quality, mostly driven by food access constraints. IP/AD households are also significantly more vulnerable to social instability shocks, whose correlation with hunger and coping strategies seems entirely driven by this group – this is perhaps not surprising, if one keeps into account the situation of socio-economic marginalization experienced by several IP/ADs communities in

> *"In many communities the food is in the market; the problem is not that it does not exist, the problem is that the families do not have sufficient income to buy it regularly."*
> — KII, indigenous organization, Guatemala

the region. Focus group discussions also highlight how situations of instability and hunger can often also result in increased intra-household tensions, as well as gender-based violence. While a priori less keen on migrating, however, IP/AD households react to shocks in the same way as the full sample: planning to migrate as a coping strategy. This finding may be partly explained by the observation that remittances (although less frequently received) have a similar buffering effect on food insecurity than for the full sample – so that IP/ADs, who are already more income constrained, might attempt to pursue that type of economic relief for their families.

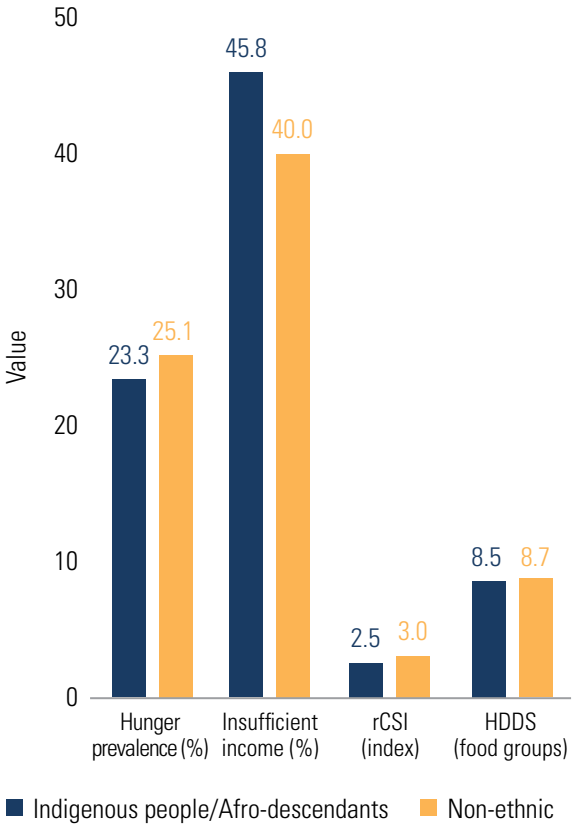
> *"Because the man, when help gets to the couple, goes to sell the product, and instead of bringing the money home, he takes it... and there is where there is violence because when he goes home he asks for more, he shouts, and the woman does not have anything to give and this makes him hit her."*
> — FGD, indigenous women, Honduras

FIGURE 28. SHOCK EXPOSURE, BY SELF-REPORTED ETHNICITY



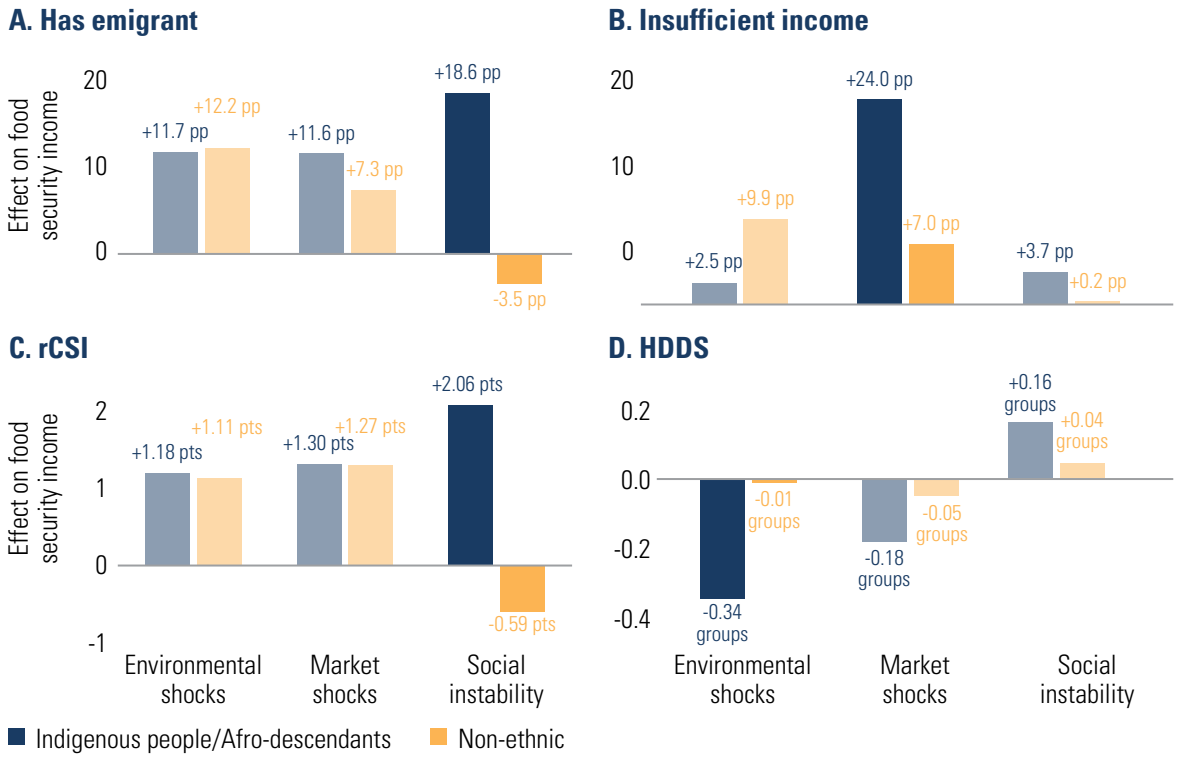
Notes: The figure compares the prevalence of different types of shocks (environmental, income, and social instability) between households identifying as Indigenous or Afro-descendant and non-ethnic households. Values represent the share of households reporting having experienced each type of shock in the reference period.

FIGURE 29. FOOD AND NUTRITION INSECURITY, BY SELF-REPORTED ETHNICITY



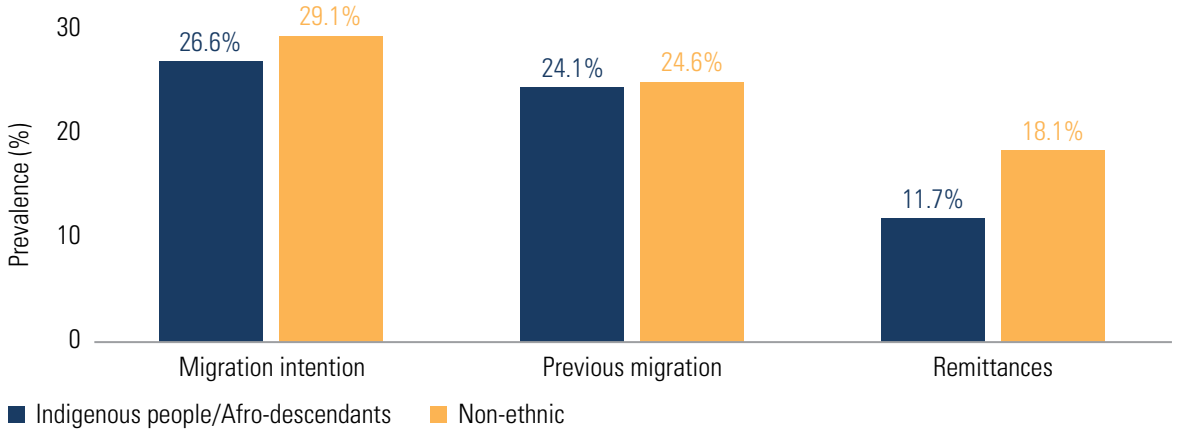
Notes: The figure compares food security outcomes between Indigenous/Afro-descendant households and non-ethnic households. Hunger prevalence and insufficient income refer to the percentage of households that reported experiencing hunger and having insufficient income to cover food needs in the last month. rCSI measures the frequency and severity of coping strategies adopted due to food shortages, and HDDS reflects the number of food groups consumed. Values represent group averages.

FIGURE 30. HETEROGENEOUS EFFECTS OF SHOCKS ON FOOD SECURITY, BY SELF-REPORTED ETHNICITY



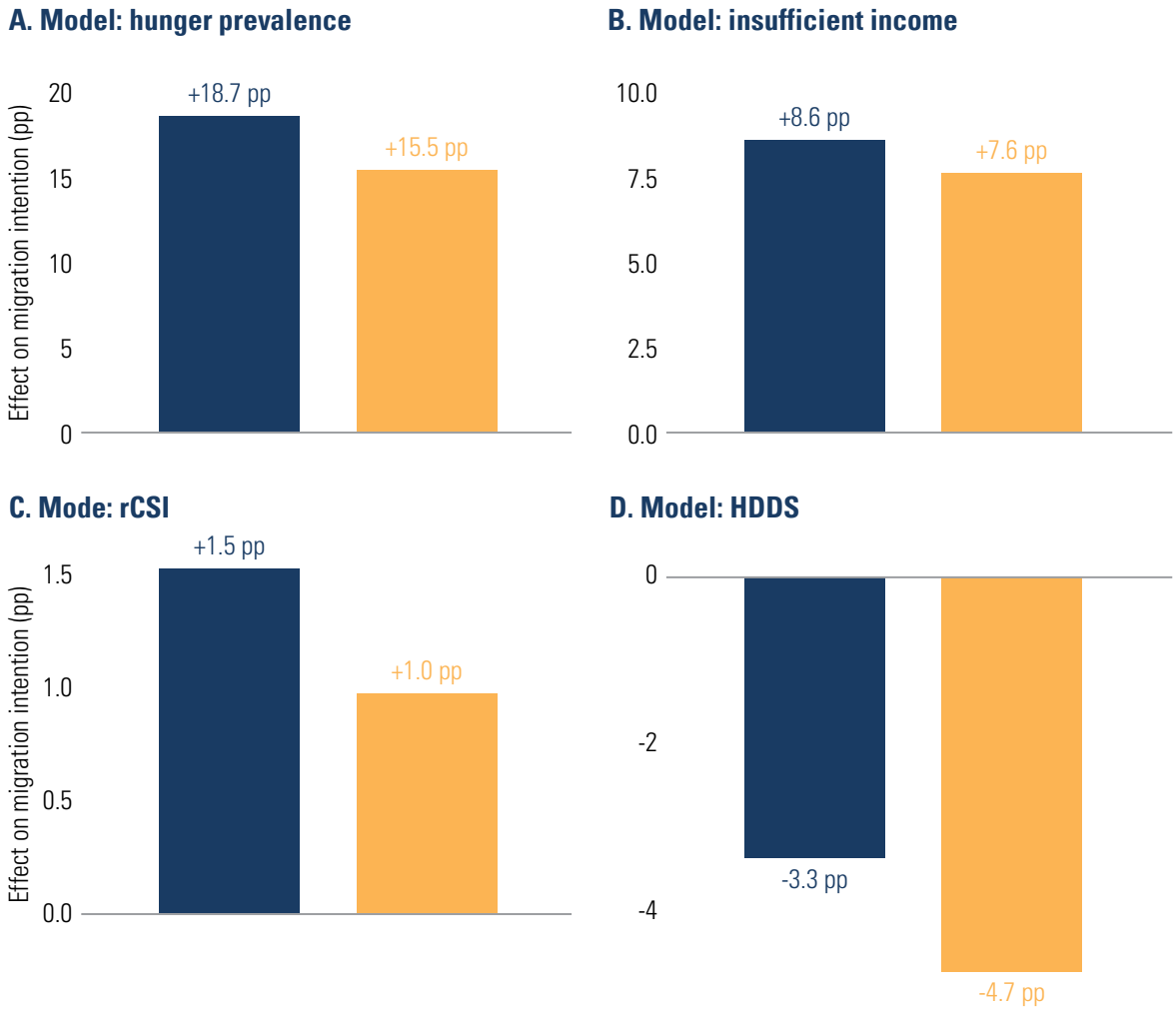
Notes: Each bar shows the estimated association between shock exposure (environmental, income, and social instability) and ethnic group status on food security outcomes (hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS), Indigenous people, or Afro-descendant households are the reference category. Green bars show the estimated association for the reference group, while gray bars show the corresponding association for the comparison group. All models control for municipal-level fragility and household characteristics (age, gender, education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.

FIGURE 31. MIGRATION AND REMITTANCES, BY SELF-REPORTED ETHNICITY



Notes: The figure compares migration-related indicators between Indigenous/Afro-descendant households and non-ethnic households. Migration intention refers to the share of households reporting plans to migrate (internally or internationally). Previous migration indicates whether at least one household member has migrated. Remittances refer to the share of households receiving transfers from migrants. Values represent group prevalence rates.

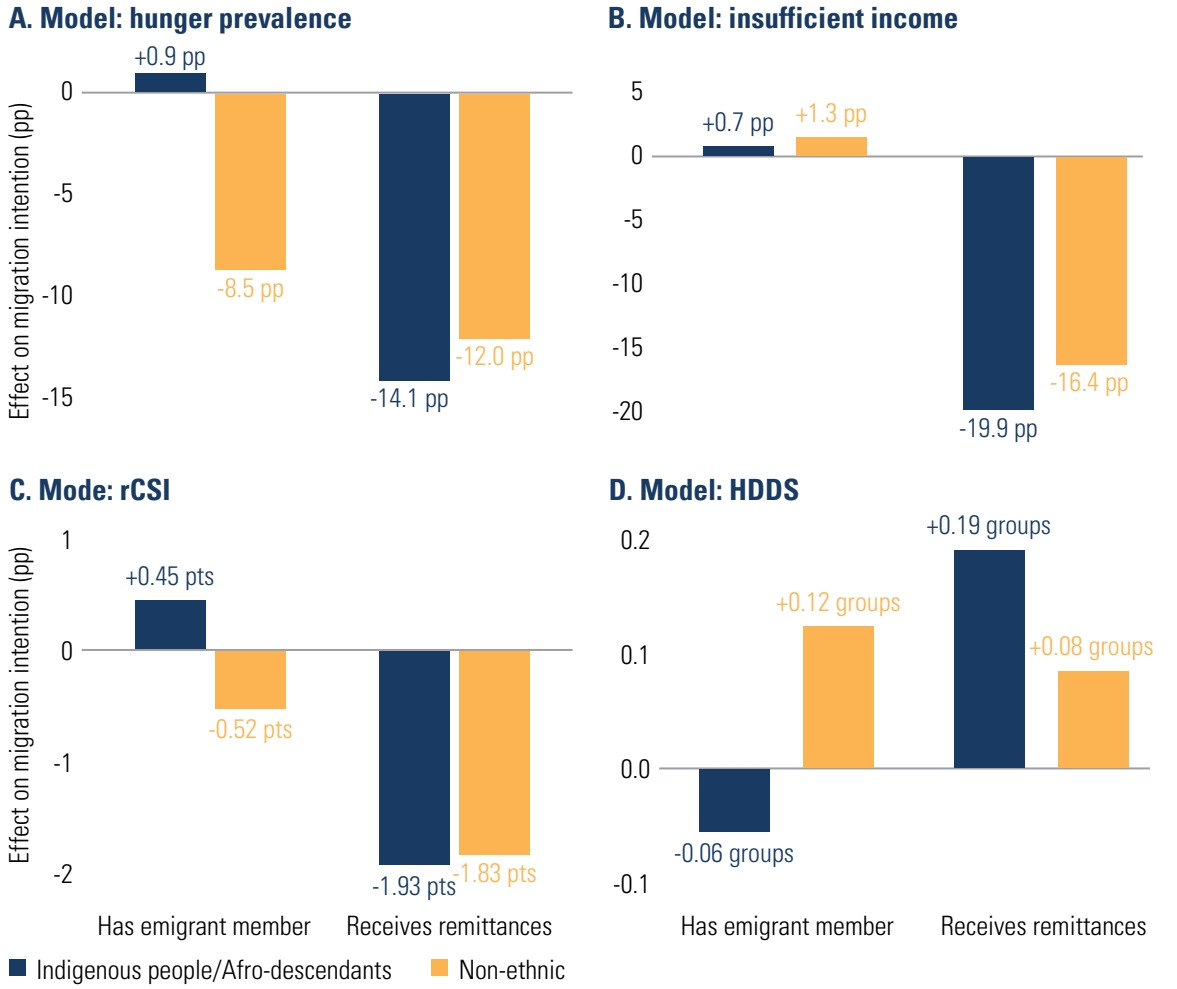
FIGURE 32. HETEROGENEOUS EFFECTS OF FOOD INSECURITY ON MIGRATION INTENTIONS, BY SELF-REPORTED ETHNICITY



Notes: Each bar shows the estimated association between food insecurity indicators and migration intentions, by ethnic group status. Food insecurity indicators include hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS. Each panel is estimated from a separate model corresponding to the food insecurity indicator shown in the panel title. Indigenous people, or Afro-descendant households are the reference category. Green bars show the estimated association for the reference group, while gray bars show the corresponding association for the comparison group. All models control for municipal-level fragility, shock exposure, and household characteristics, include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate estimates that are not statistically significant at the 10% level.
Source: Authors' calculations.

Photo Credit: SALMONNEGRO-STOCK / Shutterstock

FIGURE 33. HETEROGENEOUS EFFECTS OF MIGRATION AND REMITTANCES ON FOOD SECURITY, BY SELF-REPORTED ETHNICITY



Notes: Each bar shows the estimated interaction effect between previous migration in the household and receipt of remittances, and ethnic group status on food security outcomes (hunger prevalence, insufficient income to cover food needs, rCSI, and HDDS). Indigenous people, or Afro-descendant households are the reference category. Green bars show the estimated association for the reference group, while gray bars show the corresponding association for the comparison group. All models control for municipal-level fragility and household characteristics (age, gender and education of the household head; household size; number of children; land or housing ownership), include country fixed effects, and cluster standard errors at the municipal level. Faded bars indicate interaction effects that are not statistically significant at the 10% level.

Photo Credit: Sami TÜRK / Pexels

5.8. WHAT THE EVIDENCE SHOWS: SUMMARY OF MAIN MESSAGES

The analysis in this chapter shows that, in fragile, shock-prone settings, the pressures of hunger and migration reinforce each other through identifiable channels. Based on the four guiding hypotheses resulting from the conceptual framework formulated in Chapter 3, a number of key operationalizable takeaways emerge from the findings of this chapter:

A. ***Hypothesis 1:*** Repeated and compounding shocks, especially shocks directly related to loss of household income, erode households' food security and can overwhelm their coping capacity.

B. ***Hypothesis 2:*** Hunger is a strong contributor to migration pressure when households see no viable pathway to recovery locally, but some of the most food-insecure households may be unable to migrate due to insecurity or poor connectivity. Having migrant household members and receiving remittances can buffer the negative effects of shocks on food security, but migrating is not an effective coping strategy in the aftermath of a shock.

C. ***Hypothesis 3:*** Where climate risk intersects with social instability, shocks result in more acute food security losses and migration pressure. However, migration continues not to be an effective strategy to alleviate food insecurity after a shock, and the buffer effect of previous migration and remittances is the same as in lower fragility areas.

D. ***Cross-cutting:*** Women-led households are more food insecure but are able to defuse the impact of shocks, thanks to more established previous migration channels but also to potentially distorted intra-household dynamics. Indigenous Peoples and Afro-Descendants are more income constrained, and are exceedingly vulnerable in the wake of social instability and environmental shocks.

6 | THE INSTITUTIONAL SIDE

Photo Credits: helgabalaurus / Shutterstock
Garun .Prdt / Shutterstock

The evidence presented in Chapter 5 indicates that food insecurity, migration pressures, shocks, and fragility are interconnected challenges that reinforce one another. In light of these interlinked challenges, this chapter takes stock of the main institutional players active in the fields of food security and disaster risk management in Northern Central America, both at the regional and at the country level, addressing their distinct and complementary roles in policy development and program implementation. This chapter provides a general overview of these actors, as well as of key initiatives across their respective sectors. Further, consistent with the focus of this report on rural and agricultural livelihoods, the chapter provides a snapshot of the structure of public support to agriculture, assessing the expected efficiency of public spending in the sector against long-term resilience goals.

6.1. MAPPING OF KEY INSTITUTIONAL PLAYERS

6.1.1. REGIONAL LEVEL

- **Central American Integration System (SICA).** SICA is the main regional institutional framework for political, economic, social, and environmental integration in Central America. It provides a platform for coordination among member countries on shared regional challenges, including disaster risk management, food security, agricultural resilience, and climate adaptation. Through its specialized bodies, SICA supports policy coordination, regional strategies, and the alignment of national actions in areas related to agriculture, rural development, and food systems. SICA also serves as a key counterpart for regional initiatives on anticipatory action, resilience building, and risk management, enabling cross country collaboration without creating new institutional structures.

- **Central American Agricultural Council (CAC) and its Executive Secretariat (SECAC).** CAC is the SICA body comprised of the Ministers of Agriculture from Central America. It is recognized as the institutional mechanism for linking the agricultural sector with other Central American integration bodies. It promotes regional policies to ensure food and nutrition security, particularly by enhancing agricultural resilience to climate change, implementing sustainable agriculture, and facilitating trade. In particular, the CAC focuses on mitigating the high vulnerability of Central American food production to climate shocks in the region, including through interventions targeting the Dry Corridor.

- **Secretariat for Central American Social Integration (SISCA).** SISCA is the SICA entity responsible for regional coordination on social development, social protection, and inclusion. It supports the alignment of national policies and strategies related to poverty reduction, vulnerability, and human development, and provides a platform for regional dialogue on adaptive and shock-responsive social protection. As such, SISCA is a relevant regional counterpart for initiatives that seek to link early warning, food security, and social protection responses at scale.

- **Coordination Center for Disaster Prevention in Central America and the Dominican Republic (CEPREDENAC).** It is SICA's specialized regional institution for disaster prevention, mitigation and response, and convenes national civil protection and risk management entities. This regional information platform monitors major natural hazards within countries and the region and provides key analysis that strengthens preparedness and response, facilitating more timely and coordinated decision-making among SICA countries.

- **Secretariat for Central American Economic Integration (SIECA).** SIECA leads the regional

agenda on economic integration, trade facilitation, and productive development in Central America. It plays a central role in promoting regional value chains, reducing trade and logistics barriers, and strengthening market integration across countries. SIECA's mandate makes it a key institution for regional initiatives aimed at improving agri-food value chain integration, cross-border trade, and private sector participation in food systems.

- **Council of Ministers of Finance of Central America, Panama and the Dominican Republic (COSEFIN).** It is responsible for coordinating fiscal policy, harmonizing tax systems, and managing regional financial stability. As part of the economic pillar of integration, it serves as the forum where finance ministers align their policies to advance the regional customs union and economic integration. Through COSEFIN, Central American countries have accessed parametric insurance products from CCRIF (Caribbean Catastrophe Risk Insurance Facility) for events like tropical cyclones, earthquakes, and excess rainfall.

- **Policy for Food and Nutritional Security of Central America and the Dominican Republic 2012–2032 (POLSAN).** The POLSAN is a long-term regional framework developed by CAC, in collaboration with the Council of Social Integration (CIS) and the Secretary General of SICA, to address hunger and malnutrition through coordinated regional action. Its overarching goal is to ensure that populations across member states have permanent and adequate access to, availability of, and ability to consume and biologically utilize food in sufficient quantity and quality to lead active and healthy lives. The policy is structured around five pillars — availability, access, consumption, biological utilization, and stability — with stability specifically addressing risks from climate change, drought, floods, and economic shocks. Cross-cutting principles include a human rights approach to food, gender equality, and environmental sustainability. Governance is organized across regional and national levels, with ministers of health, agriculture, and social integration playing a central coordinating role, and a results-based monitoring system mandated to track progress. The policy acknowledges that food insecurity in the region is compounded by global factors such as climate volatility and price fluctuations, making regional cooperation essential.

- **Central America Anticipatory Action Framework for Drought.** Guatemala, Honduras, and El Salvador are covered by a jointly developed Anticipatory Action Framework for drought in the Dry Corridor. This framework defines forecast-based triggers, pre-agreed action packages, and pre-arranged financing mechanisms to act before drought impacts fully materialize. It represents one of the most advanced regional efforts globally to institutionalize anticipatory action across multiple countries (cf. OCHA, 2025b).

- **FAO–SICA Hand in Hand Initiative in the Dry Corridor.** With support from FAO, SICA has advanced the Hand in Hand Initiative in the Dry Corridor, focusing on resilience, climate adaptation, agricultural transformation, and rural livelihoods.[10] The initiative aims to mobilize investment and coordinate policies across countries to address structural drivers of food insecurity, including low productivity, climate vulnerability, and limited economic opportunities in rural areas (cf. FAO & SICA, 2024).

[10] FAO–SICA Cooperation Agreement (2023) https://belize.un.org/en/238586-fao-and-sica-sign-unprecedented-agreement-promote-dry-corridor-central-america

6.1.2. NATIONAL LEVEL

El Salvador

- **Ministry of Agriculture and Livestock (MAG).** It has the mandate for agricultural production, extension services, input systems, and regulation of domestic food supply. It supports food security through a comprehensive strategy focused on increasing local production, supporting smallholder farmers, and promoting climate-smart agriculture. Its National Center for Agricultural and Forestry Technology (CENTA) has a key role in agricultural research, technology development, and extension.

- **Universal Social Protection System (SPSU).** It is a government-led initiative aimed at poverty reduction and social welfare. It is primarily coordinated through the Technical Secretariat of the Presidency (STPP) and implemented by various ministries, and aims to ensure access to health and nutrition, education, income security, and vocational training focusing on reduced inequality, with tools such as the Single Registry of Participants (RUP).

- **General Directorate of Civil Protection (DGPC).** It is the governing body of the National System responsible for preventing, mitigating, and responding to natural or man-made disasters. It coordinates public and private institutions for risk management and issuing alerts. It operates under a National System that integrates risk management in its three phases: prevention, mitigation, and response, through the coordination of public and private institutions.

BOX 6.1. MIGRATION REGULATORY AND INSTITUTIONAL FRAMEWORK – EL SALVADOR

In El Salvador, the main migration framework is the Special Law on Migration and Aliens (Decree 286-2019) and its Regulation (published and officially available), which organize categories, migration control procedures, and institutional mandates. Regarding international protection, El Salvador has a specific framework for refugee status determination (the 2002 law and its 2005 regulation), which complements the general migration regime and sets the procedure for applications and recognition.

For emigration/diaspora, El Salvador has an explicit normative framework: the Special Law for the Protection and Development of Salvadoran Migrants and their Families (Decree 655, 2011), which creates and organizes a coordination scheme for protection and development policies linked to Salvadoran migrants and their families (including CONMIGRANTES). The key operational authority is the General Directorate of Migration and Aliens (DGME), responsible for day-to-day management of entry/exit, status, and migration control within the framework defined by the Law and its Regulation. The Ministry of Foreign Affairs operates dedicated diaspora and human mobility structures, including the Vice-Ministry for Salvadorans Abroad and the Diaspora and Human Mobility structure, reinforcing the country's "emigration" orientation (consular protection, programs, labor mobility).

Guatemala

- **National Food and Nutrition Security System (SINASAN).** It is the set of institutions, policies, and actions aiming to ensure food and nutrition for the population, focusing on combating hunger and malnutrition in vulnerable sectors. This system integrates multiple administrative data streams, and is explicitly designed to detect emerging risks to food availability, access, and nutritional outcomes, particularly in drought-prone and food-insecure areas such as the Dry Corridor. By centralizing multisectoral information, the system provides a continuous diagnostic of evolving food security risks rather than a purely post-crisis assessment.

- **National Council for Food and Nutrition Security (CONASAN).** It is the highest authority on food and nutritional security, chaired by the Vice President of the Republic. It is responsible for policy orientation, priority setting, and oversight of national food and nutrition security strategies under the SINASAN, including approval of action plans and protocols for acute malnutrition and seasonal hunger.

- **Secretariat for Food and Nutrition Security (SESAN).** It is an entity of the Presidency of the Republic, responsible for the technical coordination of the SINASAN, and leads the country's integrated Food and Nutrition Security Early Warning System. It plays a critical role in consolidating information from the health sector (nutritional surveillance), agriculture (crop and production monitoring), and food security analysis to identify emerging risks, particularly in the Dry Corridor.

- **Ministry of Agriculture, Livestock and Food (MAGA).** As one of the institutions responsible for implementing food policy under the SINASAN, it is responsible for agricultural monitoring, crop loss assessments, and production data that feed directly into Guatemala's food security early warning system. Its role is particularly important in drought prone areas where production shocks are the main transmission channel from climate stress to food insecurity and income loss. It provides technical assistance and training in rural areas through its Rural Extension Directorate (DICORER).

- **Ministry of Social Development (MIDES).** It is the government entity responsible for reducing poverty and inequality through social policies and programs. Its main actions and programs include conditional cash transfers to families in poverty, community kitchens, assistance with the purchase of basic food items, and youth-targeted activities. It utilizes the Household Social Registry to identify beneficiaries and tracks progress using the Multidimensional Poverty Index.

- **National Coordinator for Disaster Reduction (CONRED).** It is the national disaster risk reduction coordination system, responsible for preventing, mitigating, attending to and responding to disasters of natural or man-made origin. It uses the technical information provided by the National Institute of Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH) on droughts and other natural disasters to make strategic decisions, issue alerts, and coordinate humanitarian aid.

BOX 6.2. MIGRATION REGULATORY AND INSTITUTIONAL FRAMEWORK – GUATEMALA

Guatemala's migration framework is anchored in the Migration Code (Decree 44-2016), which regulates entry, stay, and exit, and defines the Guatemalan migration system and its coordination bodies. Regarding international protection, the Code itself includes provisions on categories and the treatment of populations with protection needs, within the migration system and its procedures. Institutionally, the Code establishes the Guatemalan Migration Institute (IGM) as the core operational authority, and foresees bodies such as the National Migration Authority and the National Migration System for inter-institutional coordination and policy formulation/implementation.

In terms of emigration/diaspora and return, Guatemala does have a specific instrument and institution: the National Council for the Assistance of Guatemalan Migrants (CONAMIGUA), created by the CONAMIGUA Law (Decree 46-2007), aimed at serving Guatemalan migrants (including returnees). Guatemala also adopted a Migration Policy (2023) that is strategic in nature and seeks to cover the migration cycle comprehensively (i.e., not only "migration control").

Honduras

- **Ministry of Agriculture and Livestock (SAG).** It is responsible for agricultural production, extension, input support, and risk management. Its Directorate of Agricultural Science and Technology (DICTA) is the main institution in charge of generation and transfer of agricultural technology. SAG also contributes to food security early warning and disaster preparedness, working alongside the national risk management system and food security monitoring platforms. In particular, its Technical Unit of Food and Nutrition Security (UTSAN) is responsible for planning, coordinating, and monitoring national policies to reduce hunger and malnutrition, including by leading the Integrated Food Security Phase Classification (IPC).

- **Secretariat of Social Development (SEDESOL).** It is the entity for social protection policy, responsible for designing, coordinating, and implementing public policies aimed at reducing poverty, inequality, and vulnerability. It acts as the lead institution for the social protection system, aiming to create an inclusive, supportive, and violence-free society. It currently implements shock responsive and anticipatory cash transfer programs. It operates Honduras's Social Information and Beneficiary Registry (SIRBHO), which underpins the targeting of social assistance programs, enabling rapid identification and enrollment of households affected by shocks.

- **National Risk Management System (SINAGER).** It is the legal and organizational framework that brings together state and local institutions for disaster prevention, mitigation, and response. It operates at three levels (local, departmental, and national) with an emphasis on municipal risk management. It is coordinated by the Permanent Contingency Commission (COPECO), which is the key operational actor in charge of coordination, alerts and response.

BOX 6.3. MIGRATION REGULATORY AND INSTITUTIONAL FRAMEWORK – HONDURAS

In Honduras, the regime is governed primarily by the Migration and Aliens Law (Decree 208-2003), which establishes migration categories, procedures, and the powers of the migration authority; the text also includes a specific section on refugees and their treatment within the legal migration framework. Institutionally, migration management is organized around the National Migration Institute (INM) as the operational authority, and the migration system is understood as the set of state institutions involved in migration governance (control, regulation, assistance, and coordination).

Honduras has an explicit legal framework for emigration/diaspora and return through the Law on the Protection of Honduran Migrants and their Families (Decree 106-2013). This law incorporates a "protection and return" logic and includes specific arrangements such as the Office for Assistance to Returned Migrants (OFAMIR), alongside the institutional architecture described under the General Directorate for the Protection of Honduran Migrants (including units/centers for assistance to returnees). Honduras has also advanced a specific framework for internal displacement, which is relevant to the mobility–protection continuum.

TABLE 5. SELECTED EXAMPLES OF NATIONAL SHOCK-RESPONSE PROGRAMS, NCA COUNTRIES

Country	Policy Framework	Programs
El Salvador	**National Civil Protection, Prevention and Disaster Mitigation Plan** (2018): central DRM strategy document, with scope for strengthening preparedness, risk reduction, risk transfer elements.	**Index-based agricultural insurance pilots:** index-based agricultural insurance mechanisms implemented by MAG in specific areas to protect small producers—particularly staple crop farmers—against climate related shocks such as drought and excess rainfall provide rapid, pre-agreed compensation to support replanting and early recovery following shocks. **Shock-Responsive Social Protection Program:** implemented by the Ministry of Finance through its Directorate General for Subsidies and the Directorate of Economic and Fiscal Policy, it aims to increase household resilience to climate-related and economic shocks by integrating social protection systems with temporary cash transfers and early childhood development services.
Guatemala	**The National Food and Nutrition Security Policy** is a strategic policy framework that establishes the long-term vision, objectives, principles, and priority areas that guide national action on food and nutrition security, including how the country addresses issues such as malnutrition, access to food, and sustainable food systems. It therefore operates at a high-level, normative and strategic plane, providing overall direction to the institutions that form part of the national system (SINASAN). **National Strategic Plan for Food and Nutrition Security** (PESAN) and its annual operational instrument, the **Annual Operational Plan for Food and Nutritional Security** (POASAN): main policy tools that translate national food security objectives into concrete actions across ministries and territories, including measures related to agricultural production, family farming, livelihoods protection, and seasonal hunger.	**Parametric agricultural insurance for family farmers:** led by the MAGA to protect family farmers against drought and excessive rainfall. The insurance provides rapid, rules-based payouts triggered by predefined satellite rainfall indices that vary by agroecological zone, without requiring plot level loss assessments. Payouts are delivered directly to farmers, including unbanked beneficiaries. MAGA acts as the policyholder on behalf of smallholders, while implementation is carried out by the state owned Crédito Hipotecario Nacional, with technical design support from the Microinsurance Catastrophe Risk Organisation. **Early Warnings for All initiative:** strengthens coordination between INSIVUMEH, and CONRED to improve the country's capacity to monitor and communicate risks related to droughts, floods, and other natural hazards, and represents an important advance in multi-hazard early warning coverage.
Honduras	**State Policy for the Agri Food Sector 2023–2043:** explicitly frames food security as a function of agricultural production, inclusive financing, risk management, and resilience. **National Adaptive Social Protection Policy** (2025): sets out a framework for adapting social protection systems so they can anticipate, absorb, and respond to shocks rather than only addressing chronic poverty.	**Parametric agricultural insurance pilot:** implemented by SAG through Aseguradora BanRural, provides index-based coverage to maize and bean producers against drought and excess rainfall, using climatic triggers to enable rapid, rules based payouts without the need for individual loss assessments. **Bono Unid@s**: Anticipatory Cash Transfers for Disaster-Affected Households implemented by SEDESOL. Targets households historically affected by disasters and uses the national social registry to identify beneficiaries before the peak of the hurricane season. Transfers are delivered in advance of expected shocks.

6.2. DEEP DIVE: PUBLIC SUPPORT TO AGRICULTURE IN NCA COUNTRIES

The structure of public support to agriculture is a crucial factor in determining long-term rural resilience. The institutional mapping in Chapter 6.1 shows how Ministries of Agriculture in the three NCA countries operate as central players in a dense web of institutions coordinating disaster risk management, social protection response, and long-term resilience. Recent evidence on policy responses to food price crises in Central America (Perego et al., 2024), however, shows that NCA countries have responded to recent crises with an array of short-term measures that, while providing temporary relief in the immediate wake of shocks, lacked a resilience vision and were often distortionary in the long run. Understanding how Agriculture ministries are prioritizing their budgets is thus key to assessing the expected efficiency and efficacy of their policies and programs in building long-term resilience, especially in shock-prone and fragile areas. Evidence from within Latin America as well as other regions of the world suggests that the composition of public expenditure on agriculture affects its effectiveness in promoting agricultural development.[11]

The most widely accepted method for measuring and assessing public support to agriculture is the one developed by the Organisation for Economic Cooperation and Development (OECD).[12] The OECD indicators reflect the provision of support, or the level of effort made by governments, implicit in their agricultural policies. In the OECD methodology, "support" is understood as gross transfers to agriculture from consumers and taxpayers, arising from government policies that support agriculture. This includes both budgetary expenditures and other estimated transfers which do not require actual monetary disbursements (e.g. credit concessions). The OECD indicators can be distinguished according to the recipient of the transfer, the unit of measurement in which they are expressed, and the type of aggregation. When analyzed together, these indicators provide a comprehensive picture of the level and composition of public support to agriculture. The broad categories of agriculture support measures identified by the OECD are: (i) Producer Support (PSE); (ii) Consumer Support (CSE); (iii) General Services Support (GSSE); and (iv) Total Support Estimate (TSE), which is the sum of the previous three. PSE comprises measures that provide direct or indirect transfers to producers, including input subsidies and price linked support. CSE looks at gross transfers to consumers of agricultural commodities, such as export bans or food vouchers. GSSE refers to public expenditures that provide sector wide services such as agricultural research and extension, infrastructure, sanitary and phytosanitary systems, and information services, without directly transferring resources to individual producers. GSSE has long been recognized as the most efficient use of public money.

An analysis of these measures for NCA portrays the structure of public expenditure in agriculture as skewed against food consumers. Across all three countries, the most recent available estimates show that TSE (Figure 34, Panel A) represents a relatively modest share of GDP, ranging from 0.75% in Guatemala to 1.53% in El Salvador. Despite notable country heterogeneity, PSE (Figure 34, Panel B) represents the dominant component of support, reflecting a continued reliance on input and price linked instruments that primarily transfer resources

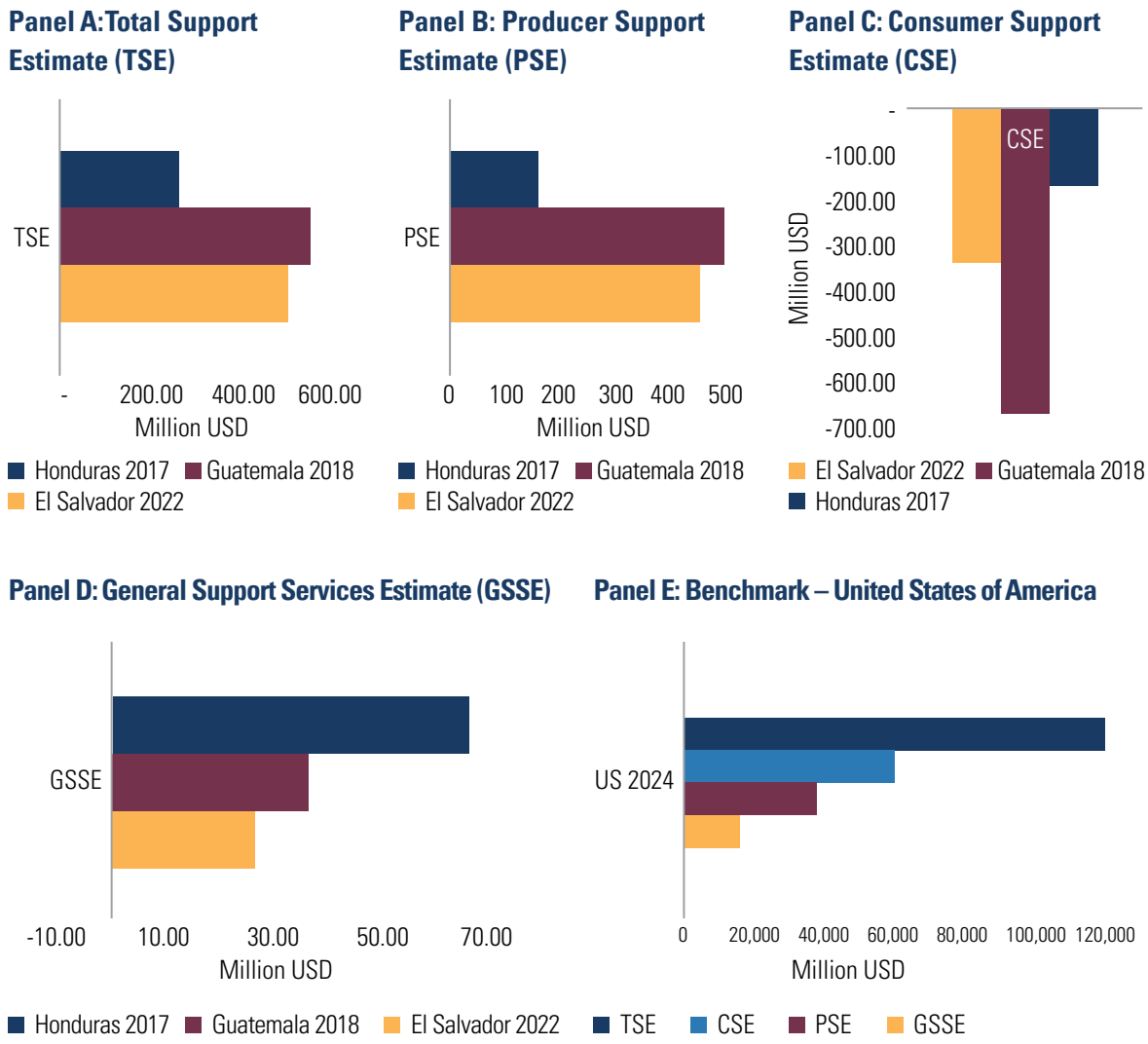
[11] See Anríquez et al., 2016 ; López et al., 2007; López et al., 2017.

[12] The OECD methodology is currently used by 39 OECD members and emerging economies, including Mexico, Brazil and Chile. For other Latin American countries, agriculture support estimates are currently collected by the Inter-American Development Bank (IDB) through its Agrimonitor database. See https://agrimonitor.iadb.org/en. For a recent analysis of Central American countries see Flores Agreda et al., 2020.

to producers. At the same time, negative CSE values (Figure 34, Panel C), observed across all three countries, reflect an implicit burden on consumers resulting from price distorting policy instruments that raise domestic food prices above international reference levels. As a reference, consumer support in the United States (Figure 34, Panel E) is positive and substantial, reflecting a policy environment in which food policies represent net benefits to consumers rather than imposing implicit taxation.

Photo Credit: Omri Eliyahu / Shutterstock

FIGURE 34. AGRICULTURE SUPPORT ESTIMATES IN NCA COUNTRIES, LATEST AVAILABLE YEAR

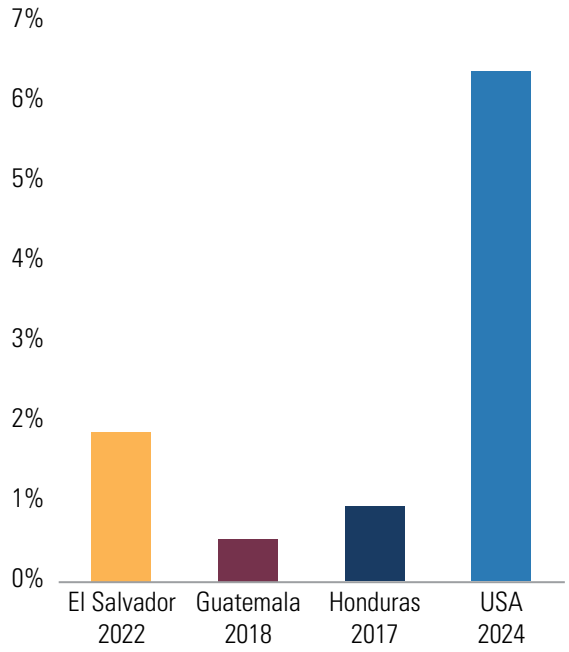


Notes: TSE: Total Support Estimate; PSE: Producer Support Estimate; CSE: Consumer Support Estimate; GSSE: General Support Services Estimate. Latest available year: Honduras 2017, Guatemala 2018, El Salvador 2022, United States of America 2024. Source: Own elaboration, based on Agrimonitor data (consulted March 2026) from https://agrimonitor.iadb.org/es/resultados-por-paises?country=pe&tab=agriculture.

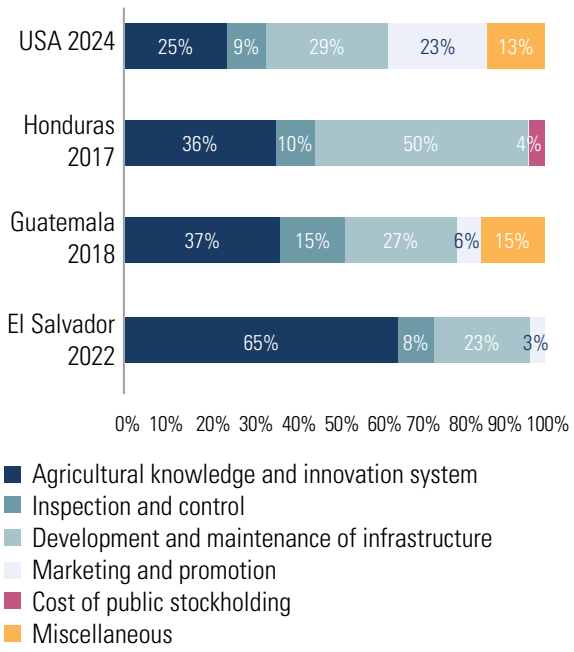
GSSE expenditure is below recommended levels and concentrated on a few items, with a limited contribution to enhancing productivity, resilience to shocks, and overall food system performance. GSSE accounts for only a small share of total agricultural support (Figure 34, Panel D) in all three countries, despite its role in financing agricultural research and extension, climate and early warning services, biosecurity and sanitary systems, and rural infrastructure. In particular, GSSE expenditures as a share of agricultural GDP (Figure 35, Panel A) are significantly low in El Salvador, Guatemala, and Honduras, remaining within a narrow range of 1 to 2%. This contrasts markedly with the United States, where GSSE amounts to approximately 6% of agricultural GDP, indicating a greater relative emphasis on public investment in agricultural general services. A disaggregation of GSSE by functional category (Figure 35, Panel B) also indicates that general services spending is concentrated in a limited number of areas, with variation across countries. In El Salvador, GSSE is heavily oriented toward agricultural knowledge and innovation systems, followed by infrastructure development and maintenance. Guatemala shows a more diversified GSSE profile, with spending distributed across knowledge and innovation, infrastructure, and inspection and control. In Honduras, GSSE is predominantly allocated to infrastructure investment, followed by knowledge and innovation. Across all three countries, expenditures on marketing and promotion and public stockholding are negligible, suggesting that GSSE is not being systematically used to strengthen market integration or price stabilization mechanisms. By contrast, the United States exhibits a more diversified GSSE composition, with spending distributed across agricultural knowledge and innovation systems, infrastructure, inspection and control, and marketing related functions, reflecting a broader use of general services to support productivity, risk management, and market functioning.

FIGURE 35. GENERAL SUPPORT SERVICES IN NCA COUNTRIES, LATEST AVAILABLE YEAR

Panel A: GSSE as a share of Agriculture GDP



Panel B: Decomposition of GSSE



Notes: GSSE: General Support Services Estimate. Latest available year: Honduras 2017, Guatemala 2018, El Salvador 2022, United States of America 2024. Source: Own elaboration, based on Agrimonitor data (consulted March 2026) from https://agrimonitor.iadb.org/es/resultados-por-paises?country=pe&tab=agriculture.

The current structure of agricultural support has important implications for food and nutrition security in NCA countries. While producer linked transfers can provide short term income relief, international evidence[13] consistently shows that such measures are weakly targeted, fiscally costly, and poorly aligned with long term productivity growth or climate resilience objectives. In contrast, GSSE type expenditures directly support the supply side foundations of food security, including stable domestic food availability, reduced post harvest losses, and lower vulnerability to climatic and sanitary shocks. At the same time, the presence of negative consumer support estimates indicates that market price support and other price distorting policies continue to raise domestic food prices above international reference levels, imposing an implicit burden on consumers. This is particularly relevant for low income households, for whom food expenditures represent a large share of total consumption, and reinforces the regressive effects of price based agricultural support. The relatively low level of GSSE observed across the three countries, combined with persistent negative CSE, therefore constrains the agricultural sector's capacity to absorb shocks and undermines food affordability. As a result, social protection systems are repeatedly required to respond to food crises that are, in part, structurally preventable, rather than serving as a complement to a more resilient and productive food system.

6.3. THE INSTITUTIONAL SIDE: SUMMARY OF MAIN MESSAGES

The institutional ecosystem in NCA sees the coexistence of strong regional institutions and well-established national actors. The SICA framework provides a solid foundation for countries to address shared challenges related to food security, disaster risk management, and long-term resilience. At the national level, all three countries have institutions in charge of policy-making and program implementation on these same issues, although the level of coordination and comprehensiveness of food security interventions varies by country. All three countries display at least some experience in promoting agriculture insurance among smallholders, and they have social protection mechanisms with varying degrees of shock responsiveness and anticipation. Across countries, specific governance frameworks have been developed on migration and displacement, as well as for diaspora and return migration.

NCA countries have historically been responding to shocks and food security crises with a range of producer support, consumer support, and general services support measures. However, while total government expenditure positively impacts agricultural performance, the various types of support do not all have the same level of impact on the agricultural sector, in terms of the efficacy of public action. In particular, increasing the share of expenditures committed to public goods and services is less distortionary and more effective than subsidizing the provision of private goods and services or market price support. The general thrust in NCA has been to favor direct producer support to the detriment of food consumers. Furthermore, expenditures on general services support have lagged in terms of volume (vis-à-vis the contribution of agriculture to the economy) and diversification.

Overall, the policy ecosystem displayed by NCA can address the food security impacts of shocks in fragile areas, but there are opportunities for enhancing its long-term vision. Improving inter-agency coordination, strengthening joint regional responses, and shifting the structure of agriculture support could enable large efficiency gains that can drive sustainability, equity, and resilience.

[13] See OECD, 2024; World Bank, 2025a; FAO, UNDP, and UNEP, 2021; Martin et al., 2022.

7 | RECOMMENDATIONS AND OPERATIONALIZATION PRINCIPLES

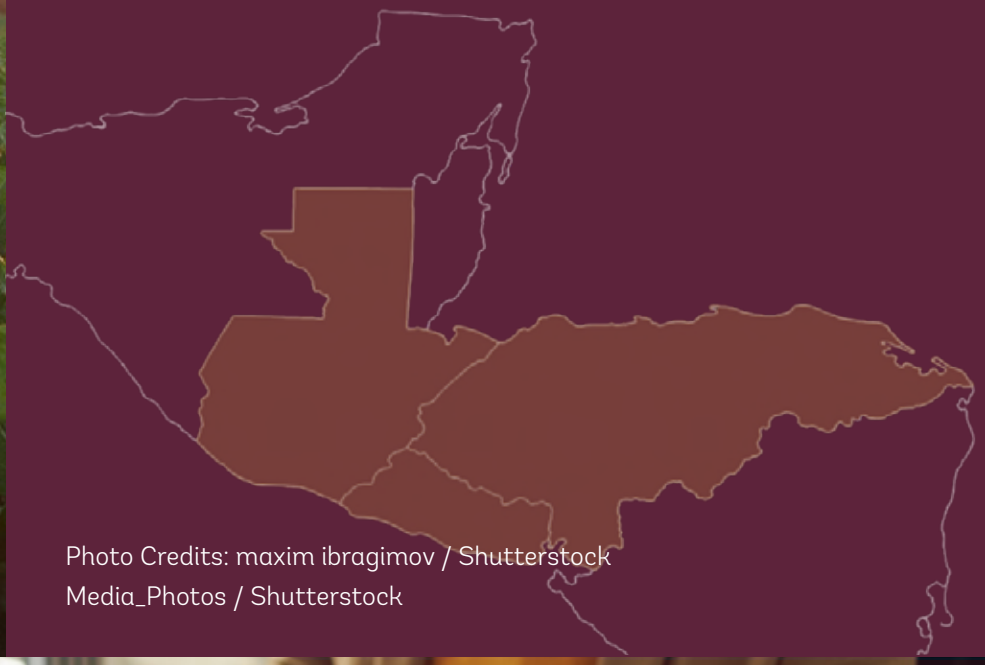


Photo Credits: maxim ibragimov / Shutterstock
Media_Photos / Shutterstock

This report has provided insights on the complex dynamics that link food insecurity, shocks, migration pressures, and fragility in Northern Central America. In particular, a number of findings are central to derive actionable recommendations for the three countries:

1. **Repeated and compounding shocks can overwhelm household coping capacity.** This underscores the importance of policies that not only help households cope, but also reduce exposure and vulnerability to climate shocks and protect livelihoods so that repeated events do not continuously erode assets and well-being. Priority risk-reduction measures include safeguarding lifeline infrastructure and income access (rural roads, bridges, drainage, water systems), supporting household- and community-level mitigation (flood-proofing, slope stabilization, water harvesting), and promoting risk-informed land use and housing upgrades in the highest-risk locations. Complementary to risk reduction measures, anticipatory systems should be able to quickly detect shocks or anticipate them through early warnings and automatically scale up assistance.

2. **Hunger is a strong contributor to migration pressure when households see no viable pathway to recovery locally, while some of the most food-insecure households may be even unable to migrate.** Preventing acute hunger and protecting consumption during stress—by scaling proven instruments in high-out-migration corridors, including cash-based support, nutrition interventions (including school-based platforms where feasible), and livelihood measures that stabilize rural incomes—reduces the urgency that drives risky migration decisions. At the same time, specific support is needed for the invisible yet most vulnerable households (or individuals within households) that are less likely to migrate due to a lack of financial resources, insecurity, or poor connectivity, to address their hidden vulnerability trap.

3. **Receiving remittances can support household resilience, but migrating does not support food security in the face of shocks.** Treating migration and remittance flows as a stable food-security instrument misreads their structural function: converting them into resilience rather than dependency requires complementary investment in rural livelihoods and local job creation. Expanding financial inclusion can also simultaneously allow remittances to help smooth consumption and support productive investments. At the same time, robust communication strategies should be put in place in fragile migration hotspots about the inherent risks of treating migration as a coping strategy against shocks; where politically and operationally feasible, it is however important to support safer, legal, and more predictable pathways for labor mobility - not to replace local support, but to reduce risk exposure for the population who continues to regard migration as a viable option.

4. **Where climate risk intersects with high fragility, shocks result in more acute food security losses and migration pressure.** These areas require coordinated support packages that combine immediate assistance for consumption with resilience-building measures, such as climate-smart agriculture and improved market connectivity. In insecure environments, it is also important to focus on stabilization and maintaining essential services. Flexible financing and institutional coordination (including donor coordination) are crucial, since single-instrument responses are unlikely to effectively address the complex risk profiles in these regions.

5. **Households with different socio-demographic profiles experience different dynamics.** Women-led households, Indigenous Peoples

and Afro-Descendants, or youth are not necessarily exposed to the same set of vulnerabilities, challenges, and incentives, and intra-household dynamics create compounded complexities. Policy and program responses need to address this heterogeneity through intentional targeting, instrument choice, and monitoring efforts.

This chapter identifies recommendations for NCA countries to address the dynamics underlying these findings. Recommendations are grouped in measures to enhance shock response, on one hand, and longer-term resilience, on the other. Each recommendation is characterized in terms of policy and investment implications, national institutions to be involved, and opportunities for regional integration. Relevant examples from international experience are also included for further reference on global best practice.

7.1. RECOMMENDATIONS FOR SHOCK RESPONSE: PREVENTING THE ESCALATION FROM FOOD STRESS TO DISTRESS MIGRATION

7.1.1. MOVE FROM EARLY WARNING TO EARLY ACTION TO PROTECT FOOD CONSUMPTION BEFORE COPING STRATEGIES DETERIORATE

Description. Evidence from this report indicates that food insecurity in NCA rarely manifests as an abrupt absence of food, but rather as a progressive deterioration in dietary quality and quantity driven by income instability, food price increases, and shocks, with compounded exposure worsening vulnerability. This deterioration can become a stability issue, as rising food stress interacts with insecurity, restricted mobility, and weak trust in public institutions. These patterns underscore the importance of acting after the first shock, rather than waiting until households have exhausted their coping capacity. Embedding early warning systems in decision frameworks that link alerts to predictable, scalable responses can help preventing the deterioration of food insecurity stress: strengthening the connection between existing early warning platforms and national programs—such as adaptive social protection, food assistance, and agricultural support—would allow countries in the Region to move from risk identification toward earlier and more systematic action, complementing operational early action pilots while reinforcing national ownership. Across Guatemala, Honduras, and El Salvador, food and nutrition security early warning systems are relatively well developed, but they are not consistently linked to predefined, scalable responses. A stronger operational link between existing early warning signals, such as drought forecasts, crop stress indicators, or food and nutrition surveillance with pre-agreed scale-up rules for existing programs would allow governments in the Region to intervene while households are still able to stabilize consumption locally, reducing the likelihood that migration emerges as a coping horizon.

Policy implications. Governments should define a small, transparent set of triggers and pair them with standard operating procedures (SOPs) for action. Triggers should explicitly include economic and agricultural stress signals alongside disaster, climate and production indicators (e.g., flood risk, drought outlooks, crop stress, localized crop loss indicators, food price spikes), as well as fragility and violence indicators that interact with food insecurity and disaster risk (e.g., territorial control changes, displacement flows, school dropout rates as a proxy for recruitment risk). The SOPs should anticipate fragility-related transmission channels by incorporating: (i) market-access stress proxies, especially transport costs, which is a key channel through which fuel price shocks and localized disruptions translate into higher food prices in remote and rural areas; (ii) service-delivery feasibility proxies in violence affected areas, so the triggers reflect not only whether households need support but also whether the delivery channels can reach them safely and efficiently; and (iii) explicit conflict sensitivity checks before activation, to

Photo Credit: Curt Carnemark / World Bank

ensure that the choice of instrument, delivery modality, and targeting into does not exacerbate intergroup tensions or expose recipients to extortion or coercion by non-state actors.

Investments. Improving interoperability between monitoring systems (agroclimatic, prices, nutrition, and where available civil protection and security incident data), strengthening simple dashboards and decision routines, and ensuring delivery channels can scale quickly (payment rails, enrollment/verification procedures, and field coordination), including pre-arranged alternative delivery modalities including for instance e.g. mobile money, community-based trained focal points, and partnerships with trusted local actors. Where feasible, this should be backed by pre-arranged financing (contingency allocations, reserve mechanisms, or other rapid-disbursement instruments, layered with sovereign risk transfer mechanisms for disaster risk such as CCRIF parametric coverage, among others) so that activation is not delayed by ad hoc budget reallocations, particularly important where delayed response can deepen mistrust and compound fragility dynamics.

Institutions and platforms. At the national level, operationalization starts with institutions that already generate, validate, and use relevant signals, anchoring early action in existing architectures. In fragile municipalities, coordination should explicitly anticipate constraints linked to insecurity and mobility restrictions, so that validated alerts translate into feasible response choices (what can be delivered, through which channel, and with what safeguards).

- ***El Salvador:*** DGPC should retain responsibility for early warning validation (strengthening data collection and processing capacities especially in vulnerable areas), while social protection agencies should lead the implementation of scalable responses once triggers are met. In the short run, delivery could leverage the architecture of the e-voucher platform established by MAG to transition away from its previous system of physical input subsidies. The e-voucher scheme could be used as a predictable shock-response instrument to deliver anticipatory cash transfers in high-fragility municipalities, validated by the DGPC.

- ***Guatemala:*** Assign SESAN a formal role in triggering predefined responses based on alerts generated through SINASAN, in coordination with line ministries responsible

for delivery. SESAN's coordination role should be backed by a deliberate rebalancing of CONRED's resource envelope toward prospective and corrective risk management (rather than the current heavy concentration on response), to avoid early action triggers to be activated into a system whose preventive capacity is underfunded.

- ***Honduras:*** operational leadership requires structured coordination between SAG, through UTSAN, as the lead for food security analysis, and SEDESOL as the authority responsible for activating shock responsive social protection instruments using the SIRBHO registry. UTSAN and SEDESOL should formalize food security unit and climate change driven targeting (rather than the two measures in isolation) and the open-registration channel as operational backbones of the early-action protocol. COPECO's alerts and damage assessments would need to be formalized as the standing trigger source feeding into this protocol.

Regional integration opportunities. Relevant SICA institutions include CEPREDENAC, CAC, and SISCA. The Dry Corridor Anticipatory Action Framework for drought provides an existing reference model for linking early action across Guatemala, Honduras and El Salvador. The framework is developed to anticipate drought impacts associated with recurrent climate variability in the Central American Dry Corridor and defines forecast based triggers, pre agreed action packages, and financing arrangements that are activated once drought risk thresholds are met. While designed as a regional coordination mechanism, the framework provides a reference that countries can adapt to their national context, including through the alignment of triggers with national agricultural calendars and the selection of context-specific early actions, to strengthen national early action systems and their linkage to scalable food security responses.

BOX 7.1. FROM EARLY SIGNALS TO IMMEDIATE FOOD SECURITY RESPONSE: ANTICIPATORY ACTION IN BANGLADESH

Bangladesh offers one of the most well documented examples of how early warning information can be systematically translated into timely food security responses. Since 2020, the Government of Bangladesh has implemented forecast-based anticipatory cash transfers triggered by flood forecasts produced by the national Flood Forecasting and Warning Center and global hydrological models. When predefined water level thresholds are exceeded, cash transfers are automatically released to vulnerable households before flood peaks, using national social protection databases and mobile payment systems.

During the July 2024 monsoon floods, anticipatory action was activated four days ahead of peak flooding in five districts of the Jamuna River basin: 89,560 households received multipurpose cash transfers within hours of trigger activation, coordinated with national disaster management authorities. Rigorous impact evaluations found improvements in food security, reduced use of negative coping strategies, and better psychosocial wellbeing among recipient households.

Source: WFP, 2024.

7.1.2. ENSURE EXISTING FOOD SECURITY PROGRAMS ARE ACCESSIBLE TO LOW-VISIBILITY SHOCK AFFECTED HOUSEHOLDS, INCLUDING RETURNEES AND FAILED MIGRANTS

Description. This report finds that food insecurity and livelihood stress are closely linked to migration pressure, but that this relationship is shaped by an important aspiration–ability gap. Some food-insecure households express binding liquidity constraints that limit mobility. Income and price shocks can translate more quickly into food stress because insecurity raises transaction costs, disrupts services and markets, and weakens trust in institutions. This makes predictable, rules-based stabilization especially important to prevent deterioration into crisis coping. These findings shift the focus toward temporary income stabilization, using instruments that already exist in most countries, to more effectively reach households that are high need but poorly captured by standard eligibility approaches, including returnees, failed migrants, internally displaced persons, and shocked affected households. Temporary benefit top ups or short-term expansions during periods of stress can help stabilize purchasing power when food prices rise or incomes fall. Evidence from pilots of anticipatory and shock responsive cash transfers in countries such as Honduras and El Salvador indicates that the institutional structures required to expand these social protection adaptations are already established. Adjusting targeting, delivery, and financing rules within national systems would allow NCA governments to provide timely, scalable income support that protects food access, reduces reliance on ad hoc crisis responses, and interrupts the transmission of shocks into deeper food insecurity and distress-driven migration.

Policy implications. Current programs provide a baseline but targeting rules are not consistently designed for shock periods. Moreover, as registry entries are often linked to last known place of residence at the time of registration, failed migrants or returned individuals who re-join a household may not be automatically re-enrolled or qualify for benefit eligibility under existing programs. Policy adjustments should prioritize explicit inclusion pathways for households that are high-need but low-visibility. This includes codifying simple rules for (i) temporary top-ups and temporary enrollment during stress periods; (ii) simplified re-enrollment protocols for returnees; (iii) protection and secure data-handling protocols; and (iv) time-bound eligibility mechanisms that recognize transitory vulnerability, including for internally displaced persons.

Investments. Investments should focus on ensuring delivery readiness: expanding and regularly updating registry coverage in the most shock-exposed municipalities to improve coverage of the most vulnerable households, enabling emergency enrollment protocols that can be deployed rapidly during crisis periods, and pre-authorizing simplified payment and verification procedures for temporary benefits. Coverage should extend beyond the chronically poor to include households at risk of food insecurity conditional on a shock — a broader "shock-ready" targeting criterion that implies a different enrollment logic. Other investments are also needed to strengthen the interoperability between beneficiary registries, food security monitoring systems, and payment platforms (each typically managed by a different agency), with pre-agreed data-sharing protocols to enable rapid enrollment and disbursement when pre-agreed triggers are activated.

Institutions and platforms. Institutional mandates related to food security analysis, beneficiary identification, and crisis response are often fragmented across social protection, agriculture, civil protection, and planning entities, with limited formal protocols for joint action during shocks. Ministries of Agriculture are central institutional owners of food security in practice and should be visible in the operating model. A streamlined operating arrangement should be established, whereby the social protection lead agency can

trigger temporary expansions based on agreed signals, while coordinating with food security monitoring and civil protection actors.

- ***El Salvador:*** MAG and disaster management actors should be connected to the agencies that can implement scalable assistance, leveraging early pilots of anticipatory transfers.

- ***Guatemala:*** leverage the established SINASAN food and nutrition coordination architecture, strengthening coordination between SESAN, MAGA, and other delivery agencies.
- ***Honduras:*** formally link SAG (including specifically UTSAN) with SEDESOL's targeting backbone through the SIRBHO registry under the social assistance architecture, strengthening delivery and leveraging pilots of shock-responsive transfers.

Regional integration opportunities. The region already has a useful coordination entry point through the Dry Corridor Anticipatory Action Framework for drought, which defines forecast-based triggers, pre-agreed action packages, and financing arrangements across Guatemala, Honduras, and El Salvador. However, similar principles can be applied elsewhere in the region and for other types of shocks (food price spikes, floods, and economic shocks affecting urban and peri urban households), under the auspices of CEPREDENAC and SISCA. Regional operationalization should emphasize minimum common standards for (i) defining stress signals (e.g., climate anomalies, staple price inflation, or livelihood disruption), (ii) sharing timely data across food security, disaster risk, and social protection systems, and (iii) translating these signals into temporary, time bound responses through national platforms, while allowing national systems to adapt these tools to different risk profiles and institutional contexts. By aligning definitions, data exchange protocols, and surge parameters, regional coordination can help reduce fragmentation and ensure that similar shocks generate comparable protective responses across countries, regardless of hazard type or geography.

BOX 7.2. KENYA'S HUNGER SAFETY NET PROGRAM

Kenya's Hunger Safety Net Program (HSNP) is a government led cash transfer system designed to protect food access and stabilize household incomes in arid and semi-arid areas characterized by recurrent drought and livelihood shocks. Implemented by the National Drought Management Authority, HSNP is fully embedded within the national social protection architecture and targets chronically vulnerable households using a unified registry and digital payment systems. HSNP combines regular cash transfers with a built-in capacity for temporary scale-up during periods of stress. All households in targeted counties are pre-registered, allowing the program to expand coverage or adjust benefit levels rapidly when pre-defined drought and livelihood stress indicators are triggered. This rules-based design enables timely income support without the need to establish parallel emergency mechanisms or undertake ad hoc beneficiary identification during crises. By stabilizing purchasing power early in the shock cycle, HSNP reduces reliance on delayed humanitarian responses and helps prevent negative coping strategies, including asset depletion, food consumption losses, and distress-driven migration.

Source: IDB, 2023.

7.1.3. INSTITUTIONALIZE FOOD SECURITY CRISIS PREPAREDNESS THROUGH PRE-AGREED ESCALATION PROTOCOLS

Description. Evidence from this report shows that, in fragile settings, the costs of delayed food security response are amplified, because insecurity and low trust can disrupt market functioning, constrain mobility, and limit the reach of government services. The qualitative findings also show that responses in fragile areas are constrained by weak inter-agency coordination and informal access networks. Discretionary crisis decisions are more likely perceived as uneven and more difficult to implement operationally, generating delayed responses, welfare losses, and heightened displacement risks. Formalizing anticipatory action would allow NCA governments to act on early signs of food stress, thereby reducing delays, discretion, and fragmentation during acute food security crises, and ensuring that existing instruments can be scaled rapidly and coherently. Food Security Crisis Preparedness Plans (FSCPPs) provide a practical mechanism to operationalize this objective. They are formulated through a government-led, ex-ante process that consolidates climate, food security, and production risk analytics and existing crisis diagnostics into a shared assessment of priority risks and vulnerable populations. Unlike operational early action instruments, FSCPPs do not deliver assistance directly; rather, they establish pre agreed protocols for when and how existing responses are expanded once crisis thresholds are reached. This process typically includes pre-agreement across relevant ministries on decision rules, roles, and financing channels to be activated under different crisis scenarios, including clear inter-agency crisis coordination protocols. FSCPPs are government-owned protocols that define (i) what constitutes an extraordinary food and nutrition security crisis, based on agreed analytical thresholds, (ii) who validates the assessment, and (iii) how existing responses (such as social protection, food assistance, livelihood support, and emergency procurement) are escalated in a coordinated and time-bound manner once those thresholds are reached. FSCPPs translate already validated crisis assessments into predictable decisions, financing pathways, and operational scale-up across government and partners.

Policy implications. Governments should codify a limited set of triggers, drawing on meteorological, agricultural, nutrition, and market indicators, and pair them with SOPs that clearly specify validation responsibilities, inter-agency coordination, the response package to be activated (including benefit top-ups, temporary enrollment, livelihood support, contingency procurement, or early recovery measures), and the duration of such measures. FSCPPs work best when explicitly nested within each country's national disaster risk management framework and civil protection ecosystem, so that food security crises triggers, governance structures, and financing channels are interoperable with existing systems used for disaster emergency response, rather than creating a parallel system. Scenario planning covered by FSCPPs should include, in addition to climate disaster and price driven crises, crises whose proxy driver is linked to instability and violence or large-scale displacement, which could possibly produce comparable food security outcomes but are often omitted in standard early warning systems.

Photo Credit: Maria Fleischmann / World Bank

Investments. Investments should focus on operational readiness to implement FSCPPs, including: (i) analytical and coordination readiness investments to ensure that food security analysis is routinely translated into decision-ready crisis assessments, including shared dashboards, standardized briefing products, and coordination across agencies involved in FSCPP activation; (ii) investments for aligning contingency budget provisions, rapid disbursement instruments, or pre-approved reallocations with FSCPP escalation decisions, so that once a crisis is in place, financing can be released without ad hoc budget negotiations; (iii) investments for testing operational readiness and FSCPP activation through simulations, updated roles and protocols, and maintaining the plan as a living operational instrument integrated into annual budget and contingency planning.

Institutions and platforms. FSCPP preparation and readiness would rely on arrangements intended to operate once crisis thresholds are reached, complementing early action mechanisms by clarifying decision-making authority and coordination during acute food security crises.

- ***El Salvador:*** MAG and the General Directorate of Civil Protection should establish more formalized linkages with social protection and livelihood systems to support anticipatory action. The FSCPP should be developed as part of the update of the 2018 National Plan for Civil Protection, Disaster Prevention, and Mitigation: embedding food security crisis triggers and SOPs in this update would address the preparedness gap directly and give the FSCPP a durable legal and budgetary anchor.

- ***Guatemala:*** SESAN should be positioned as the central node for linking alerts to response, also leveraging the Early Warnings for All initiative that strengthens coordination between forecasts produced by INSIVUMEH and disaster risk management responses led by CONRED: the remaining gap lies in systematically translating these signals into scalable livelihood and protection actions. Embedding food security crisis triggers and SOPs in the ongoing reform process of CONRED's legal framework would give the linkage between food security and disaster risk management a durable legal basis, reducing the risk that anticipatory action remains a project-level pilot.

- ***Honduras:*** strengthen coordination among SAG (UTSAN), SEDESOL, and COPECO by linking established shock-responsive systems to anticipatory action and scale-up. Honduras has a near-term legislative window, as the draft of a revised SINAGER Law, formulated by COPECO and submitted to Congress in May 2022 and resubmitted to the Presidency in February 2025, remains pending at the time of writing. Food security crisis triggers, escalation protocols, and SAG/SEDESOL roles should be reflected in the implementing regulations once the revised Law is approved, rather than being negotiated separately afterwards.

Regional integration opportunities. Countries can use existing Dry Corridor anticipatory action coordination to harmonize the minimum trigger set and SOP architecture and share calibration lessons. These should also be explicitly linked with the update and operationalization of the POLSAN framework. Where relevant, regional fiscal and disaster risk financing coordination can support linking triggers to pre-arranged liquidity options that complement national contingency budgets. Regional coordination could be provided by CEPREDENAC, CAC, SISCA, COSEFIN in their respective area of competence.

BOX 7.3. INSTITUTIONALIZING EARLY ACTION THROUGH NATIONAL CRISIS PROTOCOLS: HAITI'S FSCPP

Haiti has developed a national FSCPP led by the Ministry of Agriculture and the National Coordination for Food Security. The Plan defines what constitutes an "extraordinary" food and nutrition security crisis in the Haitian context and establishes three standing bodies with clear mandates: a Risk Team responsible for monitoring and pre assessing food security risks based on official analyses; a Programming Team that validates risk assessments and reviews readiness across ongoing programs; and a Senior Decision Team that determines whether to formally trigger the Plan and escalate the response. The process is anchored in IPC analyses and other official data products, ensuring that decisions are evidence based and time bound. Recent IPC analyses indicate that around 5.4–5.7 million people—nearly half of the population—face acute food insecurity, including about 1.9–2.0 million people in emergency conditions. In this context, the FSCPP is intended to reduce reliance on ad hoc emergency decisions by enabling earlier, more predictable escalation of social protection, food assistance, and livelihood support when indicators deteriorate, rather than waiting until conditions reach their most severe levels.

Source: World Bank, 2023; GNAFC, 2023; IPC, 2024.

7.1.4. INCORPORATE GENDER, IP/AD, AND YOUTH RESPONSIVE DESIGN INTO SHORT-TERM FOOD SECURITY RESPONSES

Description. Insecurity is experienced and managed unevenly across and within households. Women, particularly mothers, frequently reduce their own consumption to protect children, Indigenous and Afro-Descendant peoples are disproportionately affected by environmental shocks, while young people emerge as the group most likely to view migration as a viable response when local opportunities shrink. Fragility and violence dynamics can amplify food insecurity situations translating them into longer term outcomes, including migration. Short-term food security interventions that fail to account for gender, ethnicity, and age differences risk reinforcing existing vulnerabilities and social pressures during shock periods. Short-term design features can be embedded within existing food security strategies and surge response mechanisms during periods of acute stress, also including a focus on the safety and do-no-harm dimension. Ensuring that assistance reaches women and IP/AD households effectively, while temporarily activating complementary opportunities for youth in high pressure contexts, can strengthen the immediate protective impact of food security responses and reduce the likelihood that short-term shocks translate into adverse coping strategies, including distress driven migration. When applied selectively during shock periods, and designed in a fragility sensitive and territorially targeted manner, temporary labor-intensive public works and short-term local employment options can reinforce resilience and complement social protection and food security systems.

Policy implications. Governments can establish a limited set of operational rules to be embedded in program manuals and surge SOPs. These should include identifying women as the preferred transfer recipients where appropriate; ensuring that enrollment processes, payment schedules, and delivery modalities account for women's care responsibilities and safety constraints, including measures to reduce risks of harassment, exploitation, gender based violence (GBV), and other unintended protection risks

during registration, payment, and participation in temporary activities; and establishing limited, culturally appropriate, time-bound support packages for youth and IP/AD households that can be activated on a temporary basis in priority areas during periods of stress (e.g. short-term public works, brief training modules, or fast-track linkages to existing inclusion programs). These measures are not intended to replace longer-term employment or inclusion strategies, but to ensure that short-term food security responses applied during shock periods are sensitive to gender, ethnicity, and age-specific vulnerabilities identified in this report.

Investments. Payment and communication systems should be adapted to enable women to receive transfers directly; last-mile outreach and grievance feedback mechanisms should be strengthened to identify exclusion risks and intra-household constraints, including safe, confidential, and accessible reporting and referral mechanisms where GBV or related protection risks are identified; and shock response packages should include small, flexible funding windows to support time-bound youth opportunities (for instance, temporary public works linked to community resilience infrastructure, short-cycle vocational training with a stipend, or cash transfers conditional on participation in agricultural extension activities) and culturally appropriate IP/AD strategies that can be deployed rapidly during periods of stress.

Institutions and platforms. This recommendation should be implemented through existing food security delivery systems by national food security coordination bodies, in collaboration with social protection authorities, local implementers, municipalities, and agencies responsible for Indigenous and Afro-Descendant agendas, youth programs, and community services, when relevant. Youth-focused agencies (and, where relevant, labor/public works actors) should be brought in to activate a limited menu of short-term youth opportunities during stress periods.

- ***El Salvador:*** MAG and social protection programs should collaborate closely with key entities such as the Salvadoran Institute for the Development of Women (ISDEMU), the Ministry of Governance and Territorial Development, and the National Youth Institute (INJUVE) affiliated directly with the Presidency of the Republic.

- ***Guatemala:*** MAGA and MIDES should work in coordination with the Presidential Secretariat for Women (SEPREM) and the National Youth Council (CONJUVE) affiliated with the Presidency. Crucial institutions advancing the IP/AD agenda include the Presidential Commission against Discrimination and Racism against Indigenous Peoples (CODISRA), the Guatemalan Indigenous Development Fund (FODIGUA), and the Office of the Ombudsman for Indigenous Women (DEMI).

- ***Honduras:*** interventions by SAG and SEDESOL should be coordinated with entities such as the State Secretariat for Women's Affairs (SEMUJER) or the National Youth Institute (INJUVE) under the Ministry of Youth. SEDESOL itself runs the "Our Roots" program through its Program of Solidarity Action (PROASOL), which is the primary delivery mechanism for services and interventions targeting IP/AD communities; other institutions active on the IP/AD agenda include the National Directorate of Indigenous and Afro-Honduran Peoples (DINAFROH) and the CONAPOA (National Coordination of Indigenous and Afro-Honduran Peoples).

Regional integration opportunities. Common approaches and best practice can be designed and streamlined at the regional level through CAC (particularly through the action areas identified by the POLSAN) and SISCA.

BOX 7.4. LOCAL EMPLOYMENT AS A PILLAR OF RESILIENCE IN DISPLACEMENT CONTEXTS: RWANDA'S JYA MBERE PROJECT

The Rwanda Socio Economic Inclusion of Refugees and Host Communities Project, Jya Mbere Project, integrates labor intensive public works, climate resilient infrastructure, and livelihood support in areas hosting large refugee populations. The Project embeds employment generation for vulnerable beneficiaries within a broader territorial development strategy, offering lessons for other regions where food insecurity, fragility, and human mobility are spatially concentrated. A central feature of the operation is employment creation, with the project expected to generate more than 10,000 jobs through labor based public works and support to small enterprises, with explicit targets to ensure the participation of women and youth. Beyond income generation, the project combines employment with investments in climate-resilient local infrastructure, including roads, marketplaces, schools, health facilities, and water systems. These investments reduce pressure on services in host areas while improving market access and economic opportunities for both refugees and host populations. A complementary graduation component provides vulnerable households with training, productive assets, and access to savings and financial services, supporting pathways toward more sustainable livelihoods.

Source: World Bank, 2025b.

7.2. RECOMMENDATIONS FOR ENHANCED RESILIENCE: ADDRESSING STRUCTURAL FOOD INSECURITY AND LIVELIHOOD FRAGILITY

7.2.1. STRENGTHEN AGRICULTURAL INSURANCE AS AN EX-ANTE INSTRUMENT FOR LIVELIHOOD PROTECTION AND FOOD SYSTEM RESILIENCE

Description. Food insecurity and livelihood stress in NCA are driven by interacting livelihood and environmental shocks, including crop production losses, income volatility, and price shocks. Especially as a large share of agricultural losses remains unfunded, while post-shock assistance is frequently delayed or unpredictable, ex-ante financial protection instruments can be deployed to stabilize consumption, avoid distress coping, and finance early recovery. Recent experience in the region (cf. Chapter 6) demonstrates that publicly supported parametric insurance can function as an effective ex-ante livelihood protection instrument at scale, providing predictable liquidity after shocks and reducing reliance on delayed, discretionary post-disaster assistance. Strengthening publicly supported agricultural insurance, especially parametric and area-based products, can provide rapid, rules-based liquidity after shocks. Agricultural insurance should be framed as part of a livelihood protection approach, addressing aggregate production and income stress. Insurance is most appropriate for frequent, moderate shocks, and should be introduced alongside social protection and food assistance within a risk layered financing strategy. To support food security outcomes, payouts should be timely and predictable, aligned with critical agricultural and consumption periods such as the post-harvest phase. This should be complemented by broader interventions, including extension and access to markets to support recovery and avoid dependency.[14] In violence-affected areas, complementary social protection instruments and adapted delivery modalities (rather than insurance alone) would need to carry more of the protective load, as households coping capacity strengthens over time.

[14] Cf. World Bank, 2024a for more detailed analysis and guiding principles.

Policy implications. A coherent disaster risk financing architecture would explicitly assign instruments to pre-identified risk layers: (i) contingent credit and prearranged budget allocations for high frequency-low severity events; (ii) parametric insurance (including sovereign coverage via CCRIF) for medium severity events that exceed governments' routine response capacity; and (iii) post-disaster financing (cat-bonds) and humanitarian appeals for catastrophic events. This layering avoids over-reliance on insurance for shocks it is not designed to cover and clarifies which instruments protect which layer of food-insecure households. Governments should define a clear policy framework for publicly supported agricultural insurance that specifies the target segments (smallholders vs. commercial producers), the shock types covered, the role and limits of premium subsidies, the rules for payout triggers, and the relationship to post-disaster assistance (so insurance does not get crowded out by ad hoc compensation). Risk-layering should be explicit: insurance complements (rather than replaces) adaptive social protection and food assistance during severe crises, while reducing the fiscal and welfare costs of frequent and moderate shocks. Policy should also require transparency and predictability (rule-based payouts, published trigger logic, and grievance channels where feasible), which is especially important in fragile settings where discretionary assistance can undermine trust. Further key design principles include: (i) the importance of interinstitutional alliances between governments, the private sector, and producer organizations; (ii) the need to adapt insurance models to local agricultural realities; (iii) the value of alternative distribution channels such as cooperatives and microfinance institutions; (iv) the potential of digitalization to expand reach — provided the rural digital divide is addressed; (v) gender-sensitive design.[15]

Investments. The focus should be on enabling systems that allow insurance to function at scale over time. Insurance instruments are most effective where field operations, loss verification, and payout delivery are feasible, so strengthening these elements ex-ante is critical for the financing to function and reach the targeted populations. Implementing this recommendation requires sustained investments in public systems such as farmer registries, payment infrastructure, risk information platforms (weather and production indices, price monitoring), and institutional capacity for product design, supervision, and monitoring. To strengthen food security outcomes, governments should also invest in the complementary services that turn payouts into recovery so households can re-enter production and reduce dependency on repeated assistance.

Institutions and platforms. Ministries of Agriculture and Finance should jointly anchor these schemes, linked to food security monitoring and early warning systems so that products reflect the main stressors observed (e.g., drought-related production loss, localized crop failure, price-driven income stress) and so that payout timing aligns with critical agricultural and consumption periods (for example, post-harvest and lean seasons). Regional coordination and risk pooling arrangements can further improve efficiency where shocks are spatially correlated across shared production and food security corridors.

- ***El Salvador:*** MAG could leverage prior experiences with index-based agriculture insurance to protect smallholder producers.
- ***Guatemala:*** MAGA should continue scaling up and strengthening its publicly financed parametric agricultural insurance to protect family farmers against drought and excess rainfall.
- ***Honduras:*** SAG should leverage and broaden its parametric agricultural insurance pilot providing index-based coverage to smallholder producers.

15 Cf. ECLAC (2021) for more detail.

Regional integration opportunities. Platforms such as CEPREDENAC and COSEFIN have been used to access tools like CCRIF parametric insurance, which can complement national efforts. Policy coordination can focus on a shared corridor approach methodology (how to identify hotspots and bundle interventions) and common monitoring indicators that allow comparison across countries. Given the shared production and food security corridors, regional risk-pooling arrangements focusing on the agriculture sector could also be explored.

BOX 7.5. PARAMETRIC AGRICULTURAL INSURANCE AS EX ANTE PROTECTION AT SCALE: MEXICO'S CADENA PROGRAM

Since 2003, the Government of Mexico implemented the CADENA program, through which state governments purchase catastrophic, index-based insurance policies to protect subsistence and small-scale producers against droughts, excess rainfall, frost, and other extreme weather events. The scheme operates at the macro level. Subnational governments act as policyholders, and payouts are triggered automatically when predefined climatic thresholds are exceeded, without the need for parcel level loss verification. This design significantly reduced administrative costs and enabled much faster disbursement compared to traditional post disaster assessments, allowing resources to reach affected farmers within weeks rather than months. Public spending on CADENA progressively replaced ad hoc post disaster assistance with pre-arranged risk financing instruments, creating predictable fiscal exposure and faster responses to recurrent climate shocks. Rather than compensating losses ex post through discretionary aid, the program provides pre-agreed financial protection, supporting early recovery and replanting after shocks.

Source: World Bank, 2013.

7.2.2. REPURPOSE AGRICULTURAL SUPPORT TOWARDS PUBLIC GOODS AND SERVICES

Description. The persistence of food insecurity described in this study reflects deeper structural weaknesses in food systems which are shown to translate into migration pressure, particularly in shock prone regions. Addressing these structural constraints requires not only reallocating public resources, but also managing a regulatory transition from producer support measures (PSE) toward general support services (GSSE). Medium-to-long term reductions in food insecurity require rebalancing public support toward investments that strengthen productivity, resilience, and nutrition outcomes, rather than relying on inefficient or poorly targeted subsidies to private actors. Redirecting support toward agricultural public goods, such as extension services, climate smart practices, soil and water management, and market infrastructure, can reduce volatility in food availability and incomes over time.

Policy implications. The most direct lever is repurposing agricultural support toward resilience and nutrition-relevant public goods, moving away from inefficient or poorly targeted subsidies or market price support that distort efficient market signals, crowd out the private sector, and do not reduce volatility. In practice, this entails the replacement of input subsidies with targeted and time-bound (e-)vouchers, the gradual shift to decoupled support to reduce the link between public support and production decisions, and the

gradual removal of tariff and non-tariff trade barriers while ensuring safety nets for exposed producers. Such instruments provide a bridge that allows governments to maintain farmer support during the transition, while creating the policy space to refocus public spending on productivity enhancing and resilience building public goods, including measures such as extension, advisory systems, sanitary and phytosanitary services where relevant, soil and water management, market infrastructure, and risk information.

Investments. Emphasis should be placed on strengthening the foundational systems that reduce vulnerability over time. Priority areas include rural market infrastructure and storage; local feeder and market connectivity; irrigation investments where economically and environmentally appropriate; agricultural innovation, extension services, and support for the adoption of climate-smart agriculture practices; and mechanisms that lower transaction costs for small producers. These investments should be complemented by scalable consumer support measures that can be activated when abnormal food price pressures emerge, ensuring that resilience gains are preserved during periods of stress.

Institutions and platforms. This is primarily an agenda led jointly by Ministries of Agriculture, Finance, and local governments, implemented in coordination with the national food security system to ensure that reforms translate into tangible welfare gains. As Chapter 6 highlights, all three NCA countries already possess planning instruments and sectoral programs, but integration, prioritization, and coherence across existing tools and institutions is often weak. In highly fragile areas, coordination should explicitly focus on the real economy constraints that amplify shocks, such as market disruptions, high transport costs, irregular service delivery, and security challenges, so that repurposed spending targets the factors that most directly drive food price stress and income volatility at the household level.

- ***El Salvador:*** while the agenda should be primarily led by MAG (with a strong role for research and development from CENTA), certain key investments would need to be coordinated with other line ministries and local governments. Trade policy is the responsibility of the Ministry of Finance.

- ***Guatemala:*** a similar consideration applies to MAGA (among others, strengthening public extension services provided by DICORER), in coordination with other relevant institutional actors, including the Ministries of Economy and of Finance for competitiveness and trade policy goals.

- ***Honduras:*** similarly, SAG would be in charge of the repurposing agenda (with research and development driven by DICTA) and coordinate with local governments and other ministries, such as the Ministry of Economic Development and the Ministry of Finance.

Regional integration opportunities. CAC is the institutional anchor for aligning the repurposing agenda and defining a comparable functional classification of agricultural spending that distinguishes resilience-building public goods from less effective support. SIECA and COSEFIN can provide additional coordination and support.

Photo Credit: Maria Fleischmann / World Bank

BOX 7.6. PUBLIC INVESTMENT IN AGRICULTURAL PUBLIC GOODS FOR CLIMATE RESILIENCE: BRAZIL'S EMBRAPA

Brazil's agricultural resilience has been supported by sustained public investment in agricultural research, innovation, and knowledge dissemination, through the Brazilian Agricultural Research Corporation (EMBRAPA). Established in 1973 as a publicly funded institution, EMBRAPA provides collective services to agriculture, including research and development, climate resilient technologies, extension support, and climate risk analytics, whose benefits reach producers as a group rather than through transfers to individual farmers. EMBRAPA operates a decentralized network of over 40 research centers across Brazil's major agro ecological zones, generating public goods such as drought and heat tolerant crop varieties, soil and water management practices, integrated crop–livestock–forestry systems, and decision support tools for climate risk management. These investments strengthen enabling conditions for agricultural production without relying on farm gate price support or input subsidies. Rigorous empirical evidence shows that EMBRAPA's locally adapted innovation has delivered large and durable productivity gains, particularly in climate exposed and previously marginal regions. Recent research estimates that public investment in EMBRAPA increased Brazil's aggregate agricultural productivity by around 110%, with a benefit–cost ratio of approximately 17. Beyond productivity, EMBRAPA plays a central role in climate adaptation and risk management, investing in climate scenario modeling, drought and heat tolerant technologies, and digital platforms that translate climate information into agronomic guidance and public policy inputs. These public goods strengthen anticipatory capacity and reduce production volatility under increasing climate stress.

Source: Akerman et al., 2025; Paviot et al., 2025.

7.2.3. STRENGTHEN TERRITORIALLY ANCHORED LIVELIHOOD RESILIENCE IN HIGH MIGRATION CORRIDORS

Description. Migration pressure is especially concentrated in fragile territories, characterized by repeated shocks, limited economic diversification, weak market connectivity, and fragile local institutions. In these contexts, food insecurity is not only the result of bad seasons, but of structural exposure to income volatility, price stress, and localized disruptions that can quickly overwhelm household coping. Addressing food insecurity in these contexts requires moving beyond household level coping toward territorially anchored strategies that combine productive alliances, market access, climate resilience, and local governance, and stabilize production, incomes, and market access over time. Integrating climate resilience and fragility considerations into a single, location-based approach allows interventions to address the underlying drivers of food insecurity rather than its symptoms. Rather than deploying fragmented sectoral interventions, this approach bundles complementary actions in the same territories and aligns them around clear economic incentives, local institutions, market linkages, and financial structures, anchored in local institutions.

Policy implications. Governments can operationalize location-based resilience by defining priority corridors and municipalities on the basis of combined climate, food security, and violence indicators, and ensuring that selection criteria are explicit, transparent, and validated jointly with civil protection authorities and, where relevant,

peace and security actors. Sectoral actions should then be bundled into a single territorial plan with shared objectives (food security, income stability, connectivity, and resilience), assigning clear coordination roles across agencies. Each priority corridor should be underpinned by (i) a multi-hazard/compounded risk assessment that explicitly maps climate, market, and violence-related risks together rather than in parallel; (ii) a conflict-sensitivity analysis that identifies how the proposed package could affect inter-group relations and the local political economy; and (iii) a monitoring framework with explicit social cohesion and trust-in-institutions outcomes alongside food security and income indicators, so that the territorial package is measured on whether it reduces, not just mirrors, fragility dynamics.

Investments. Prioritize integrated investment packages that reduce volatility, including productive alliances and value-chain linkages, small-scale infrastructure that reduces exposure (such as drainage, water systems, and slope stabilization where relevant), and connectivity investments (roads, bridges, and logistics) that prevent isolation and price spikes after hazard events.[16] This includes investing in: (i) climate-smart production and resilience assets that reduce exposure to climate risk and stabilize output (such as soil and water management, adapted seed systems, regenerative practices, and extension services); (ii) livelihood diversification investments that expand income sources beyond a single crop or season, with particular attention to women and youth, including complementary on-farm and off-farm activities where relevant; and (iii) market access and value chain enablers that lower transaction costs and post shock disruptions, including aggregation and storage infrastructure, basic processing and quality upgrading, local logistics, market information systems, and linkages to private buyers and public procurement programs. Productive alliances[17] are a proven mechanism for linking public support with private finance and market access in high migration territories. Within productive alliances, financing arrangements should combine producer co-investment, private credit for asset formation, and targeted public financing (i.e. matching grants, guarantees, or co-financing) to close viability gaps and reduce risk. This structure enables private financial institutions to lend to producer organizations that would otherwise remain excluded, while ensuring beneficiaries retain ownership. Public resources should be used strategically to de-risk investments and crowd in private capital through offtake agreements, co-financing, and risk sharing mechanisms, rather than substituting for private investment.

Institutions and platforms. These packages require joint leadership from Agriculture Ministries and local governments, with Finance and Planning agencies enabling multi-year location-based programming and line ministries aligning their investments in the same locations. Line ministries and local governments should finance agriculture-supportive expenditure, i.e. spending that does not directly target the agricultural sector but has an indirect yet significant effect on it by supporting the rural economy and population more broadly (e.g. rural infrastructure, rural education, rural

16 The case for prioritizing resilience in lifeline infrastructure is well established. Hallegatte et al. (2019) estimate that the net benefit of investing in more resilient infrastructure in low-and middle-income countries is approximately USD4.2 trillion, with a conservative estimate of USD4 in benefit for every USD1 invested, primarily through avoided disruption losses to households and firms.

17 A productive alliance is a structured partnership that links organized small producers with buyers (private firms or public procurement agencies) through a jointly agreed business plan that specifies production requirements, quality standards, volumes, and delivery schedules. Public support typically finances complementary investments—such as productive assets, technical assistance, and organizational strengthening—that enable producers to meet market requirements and reduce transaction risks, while leveraging private demand and co investment. Cf. World Bank (2016) for a review of experiences in Latin America.

health). In line with the productive alliances approach, public actors should play an active facilitating role in mobilizing private capital, rather than acting as sole financiers.

- ***El Salvador:*** Implementation would require coordination between MAG and the Ministry of Finance, working jointly with relevant line ministries and subnational governments.
- ***Guatemala:*** MAGA should coordinate with the Ministry of Finance, line ministries, and local governments.
- ***Honduras:*** SAG should work closely with line ministries and local governments, in strategic coordination with the Ministry of Finance.

Regional integration opportunities. At the regional level, CAC and SIECA can facilitate regional coordination, regulatory alignment, knowledge exchange, and the scaling of cross border initiatives. The POLSAN includes several action areas for enhanced resilience that could be strengthened with territorially anchored approaches for high migration, high fragility corridors.

BOX 7.7. PRODUCTIVE ALLIANCES IN FRAGILE AREAS: EVIDENCE FROM MALAWI

The Malawi Agricultural Commercialization Project used the productive alliances model to integrate smallholder farmers into agricultural value chains by linking producer organizations with buyers through matching grants, technical assistance, partial credit guarantees, and last-mile infrastructure investments. Malawi's context is one of chronic fragility: the country faces recurrent climate shocks — including cyclones and droughts — high food insecurity, and a predominantly subsistence rural economy where smallholders have limited market access and weak land tenure security. The project explicitly targeted the most vulnerable groups within this context, by creating dedicated windows for women and youth participation in productive alliances and by issuing land tenure certificates to over 23,800 households. A total of 72,873 farmers were reached with agricultural assets or services and achieved at least a 50% increase in commercialization across eleven value chain products, with strong performance driven by improved access to technology and better market prices.

Source: World Bank, 2025c.

7.2.4. ALIGN NATIONAL EFFORTS THROUGH EXISTING REGIONAL PLATFORMS TO ADDRESS SHARED FOOD SECURITY RISKS

Description. While systemic shocks amplify local vulnerabilities, coordinated responses can reduce the costs and delays associated with fragmented national action. Regional coordination can reduce duplication of diagnostics, improve comparability of risk assessments, and accelerate learning across countries, while preserving full national ownership over policy choices and implementation. The institutional mapping in Chapter 6 shows that regional coordination mechanisms already exist: the region benefits from a growing set of regional public goods that strengthen how risks are analyzed, compared, and translated into national decisions. Under SICA, countries have collaborated to develop harmonized diagnostics, geospatial analytics, and planning tools that improve the identification of climate and food security hotspots and guide national investment priorities, particularly in the Dry Corridor. Existing regional platforms should be leveraged to align analysis, definitions, and decision inputs, and to prioritize a limited set of implementable mechanisms, including: (i) integrating seasonal and working capital finance with extension

services and risk information; (ii) expanding access to savings instruments and payment infrastructure in rural areas to enable the rapid delivery of transfers and payouts; and (iii) deploying risk sharing and guarantee mechanisms to mobilize private capital for climate-resilient on-farm and off-farm investments.

Policy implications. Policy coordination at the regional level should focus on a narrow set of outputs: a harmonized minimum package of indicators and thresholds used for risk bulletins, guidance on how those bulletins map to country-level actions (SOP templates that can be adapted nationally), and agreed principles for safe labor mobility (rights protections, recruitment transparency, portability/return support). Individual countries should establish formal domestic coordination arrangements that ensure regional risk signals are systematically translated into timely national decisions. To this end, they should formally specify which risk indicators (e.g. drought signals, sustained staple food price pressures, or significant market disruptions) are deemed actionable, clearly define how these indicators are mapped to national SOPs, and define rules for the scaling of social protection programs, the activation of contingency procurement mechanisms, and the adjustment of mobility-related services during periods of stress.

Investments. Investments should prioritize: (i) shared analytics and learning for trigger calibration and response design to improve quickly; (ii) scaling regional risk financing options that complement national budgets and enable rapid action after agreed triggers; and (iii) joint proposals for multi-country resilience investments in shared high-risk corridors, where cross-border market disruption and mobility patterns are most pronounced.

Institutions and platforms. Effective implementation requires the involvement of Ministries of Finance and Agriculture, other relevant line ministries, disaster risk management institutions, regulators where needed, and partners already active in disaster risk finance instruments.

- ***El Salvador:*** MAG and the Ministry of Finance would work jointly with relevant line ministries and the General Directorate of Civil Protection.
- ***Guatemala:*** SINASAN institutions, coordinated by SESAN, and MAGA should coordinate with the Ministry of Finance, MIDES, other line ministries, CONRED, and INSIVUMEH.
- ***Honduras:*** SAG (and especially UTSAN) should work closely with SEDESOL, the Ministry of Finance, line ministries, and COPECO.

Regional integration opportunities. For disaster risk management coordination and shared risk assessment, CEPREDENAC, within the SICA framework, provides an established platform for harmonizing early warning products and promoting interoperability of response approaches. For fiscal coordination and disaster risk financing, collaboration among regional finance authorities through COSEFIN and related mechanisms offers a natural entry point to link regional risk financing instruments (particularly parametric risk pooling mechanisms such as CCRIF) to national contingency and budget frameworks. In the area of agriculture and food system resilience, the CAC , particularly through the POLSAN platform, can serve as a convening platform to support alignment around shared risk corridors, such as the Dry Corridor, and to promote coherence in resilience-oriented investment priorities across countries.

Photo Credit: Curt Carnemark / World Bank

BOX 7.8. REGIONAL ANALYTICS SHAPING NATIONAL INVESTMENT PIPELINES: THE CARE PROGRAM IN SOUTH ASIA

In South Asia, the Climate Adaptation and Resilience for South Asia (CARE) program explicitly aimed to strengthen the regional evidence base for climate-resilient policies and investments at the country level. The program was structured to inform: (i) country diagnostics and policy dialogue on climate risks; (ii) geographic targeting and sequencing of climate smart agriculture, water, and resilience investments; and (iii) the integration of climate resilient standards and design parameters into national investment projects. A central pillar of CARE was a cloud-based, open-access system integrating regional climate hazards, exposure, vulnerability, hydrometeorological, and socio-economic data. The platform was designed to identify climate risk hotspots across sectors and time horizons, supporting climate risk screening and prioritization of public investments. In addition, the program supported the development of sector specific decision support systems, including agricultural and livestock advisory tools which were piloted in Bangladesh, Nepal, and Pakistan.

Source: https://www.careforsouthasia.info/.

7.3. SUMMARY OF RECOMMENDATIONS

TABLE 6. RECOMMENDATIONS FOR SHOCK RESPONSE AND FOR ENHANCED RESILIENCE

RECOMMENDATIONS FOR SHOCK RESPONSE

RECOMMENDATION	REGULATORY	INVESTMENTS	INSTITUTIONS
Move from early warning to early action to protect food consumption before coping strategies deteriorate Strengthen the connection between existing early warning platforms and national programs (adaptive social protection, food assistance, and agricultural support).	Small, transparent set of triggers and standard operating procedures (SOPs) for action. Triggers to include economic and agricultural stress signals alongside climate indicators. SOPs to anticipate fragility-related transmission channels with market-access stress proxies.	Improve interoperability between monitoring systems (agroclimatic, prices, nutrition), strengthening simple dashboards and decision routines, and ensuring delivery channels can scale quickly. Where feasible, pre-arranged financing with rapid-disbursement instruments.	**El Salvador:** DGPC, social protection programs. **Guatemala:** SESAN (SINASAN), other relevant ministries. **Honduras:** SAG (UTSAN), SEDESOL (SIRBHO registry). **Regional integration opportunities:** CEPREDENAC, CAC, SISCA Dry Corridor Anticipatory Action Framework.
Ensure existing food security programs are accessible to low-visibility shock affected households, including returnees and failed migrants	Simple rules for (i) temporary top-ups and temporary enrollment during stress periods, (ii) simplified re-enrollment protocols for returnees; (iii) protection and secure	Expand and regularly update registry coverage in the most shock-exposed municipalities, including "shock-ready" targeting; enable emergency enrollment	**El Salvador:** MAG, DGPC. **Guatemala:** SESAN, MAGA, delivery agencies. **Honduras:** SAG (UTSAN), SEDESOL (SIRBHO).

RECOMMENDATIONS FOR SHOCK RESPONSE			
RECOMMENDATION	**REGULATORY**	**INVESTMENTS**	**INSTITUTIONS**
Use existing national platforms to reach households that are high-need but poorly captured by standard eligibility rules.	data-handling protocols; (iv) time-bound eligibility mechanisms that recognize transitory vulnerability.	protocols; pre-authorize simplified payment and verification procedures for temporary benefits; strengthen interoperability between registries, food security monitoring systems, and payment platforms.	**Regional integration opportunities:** CEPREDENAC, SISCA, minimum common standards for (i) defining stress signals, (ii) sharing timely data, (iii) translating signals into national temporary, time bound responses.
Institutionalize food security crisis preparedness through pre-agreed escalation protocols Food Security Crisis Preparedness Plans (FSCPPs) to translate validated crisis assessments into predictable decisions, financing pathways, and operational scale up.	Co-development process across government, as well as humanitarian and development partners; establish rules for crisis recognition, coordination procedures, escalation protocols.	Focus on operational readiness to implement FSCPP, including (i) analytical and coordination readiness, (ii) integration into annual budget and contingency planning; (iii) testing operational readiness and FSCPP activation	**El Salvador:** MAG, DGPC. **Guatemala:** SESAN, MAGA, INSIVUMEH, CONRED. **Honduras:** SAG (UTSAN), SEDESOL, COPECO. **Regional integration opportunities:** CEPREDENAC, CAC, SISCA COSEFIN, regional fiscal and disaster risk financing coordination for pre-arranged liquidity options complementing national contingency budgets ; inform POLSAN operationalization.
Incorporate gender, IP/AD, and youth responsive design into short term food security responses Ensure that assistance reaches women effectively, while temporarily activating complementary opportunities for youth in high pressure contexts and adopting culturally-appropriate approached for IP/AD. Address the safety and do-no-harm dimension.	Women as preferred transfer recipients; enrollment processes, payment schedules, and delivery modalities to account for women's care responsibilities and safety constraints; limited, time-bound youth and IP/AD support package to be activated in priority areas during periods of stress.	Adapt payment and communication systems so women can receive transfers directly; last mile outreach and grievance feedback mechanisms to ease exclusion risks and intra household constraints; shock-response packages to include small, flexible funding windows to support time bound youth opportunities; culturally appropriate IP/AD strategies that can be deployed rapidly during periods of stress.	**El Salvador:** MAG, social protection programs, ISDEMU, INJUVE. **Guatemala:** MAGA, MIDES, SEPREM, CONJUVE, CODISRA, FODIGUA, DEMI. **Honduras:** SAG, SEDESOL, SEMUJER, INJUVE, DINAFROH CONAPOA. **Regional integration opportunities:** CAC (POLSAN), SISCA.

RECOMMENDATIONS FOR ENHANCED RESILIENCE

RECOMMENDATION	REGULATORY	INVESTMENTS	INSTITUTIONS
Strengthen agricultural insurance as an ex-ante instrument for livelihood protection and food system resilience Agricultural insurance to address aggregate production and income stress, to be introduced alongside social protection and food assistance within a risk layered financing strategy.	Define clear, transparent, predictable policy framework for publicly supported agricultural insurance, specifying target segments, shocks covered, role and limits of premium subsidies, rules for payout triggers, and relationship to post-disaster assistance.	Allow insurance to function at scale over time through (i) farmer registries, (ii) payment infrastructure, (iii) risk information platforms (weather and production indices, price monitoring), (iv) institutional capacity for product design, supervision, and monitoring. Provide complementary services that turn payouts into recovery.	**El Salvador:** MAG. **Guatemala:** MAGA. **Honduras:** SAG. **Regional integration opportunities:** CEPREDENAC, COSEFIN through CCRIF.
Repurpose agricultural support toward public goods and services Refocus public support on extension services, climate smart practices, soil and water management, and market infrastructure, rather than relying on inefficient or poorly targeted subsidies and market price support.	Gradually replace input subsidies with (e-) vouchers, avoid trade restrictions (including non-tariff barriers), decouple support from production.	Rural market infrastructure and storage; local feeder and market connectivity; irrigation where economically and environmentally appropriate; extension services and support for the adoption of climate-smart and nutrition-smart agriculture practices. Complement with consumer support measures that can be activated when abnormal food price pressures emerge.	**El Salvador:** MAG (CENTA), MH, line ministries, local governments. **Guatemala:** MAGA (DICORER), MINFIN, MINECO, line ministries, local governments. **Honduras:** SAG (DICTA), SEFIN, SDE, local governments. **Regional integration opportunities:** CAC, SIECA, COSEFIN.
Strengthen territorially anchored livelihood resilience in high migration corridors Combine productive alliances, climate resilience, and local governance, integrating climate resilience fragility considerations into a single, location-based approach.	Defining priority corridors and municipalities, bundle sector actions into a single territorial plan with shared objectives (food security, income stability, connectivity, and resilience), assign clear coordination roles across agencies.	Integrated investment packages to reduce volatility, including productive alliances and value-chain linkages, small-scale infrastructure that reduces exposure (drainage, water systems, slope stabilization where relevant), and connectivity investments (roads, bridges, and logistics) that prevent isolation and price spikes after hazard events.	**El Salvador:** MAG, MH, line ministries, local governments. Guatemala: **MAGA,** MINFIN, line ministries, local governments. **Honduras:** SAG, SEFIN, line ministries, local governments. **Regional integration opportunities:** CAC (POLSAN update), SIECA.

RECOMMENDATION	REGULATORY	INVESTMENTS	INSTITUTIONS
Align national efforts through existing regional platforms to address shared food security risks Use existing regional platforms to align analysis, definitions, and decision inputs to reduce duplication, improve comparability, and accelerate cross-country learning, while preserving national ownership over policy choices and implementation.	Harmonized minimum package of indicators and thresholds used for risk bulletins, guidance on how those bulletins map to country-level actions (SOP templates that can be adapted nationally), and agreed principles for safe labor mobility (rights protections, recruitment transparency, portability/return support).	Shared analytics and learning for trigger calibration and response design improvement, scaling regional risk financing options that complement national budgets and enable rapid action after agreed triggers, joint proposals for multi-country resilience investments in shared high-risk corridors, where cross-border market disruption and mobility patterns are most pronounced.	**El Salvador:** MAG, General Directorate of Civil Protection, line ministries, MH. **Guatemala:** SESAN (SINASAN), MAGA, MIDES, line ministries, CONRED, INSIVUMEH, MINFIN. **Honduras:** SAG (UTSAN), SEDESOL, line ministries, COPECO, SEFIN. **Regional integration opportunities:** CEPREDENAC, COSEFIN, CAC (POLSAN).

BOX 7.9. GUIDING PRINCIPLES AND GOOD PRACTICES FOR HUMAN MOBILITY POLICIES

This report has looked at migration as a distress-driven response to shocks, whose effectiveness at reducing food insecurity is mixed. Recommendations, as such, have intentionally focused on shock response and enhanced resilience rather than at the governance and management of migration. With this caveat in mind, recent analysis on human mobility approaches for Latin America and globally allows for the identification of a set of guiding principles and good practices that can be relevant for NCA countries:

- **Basic rights and protection: guarantee the basic rights of all people on the move, regardless of status.** Effective migration policies start from the premise that all people in mobility, irrespective of their status, are rights holders. This implies ensuring minimum conditions during transit and at destination (documentation, access to services, and protection), not only as a normative obligation but also as a condition to reduce negative externalities (informal markets, insecurity, concentrated fiscal pressure) and to facilitate self-reliance.
- **Agency, dignity, and non-discrimination: protect the dignity and agency of migrants and displaced persons, and prevent discrimination.** Institutions should safeguard the dignity and agency of migrants, displaced persons, and refugees, avoiding practices that aggravate vulnerabilities. This includes protection against trafficking, violence, and exploitation; ensuring humane returns and sustainable reintegration; and leveling the playing field through regular pathways (regularization, temporary permits, access to work), because they facilitate self-reliance and reduce risks and social costs over the medium term. Governments should expand safe and regular labor pathways that are predictable and transparent, and reduce exploitation risks through regulated recruitment and clear worker protections.
- **Participation and voice: enable participation mechanisms so people on the move and host communities can influence decisions.** Since the political representation of migrants is often limited (coordination barriers, weak connections to political systems, heterogeneity of groups), participation mechanisms are recommended to incorporate the needs of people on the move and host communities

into the design and adjustment of policies. This improves legitimacy, reduces tensions, and helps guide services and integration measures.

- **Active, integrated management with a development perspective: manage human mobility actively and comprehensively, with a strategic development perspective.** Beyond reactive responses to spikes, frameworks are recommended to manage emigration, immigration, transit, and return simultaneously through a coherent, long-term development approach. This requires cross-cutting efforts: political legitimacy, multi-country coordination, data collection and use, fiscal sustainability, and multi-actor, multisectoral coordination. Countries should treat labor mobility as a development instrument by investing in human capital and skills, building labor intermediation systems (matching supply and demand), and partnering with employers and destination countries to align training, skills recognition, and legal pathways.
- **Inclusion through national systems and support to host communities: integrate people on the move into national systems and strengthen services in receiving communities.** The most effective interventions invest in both host communities and people on the move, strengthening national systems (services and benefits) to serve everyone. The recommendation is to avoid parallel "migrant-only" systems (less cost-effective and more prone to tensions) and instead rapidly integrate emergency assistance with integration plans. Human mobility should be framed as an opportunity to close territorial development gaps: where transit and settlement concentrate, investments in shared infrastructure and services may be justified, improving social cohesion and development outcomes. Policies should ensure migrants can access appropriate social protection and, where relevant, portability of benefits, which supports safe mobility and better labor market integration.

Source: World Bank, 2024b; Acosta et al., 2025.

8 | CONCLUDING THOUGHTS

Photo Credits: Andre Nery / Shutterstock
Omri Eliyahu / Shutterstock

This study has explored the complex relationships among food insecurity, shocks, fragility, and migration pressures in Northern Central America. The findings highlight an important conclusion: food security is not just a humanitarian issue; it is a fundamental factor in stability, resilience, and mobility decisions. When households struggle to consistently meet basic food needs, their vulnerability increases. In fragile environments, when shocks (whether they are climatic, economic, or security-related) occur, their effects become more severe. If recovery options are limited, migration shifts from being an economic goal to serving as a coping mechanism – whose effectiveness, this report shows, remains however limited in practice. The NCA region faces chronic food insecurity for large shares of its population, coupled with intensifying climate risks, persistent inequality, and evolving migration dynamics, including a recent trend towards return and reverse migration (see Box 9.1). With a strong El Niño forecast to emerge by late 2026 (potentially among the most intense on record), NCA countries are likely to face significantly reduced and erratic rainfall, prolonged dry spells, and heightened drought risk, deepening food insecurity in an already vulnerable region. Inaction carries high costs—not only in lost development gains, but in heightened instability and forced mobility. At the same time, these very findings point to opportunity: reducing hunger and strengthening resilience are central to reducing distress-driven migration in fragile and shock-prone contexts.[18]

BOX 8.1. RETURNEES AND REVERSE MIGRATION: IMPLICATIONS FOR NCA

In 2025 and 2026, mobility in Latin America and the Caribbean has been characterized by more non-linear and adaptive trajectories, where people alternate between advancing, stagnating, returning voluntarily, or being deported, according to changes in migration policies, protection risks, and unequal access to assistance. In this context, return ceases to be an end-event and becomes part of a mobility cycle that may include re-migration, particularly when reintegration is limited. The IOM reports that irregular southward mobility remains dynamic and sensitive to local conditions (there is no single regional trend), with returns shaped by personal circumstances and operational constraints. In Guatemala and Honduras, for example, north-south flows are associated with people returning from Mexico after not being able to continue to the US, as well as with recurrent needs for food, temporary accommodation and financial support. In Honduras, local authorities are making progress in strengthening reintegration services by opening municipal offices for the support of returnees. The return generates pressure on social services and labor markets already stressed, increasing risks of informality, indebtedness, and poverty, with impacts differentiated by age and gender. Increased returns and deportations are associated with increased demand for housing, health and education; stigmatization and limited support for reintegration; and evidence that young returnees may choose to migrate again, leaving them exposed to irregular routes and risks of recruitment by criminal networks. When economic and/or agricultural shocks and fragility deteriorate income and stability, return without effective reintegration can become an additional vulnerability factor.

Source: IOM, 2025a; IOM, 2025b; IOM, 2025c.

[18] Development in origin communities does not necessarily reduce migration: rising incomes and capabilities expand households' financial ability to migrate before eventually reducing the incentive to do so, producing a non-linear, hump-shaped relationship between development and out-migration (Clemens, 2014). De Haas (2021), through the aspirations-capabilities framework, similarly shows that policies which simultaneously raise aspirations and financial capacity can increase migration in the short to medium term. As this report did not aim at addressing all drivers of migration, but was specifically focused on drivers of distress-driven migration, an exploration of the aspiration angle and of pull factors at destination (e.g. labor market conditions, legal pathways) was beyond the scope of this work.

A well-designed system of policies and investments can prevent temporary stress from becoming a crisis, while supporting resilience and local development. Pre-identified shock-response mechanisms that translate early warnings into early action, targeting vulnerable households and accounting for socio-demographic specificities, can preserve assets and human capital before coping thresholds are crossed. Meanwhile, interventions in ex-ante risk management, climate adaptation, and local governance, focusing on the provision of public goods and services and leveraging regional coordination, can reduce the structural vulnerabilities that amplify the impact of adverse events. For governments, this means integrating food security, agricultural resilience, disaster risk management, and social stability within a coherent policy framework, also recognizing their joint impact on migration decisions, rather than treating them as isolated sectors. For donors and development partners, it reinforces the value of investments that operate across the humanitarian–development–peace nexus, and highlights the importance of combining rapid support mechanisms with long-term resilience-building in identified fragility hotspots.

Beyond national boundaries, coordinating and promoting a regional agenda for food security and stability can play a major role in strengthening resilience in Northern Central America. The SICA and its network of sectoral institutions represent a powerful platform for coordinating regional policy initiatives and maintaining consistent, best practice approaches, aligning country efforts while preserving national ownership. Regional data coordination via SICA would also allow for the improved collection of comparable cross-country information on agrometeorological, production, price, and food security data, to enable both policymakers and households to improve planning, risk management, and early action in the face of shocks.

REFERENCES

Acosta, P., Özden, C., Lebow, J., Rodriguez, L., Dahlgren, E. (2025). *Global Skill Partnerships for Migration: Preparing Tomorrow's Workers for Home and Abroad.* Washington, DC: World Bank Group.

Akerman, A., Moscona. J., Pellegrina, H.S., Sastry, K. (2025). *Public R&D Meets Economic Development: Embrapa and Brazil's Agricultural Revolution.* NBER Working Papers 34213, National Bureau of Economic Research, Inc.

Anríquez, G.; Foster, W.; Ortega, J.; Falconi, C., and De Salvo, C.P. (2016). Public Expenditure and the Performance of Latin American and Caribbean Agriculture. Working Paper 722, Inter-American Development Bank, Washington, DC.

Ayala, A., & Meier, B. M. (2017). A human rights approach to the health implications of food and nutrition insecurity. *Public Health Reviews,* 38(1), 10. https://doi.org/10.1186/s40985-017-0056-5

Ben Bin, K., Jafino, B., Desjonqueres, C., & Masson, S. (2025). Unpacking the Disaster-FCV Nexus: Household Economic Impacts of Conflict and Floods in Nigeria. *Policy Research Working Paper; 11167.*

Carling, J., & Schewel, K. (2018). *Revisiting aspiration and ability in international migration. Journal of Ethnic and Migration Studies,* 44(6), 945-963.

Ceballos, F., Hernandez, M. A., & Paz, C. (2024). COVID-19 and extreme weather: Impacts on food security and migration attitudes in the rural area of Guatemala. *World Development,* 173, 106422.

Choithani, C. (2020). Gendered livelihoods: Migrating men, left-behind women and household food security in India. *Gender, Place & Culture,* 27(10), 1373–1394. https://doi.org/10.1080/0966369X.2019.1681366

Clemens, M.A. (2014). "Does development reduce migration?," Chapter, in: Robert E.B. Lucas (ed.), International Handbook on Migration and Economic Development, chapter 6, pages 152-185, Edward Elgar Publishing.

David, A., Pienknagura, S., & Roldos, J. (2020). Labor Market Dynamics, Informality and Regulations in Latin America. *IMF Working Papers,* 20

de Haas, H. (2021). A theory of migration: The aspirations-capabilities framework. *Comparative Migration Studies,* 9(1), 8.

Devarajan, S., & Jack, W. (2007). Protecting the Vulnerable: The Tradeoff between Risk Reduction and Public Insurance. *World Bank Economic Review,* 21(1), 73–91. https://doi.org/10.1093/wber/lhl007

Deza, M. C., & Ruiz-Arranz, M. (2022). *Food Security in Central America, Panama, the Dominican Republic, Mexico and Haiti.* IDB.

ECLAC. (2021). Mejores prácticas y lecciones aprendidas sobre los seguros agropecuarios en Centroamérica y la República Dominicana. Comisión Económica para América Latina y el Caribe (CEPAL)/Consejo Agropecuario Centroamericano del Sistema de la Integración Centroamericana (CAC-SICA). (LC/MEX/TS.2021/23), Ciudad de México, 2021.

FAO. (1996). *World Food Summit—Final Report.*

FAO. (2023). *Hunger hotspots.* WFP; FAO; https://doi.org/10.4060/cc6206en

FAO & SICA. (2024). Building Resilience in the Dry Corridor of the SICA Region.

https://storage.googleapis.com/hih-resources/dry%20corridor/Dry%20Corridor%20English.pdf

FAO, IFAD, PAHO, UNICEF, & WFP. (2026). *Latin America and the Caribbean Regional Overview of Food Security and Nutrition 2025.*

FAO, UNDP, and UNEP. (2021). *A Multi Billion Dollar Opportunity: Repurposing Agricultural Support to Transform Food Systems.* Rome: Food and Agriculture Organization of the United Nations.

FAO, WFP & GNAFC. 2026. *2026 Global Report on Food Crises – Joint analysis for better decisions.* Rome, FAO & WFP. https://doi.org/10.4060/cd9424en.

Flores Agreda, R., Muñoz, G., De Salvo, C., & Alcaraz Rivero, A. (2020). *Análisis de políticas agropecuarias en Centroamérica y República Dominicana. Informes de política agropecuaria.* Washington DC: Inter-American Development Bank.

Fund for Peace. (2025). *Fragile States Index 2024: Annual Report.*

GNAFC. (2023). *Haiti Country Profile.* Global Network Against Food Crises.

Hallegatte, Stephane, Jun Rentschler, and Julie Rozenberg. 2019. *Lifelines: The Resilient Infrastructure Opportunity.* Sustainable Infrastructure Series. Washington, DC: World Bank.

Heltberg, R., Dercon, S., & de la Fuente, A. (2014). What do Household Surveys Really Tell Us about Risk, Shocks, and Risk Management in the Developing World? *Journal of Development Studies,* 50(5), 597–610.

Hernández-Vásquez, A., Visconti-Lopez, F. J., & Vargas-Fernández, R. (2022). Factors Associated with Food Insecurity in Latin America and the Caribbean Countries: A Cross-Sectional Analysis of 13 Countries. *Nutrients,* 14(15), 3190.

Iacobucci, D. (2008). *Mediation analysis.* Quantitative Applications in the Social Sciences. Thousand Oaks, CA: SAGE Publications, Inc., https://doi.org/10.4135/9781412984966.

IDB. (2023). *Shock Responsive Social Protection in El Salvador* (Project ES L1159). Inter-American Development Bank.

Imbach, P., Beardsley, M., Bouroncle, C., Medellin, C., Läderach, P., Hidalgo, H., Alfaro, E., Van Etten, J., Allan, R., Hemming, D., Stone, R., Hannah, L., & Donatti, C. I. (2017). Climate change, ecosystems and smallholder agriculture in Central America: An introduction to the special issue. *Climatic Change,* 141(1), 1–12. https://doi.org/10.1007/s10584-017-1920-5

IOM. (2022). *Understanding the adverse drivers and implications of migration from El Salvador, Guatemala and Honduras.* International Organization for Migration and World Food Programme.

IOM. (2025a). *Strategic Foresight: Multi-Country Panorama of Latin America and the Caribbean 2025–2028.* International Organization for Migration. Lighthouse/IOM Programme.

IOM. (2025b). *Displacement Tracking Matrix (DTM). Spotlight on Returns in LAC: 1–30 September 2025.* International Organization for Migration. IOM-DTM.

IOM. (2025b). *Displacement Tracking Matrix (DTM). Spotlight on Returns in LAC: 1-31 October 2025.* International Organization for Migration. IOM-DTM.

IPC. (2024). *Haiti: Acute Food Insecurity Situation for August 2024-February 2025 and Projection for March-June 2025.*

Linke, A., Leutert, S., Busby, J., Duque, M., Shawcroft, M. & Brewer, S. (2023). Dry growing seasons predicted Central American migration to the US from 2012 to 2018. *Scientific Reports,* 13, 18400. https://doi.org/10.1038/s41598-023-43668-9.

Lopez, C.A.; Salazar, L., and De Salvo, C.P. (2017). Public Expenditures, Impact Evaluations and Agricultural Productivity. Technical Note IDB-TN-1242, Inter-American Development Bank, Washington, DC.

Lopez, R., and Galinato, G.I. (2007). Should Governments Stop Subsidies to Private Goods? Evidence from Latin America. Journal of Public Economics 91: 1071–94.

Martin, W., Vos, R., Glauber, J., Laborde, D., Piñeiro, V., Gautam, M., Resnick, D., Sanchez, M.V., Ding, H., Rosdaniah, S., Alta, A., Fauzi, A., Setiawan, I., Piñeiro, M., Elverdi, P., Illescas, N., Tejeda Rodriguez, A., Ruggeri, C. (2022). *G20 Framework for Repurposing Agricultural Policy Support to Meet Climate and Food Security Goals.* G20 Task Force on Food Security and Sustainable Agriculture.

OCHA. (2025a). Latin America and the Caribbean—Humanitarian Needs and Response Plans 2025. United Nations Office for the Coordination of Humanitarian Affairs

OCHA. (2025b). Central America: Anticipatory Action Framework for Drought – 2025. United Nations Office for the Coordination of Humanitarian Affairs

OECD. (2024). *Agricultural Policy Monitoring and Evaluation 2024: Innovation for Sustainable Productivity Growth.* Paris: Organisation for Economic Co operation and Development.

OECD. (2025). *States of Fragility 2025.*

Paviot, M., Peña, H., del Grossi, M., Mora López, E., Tejeda, M. F., Traverso, V., Garcia Ferreira, B.M., Leite, L. (2025). Enhancing Brazil's Agriculture Support: Policies for a Competitive, Green, and Inclusive Agrifood Sector. Washington, DC: The World Bank.

Perego, V. M. E., Brown, M., Ceballos, F., Hernandez, M., Berrospi, M. L., Flores, L., & Mora, E. (2024). *International prices and food security: An analysis of food and fertilizer price transmission in Central America.* Washington, DC: World Bank.

Poole, N., Donovan, J., & Erenstein, O. (2021). Viewpoint: Agri-nutrition research: Revisiting the contribution of maize and wheat to human nutrition and health. *Food Policy, 100,* 101976. https://doi.org/10.1016/j.foodpol.2020.101976

Ruiz-Soto, A., Bottone, R., Waters, J., Williams, S., & Louie, A. (2021). *Charting a new regional course of action: The complex motivations and costs of central american migration.*

Sadiddin, A., Cattaneo, A., Cirillo, M., & Miller, M. (2019). Food insecurity as a determinant of international migration: Evidence from Sub-Saharan Africa. *Food Security, 11*(3), 515-530.

Smith, M. D., & Floro, M. S. (2020). Food insecurity, gender, and international migration in low- and middle-income countries. *Food Policy, 91,* 101837. https://doi.org/10.1016/j.foodpol.2020.101837

Sou, G., Shaw, D., & Aponte-Gonzalez, F. (2021). A multidimensional framework for disaster recovery:

Longitudinal qualitative evidence from Puerto Rican households. *World Development,* 144, 105489. https://doi.org/10.1016/j.worlddev.2021.105489

UNHCR. (2023). *El Salvador, Guatemala and Honduras situation* [Situation reports]. UNHCR. https://reporting.unhcr.org/operational/situations/el-salvador-guatemala-and-honduras-situation

UNHCR. (2025). Refugee statistics. United Nations High Commissioner for Refugees.

United Nations. (2024). International migrant stock. Department of Economic and Social Affairs, Population Division

UNODC. (2023). *GLOBAL STUDY ON HOMICIDE 2023.*

WFP. (2021). *Stemming rising migration from Central America calls for tackling immediate needs and root causes.*

WFP. (2024). Anticipatory Action Activation: Bangladesh. July 2024. ReliefWeb.

WFP & Action Against Hunger. (2024). El Niño in Latin America and the Caribbean: 2023–2024.

WFP, IDB, IFAD, & IOM. (2017). *Food security and emigration: Why people flee and the impact on family members left behind in El Salvador, Guatemala and Honduras.*

World Bank. (2016). *Linking Farmers to Markets through Productive Alliances: An Assessment of the World Bank Experience in Latin America.* Washington, DC: The World Bank.

World Bank. (2023). *Food Security Crisis Preparedness Plan (FSCPP): Background for Food and Nutrition Security Partners.* Washington, DC: The World Bank.

World Bank. (2024a). *Feasibility Study - Disaster Risk Finance and Insurance (DRFI) Solutions for Family Farmers in El Salvador, Guatemala, and Honduras.* Washington, DC: The World Bank.

World Bank. (2024b). *Human Mobility Strategy for Latin America and the Caribbean.* Unpublished. Washington, DC: The World Bank.

World Bank. (2025a). *Repurposing Farm Support: Transforming Agrifood Systems for Healthy People, Healthy Economies, and a Healthy Planet.* Washington, DC: The World Bank.

World Bank. (2025b). *Rwanda AFE to Expand Economic Opportunities for Refugees and Host Communities.* World Bank Press Release, June 25, 2025.

World Bank. (2025c). *Implementation Completion Report, Malawi Agricultural Commercialization Project (P158434).* Washington, DC: The World Bank.

World Bank. (2026). *Personal remittances, received (% of GDP). World Development Indicators.*

ANNEX I.

DISCUSSION AND CONSIDERATIONS: LIMITATIONS, INTERPRETATION RISKS, AND OPERATIONAL CAVEATS

This study offers new evidence at the household level regarding the interaction between food insecurity, disaster and other shocks, and migration pressures in fragile and violence-affected settings in Northern Central America. As with any cross-sectional empirical analysis conducted in complex environments, where hazards, insecurity, and market disruptions can cascade and compound, the findings should be interpreted with caution. This section outlines the main limitations of the study and discusses the implications for the application of the results in policy design.

Data and measurement limitations. The analysis relies on a single-round household survey implemented in mid-2025. The data are rich and internally consistent, but they represent a point-in-time snapshot rather than a panel. This limitation is particularly relevant for disaster-related shocks, whose welfare impacts can unfold with time lags (e.g., through income losses, market disruption, and asset depletion), and where households may experience multiple overlapping events within a season. As a result, the study is well suited to documenting patterns and associations—and to testing policy-relevant mechanisms using econometric methods—but it cannot fully establish long-run trajectories without follow-up measurement. In addition, some key topics (e.g., irregular migration behaviors, exposure to violence, and income) are sensitive and may be subject to underreporting or social desirability bias, despite enumerator training, confidentiality protocols, and careful questionnaire design. Finally, self-reported shock exposure may compress heterogeneity in severity, duration, and recurrence, which can underestimate relationships for disaster risk exposure. These constraints imply that estimated magnitudes should be treated as indicative rather than exact.

Context specificity and external validity. The study focuses on selected survey areas within Northern Central America. The core relationships identified—shocks worsening food outcomes, hunger increasing migration pressure, and remittances supporting consumption—are consistent with the broader literature, but the size and composition of effects are likely to vary across settings. Even within the region, heterogeneity is substantial: remote rural communities, peri-urban areas, and territories affected by organized violence face different constraints, network structures, market connectivity, and hazard profiles and service continuity (e.g., flood exposure, isolation risk after storms, reliability of water/road networks). Policy applications should therefore avoid mechanical extrapolation and instead treat the results as an evidence-based diagnostic to inform geographically targeted programming, complemented where possible by local validation and additional diagnostics, including validation of risk exposure patterns and delivery feasibility under both insecurity and post-hazard access constraints.

Causality, timing, and identification assumptions. The study applies multivariate regression models and, where feasible, causal methods (including mediation analyses) to explore mechanisms. These approaches strengthen interpretation but rely on assumptions that may not hold perfectly in fragile settings. Timing also matters: hunger indicators typically capture recent experiences (e.g., past 30 days), while migration intentions may reflect expectations shaped by longer horizons and shifting policy environments. Reverse causality cannot be entirely ruled out (e.g., households planning migration may change livelihood decisions), although the analysis mitigates this risk through controls and robustness checks. Results should therefore be interpreted as credible evidence on pathways and relative importance, not as definitive causal magnitudes in all circumstances.

External shocks and changing policy environments. The relevance of specific estimates may evolve with macroeconomic conditions, changes in migration policies in destination countries, and climate dynamics including changes in hazard frequency, intensity, and seasonality. Remittance flows, labor demand, enforcement regimes, and climate variability can shift quickly and materially affect household coping strategies and migration pressure. Similarly, the operational performance of early warning systems, contingency financing, and delivery channels may change over time and materially affect the effectiveness of anticipatory responses. This reinforces the value of using the study as a baseline and embedding monitoring systems that allow policy calibration over time.

What this study cannot address. Migration is an inherently dynamic, multidirectional, and context-dependent process, and no single cross-sectional study can capture its full complexity, given that it cannot reconstruct migration trajectories over time or establish what happens to households after migration occurs. Among the specific limitations: the survey does not capture returned migrants as a distinct population, and therefore cannot address how return affects household food security or the likelihood of re-emigration; remittances are observed as a point-in-time receipt indicator rather than a flow, precluding analysis of volatility, interruption risk, or longer-term dependency dynamics; the near-exclusive concentration of migrant household members in international destinations (91.2% of the sample) makes disaggregation by migration type empirically unreliable; the study has no information on conditions at destination, and cannot assess migrants' own welfare or how destination labor markets shaped remittance capacity; the presence of an emigrant household member may itself reshape remaining members' migration aspirations through competing mechanisms—providing a reception network that lowers the perceived cost and risk of migrating, or conversely reducing migration pressure by activating an income channel—and the cross-sectional design cannot disentangle which mechanism dominates or whether both operate simultaneously for different household members.

ANNEX II.
EMPIRICAL MIXED-METHOD DESIGN

This annex documents the integrated mixed-methods design underpinning this study. The research combines a household survey of 1,291 households across Guatemala, Honduras, and El Salvador with 56 qualitative sessions (21 focus group discussions and 35+ key informant interviews). The two components were designed jointly: the quantitative strand identifies patterns and magnitudes in the food security–migration–fragility nexus, while the qualitative strand traces causal mechanisms, captures heterogeneity beyond sample averages, and surfaces emergent themes not anticipated in the original hypotheses. Full methodological detail, replication scripts, and complete regression tables are documented in the project's analytical repository.

A.1 MIXED-METHODS RATIONALE

The study adopts a convergent mixed-methods design in which the quantitative and qualitative components were fielded in parallel and integrated at the analysis stage. This design choice responds to three analytical needs:

- Explanatory depth (causal mechanisms). The quantitative estimates identify patterns and magnitudes, but do not explain how migration decisions are made within the household, why some households with high migration intention remain immobile, or what role institutional distrust plays in program access. The qualitative evidence documents these mechanisms.

- Heterogeneity (beyond averages). Average effects conceal critical variation by gender, ethnicity, household composition, and type of violence exposure. The qualitative design privileges depth over representativeness and captures this heterogeneity where the survey registers only conditional averages.

- Emergent findings (non-hypothesized). The study identified six emergent themes not contemplated in the original inception hypotheses: (i) qualitative transformation of migration drivers, (ii) forced immobility as a structural crisis, (iii) gender as the axis of private burden, (iv) the remittance paradox as dependency, (v) institutional fragility as a differential amplifier, and (vi) community social capital as a critical asset.

Mixed-methods triangulation was conducted in four passes: where quantitative and qualitative evidence converged, findings are reported as robust; where they diverged, the divergence is reported as heterogeneity.

A.2 QUANTITATIVE COMPONENT

A.2.1 SAMPLING DESIGN

The survey follows a multi-stage, probability-proportional-to-size (PPS) design with villages as primary sampling units (PSUs) and households as ultimate sampling units (USUs). Stratification combines two dimensions:

- Fragility typology (four strata derived from Principal Component Analysis over two dimensions): (a) Environmental fragility — water stress in crops and livestock,

drought probability (WRI), historical counts of river floods, earthquakes, tsunamis, volcanic eruptions, cyclones, water scarcity events, wildfires, and extreme heat (GDRI); (b) Social fragility — historical counts of battles, protests, riots, and violence against civilians (ACLED).

- Household-head gender (male- vs. female-headed).

The four fragility strata are: Compounded Fragility (high environmental–high social), High Environmental Only, High Social Only, and Low-Low. The distribution of sampled households across strata varies markedly by country: El Salvador concentrates in high social fragility (43.2 percent) and compounded fragility (35.2 percent); Guatemala in high social fragility (50.2 percent); Honduras is more evenly distributed, with the largest share in low fragility (37.0 percent) and high environmental only (34.6 percent).

A.2.2 SAMPLE SIZE AND MINIMUM DETECTABLE EFFECT

Total sample: N = 1,291 households (Guatemala 432, Honduras 422, El Salvador 437). Sample size was calibrated inversely: given a feasible total sample, the smallest detectable effect (MDE) is computed at 80 percent power and α = 0.05, after removing inflation factors for oversampling, clustering (DEFF), and covariate adjustment.

Binary outcome MDE (food insecurity, migration intention):

$$n = \left(Z_{(\alpha/2)} + Z_{\beta}\right)^2 \cdot \left(p^1\left(1 - p^1\right) + \left(p^2\left(1 - p^2\right)\right)\right) / \left(p^2 - p^1\right)^2 \cdot 1/\left(1 - R^2\right)$$

Continuous outcome MDE (HDDS dietary diversity):

$$n = 2\left(Z_{(\alpha/2)} + Z_{\beta}\right)^2 \sigma^2 / MDE^2 \cdot 1/\left(1 - R^2\right)$$

Design effect: $DEFF = 1 + (\bar{m} - 1)\,\rho\,(1 + CV_m^2),$ where ρ is the intra-cluster correlation and $\bar{m}$ the average cluster size.

A.2.3 ESTIMATION STRATEGY

Quantitative estimates reported come from multivariate linear regressions (OLS for continuous outcomes, linear probability models for binary outcomes). The analytical approach varies by research question: Q1 relies on descriptive statistics and visual diagnostics; Q2–Q3 model food security as a function of shock exposure (type and intensity, coded 0/1/2/3+) with interaction terms for fragility; Q4 models migration intention as a binary outcome with food insecurity, shocks, household controls, and country fixed effects as predictors; Q5 treats food security as the outcome with migration and remittance receipt as predictors (descriptive, not causal); Q6 employs instrumental variables (exogenous area-level risk) and mediation analysis (shock-induced migration and remittances). All models use robust standard errors clustered at the municipal level. The general specification is: come from multivariate linear regressions (OLS for continuous outcomes, linear probability models for binary outcomes) with the following specification:

$$Y_{(h,m,c)} = \alpha + \beta = \cdot\, Shock_{(h,m)} + \gamma \cdot Fragility_m + \delta \cdot X_h + CountryFE_c + \varepsilon_{(h,mc)}$$

where:

- $Y_{(h,m,c)}$ is the outcome for household h in municipality m in country c (hunger, rCSI, HDDS, or migration intention);
- $Shock_{(h,m)}$ captures shock exposure (type and intensity);
- $Fragility_m$ is the municipal-level fragility indicator;
- X_h is a vector of household characteristics (age, gender, education of head; household size; children; land/housing ownership);
- Country fixed effects absorb country-level heterogeneity;
- Standard errors are clustered at the municipal level.

For Q6 (fragility amplification), the analysis additionally estimates:

- Interaction specifications: Shock × Fragility terms to test whether the same shock produces larger impacts in higher-fragility contexts.
- Instrumental variables: exploits exogenous variation in area-level risk (climate risk, conflict exposure) to isolate the externally driven component of shock exposure.
- Mediation analysis: tests whether shock effects on food security operate partially through induced migration and remittance flows.

A.3 QUALITATIVE COMPONENT

A.3.1 FIELDWORK DESIGN

Fieldwork period: February 3–28, 2026. Countries: Guatemala, Honduras, El Salvador. Geographic coverage: territories selected by fragility typology derived from the quantitative sampling frame, prioritizing the Dry Corridor and rural areas with high migration intensity.

A.3.2 INSTRUMENTS

Focus group discussions (FGDs). A total of 21 groups were conducted with 178 participants. Semi-structured guides followed four thematic sections aligned with H1–H4. Average group size: 8–10 participants; duration: 90–120 minutes. The FGD stratification was as follows:

GROUPTYPE	N GROUPS	N PARTICIPANTS	COUNTRIES
Mixed agricultural households	5	~45	HN, GT, SV
Female-headed households	4	~34	GT, HN, SV
Rural youth (18–29 years)	4	~36	GT, HN, SV
Returned migrants	3	~25	HN, GT, SV
Indigenous women	3	~24	GT, HN
Rural men	2	~14	SV, HN

Key informant interviews (KIIs). Over 35 semi-structured interviews were conducted (45–90 minutes each) with community and agricultural leaders, extension agents, local health and education workers, municipal and regional officials (social protection, rural development, risk management), local and international NGOs, representatives of international organizations (WFP, FAO, IOM, UNHCR), indigenous and women's organizations, and traditional authorities where applicable. Interview guides were adapted to the informant's role.

A.3.3 RECRUITMENT AND ACCESS

Community access was managed through pre-existing networks with local organizations and community leaders. Participants received nominal compensation for transport and time in accordance with World Bank ethical standards. No monetary incentives that could bias selection were offered.

A.3.4 INSTRUMENT OUTLINES

The full instruments used during fieldwork are available on request to the World Bank. The structural outlines are summarized below.

FGD guide (90–120 min, 8–10 participants, in Spanish with indigenous language interpreters available):

- Section 1 — Warming-up and informed consent (10 min): introductions, study purpose, confidentiality, consent, permission to record.
- Section 2 — Perceived shocks and food security (25 min, aligned with H1/H3): community shocks, dietary impacts, coping strategies and household decision-making.
- Section 3 — Migration as response (25 min, aligned with H2): migration intention, push/pull factors, barriers to mobility, family consequences.
- Section 4 — Remittances, returns, and reintegration (20 min, aligned with H3): remittance use for food needs, reliability, return experiences.
- Section 5 — Gender dynamics and institutional access (25 min, aligned with H4/Q6): gendered impacts, program reach, role of community institutions.
- Section 6 — Closing and gratitude (5 min): final reflections, compensation, referral to support services.

KII guide (45–90 min, individual semi-structured format):

- Section 1 — Background and role (5 min): institution, experience, geographic area.
- Section 2 — Diagnostic of food security–migration–fragility (20 min): patterns, most-affected households, shock-migration linkages.
- Section 3 — Institutional and programmatic response (20 min): programs, coverage, limitations, coordination.
- Section 4 — Gender and ethnicity dimensions (15 min): differentiated impacts, GBV as driver/consequence, programmatic gaps.
- Section 5 — Policy recommendations (10 min): program effectiveness, missing elements, lessons.
- Section 6 — Closing (5 min): permission for anonymized quotes, follow-up possibility.

A.4 ETHICS PROTOCOL

Both components of the study were governed by a unified ethical framework reviewed by the Universidad EAFIT Ethics Safeguards Unit. The protocol covered the following elements:

- Informed consent. For the qualitative component, consent was obtained orally and in writing (where literacy permitted), in Spanish or the participant's indigenous language. Interpreters were available for FGDs in indigenous communities in Guatemala and Honduras. For the household survey, enumerators obtained consent at the start of each interview following the CAPI instrument's built-in consent module. Key consent elements included: contribution to a World Bank study on food security, migration, and fragility; voluntary participation with the right to skip questions or leave at any time; confidentiality

of responses; and potential use of anonymized quotes in the report.

- Anonymization. No direct personal identifiers (name, address) were collected in either component. Qualitative recordings and transcriptions associate participants only via FGD/KII code plus sequential number. Survey microdata are de-identified before archiving.

- Sensitive information handling. For quotes referring to criminal, institutional, or domestic violence, the report applies a triple filter: (i) no proper names; (ii) no specific municipalities or communities; (iii) only quotes whose context does not permit re-identification. The survey instrument included skip logic for sensitive modules and enumerators were trained to allow respondents to decline sensitive questions without penalty (see Box 4.1 for full transparency protocols).

- Duty of care. An active referral protocol to support services (Line 144 in El Salvador for gender-based violence; equivalents in Honduras and Guatemala) was in place during qualitative fieldwork and was activated on four documented occasions. For the survey, field teams in fragile contexts collaborated with local leaders to build trust and emphasized confidentiality.

- Ethical approval. The protocol was reviewed by the Universidad EAFIT Ethics Safeguards Unit. Signed consent forms are held under the custody of Kantar Mercaplan for five years.

A.5 DATA PROCESSING AND ANALYSIS

A.5.1 QUANTITATIVE DATA COLLECTION AND PIPELINE

The survey questionnaire was developed in collaboration with WFP, FAO, IOM, and UNHCR, capturing household characteristics (demographics, education, livelihoods, assets), food and nutrition security (hunger, rCSI, dietary diversity), shock exposure (climate events, market shocks, insecurity-related disruptions), migration dynamics (history, destinations, remittances, intentions), and contextual perceptions (safety, institutional trust, constraints). Data collection was conducted using the World Bank's Survey Solutions CAPI platform with real-time validation checks and centralized monitoring. Enumerators received structured training on survey protocols and on handling sensitive topics (hunger, insecurity, migration intentions). Field supervision involved daily data reviews, questionnaire-level validation rules, and protocols to minimize inconsistencies and missing values.

A.5.2 QUALITATIVE TRANSCRIPTION AND CODING

All 56 sessions (21 FGDs + 35 KIIs) were transcribed verbatim in Spanish by a team of four trained transcribers from Kantar Mercaplan. Quality assurance: 10 percent of transcriptions were double-checked against the original audio. Transcriptions were not translated into English; analysis was conducted in Spanish.

Coding combined deductive and inductive approaches in NVivo 14:

- Deductive: a pre-built code tree with five main branches aligned with H1–H4 from the Inception Report, plus a cross-cutting gender/ethnicity branch.

- Inductive: an open coding round on a random 25 percent sample of transcriptions to identify emergent themes. The six emergent themes identified (Section A.1) were integrated as additional branches after analyst team consensus.

Inter-rater reliability: two analysts independently coded 15 percent of transcriptions; discrepancies

were resolved through discussion. Average Cohen's Kappa = 0.78 (acceptable by applied qualitative analysis conventions). Thematic saturation was declared when new groups produced no new codes for three consecutive sessions; saturation was verified for the four core themes (H1–H4) but only partially for emergent themes — a limitation reported explicitly.

A.5.3 MIXED-METHODS INTEGRATION

Qualitative findings were triangulated with quantitative results in four passes. Where quantitative and qualitative evidence converged, findings are reported as robust. Where they diverged, the divergence is reported as heterogeneity. Prevalence figures cited in the report always originate from the quantitative component; the qualitative component contributes mechanisms, sequences, and heterogeneity — not magnitudes.

A.6 QUALITY ASSURANCE AND REPRODUCIBILITY

All quantitative analyses are implemented in R (≥ 4.3) with environment reproducibility via renv.lock. The analytical pipeline follows this sequence:

- 01_clean_data.R — clean raw survey data, derive analytical variables.
- 02_descriptives.R — descriptive statistics and cross-tabulations (inputs to Chapter 5.1).
- 03_models.R / 03_models_v2.R — regression models (inputs to Q1–Q7 results in Chapter 5).
- fragilidad.R — fragility typology construction.
- analisis_nuevo.R — emergent analysis for immobility trap and heterogeneity.

Output artifacts are stored in 03_Report/02_outputs/ (figures, models, tables) and are version-controlled in Git. All tables can be regenerated by cloning the analytical repository (wb_migration_foodsecurity), restoring the R environment (renv::restore()), and running the pipeline in order.

For the qualitative component, the NVivo 14 codebook (final code tree) and the coding manual are available on request. The 10 percent audio-versus-transcript verification and the 15 percent inter-coder reliability check constitute the primary quality controls.


WORLD BANK GROUP
Agriculture & Food


SPF
STATE AND
PEACEBUILDING
FUND


GFDRR
Global Facility for Disaster Reduction and Recovery