

AGRIBUSINESS AND FOOD SYSTEMS DEVELOPMENT

Innovation, Infrastructure, and Investments



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Executive Summary

Global agrifoodtech funding held near \$16.2 billion in 2025, almost flat year on year, but the composition shifted: upstream farm and biological technology drew \$9 billion, up 7 percent, while consumer-facing platforms retreated. That capital still bypasses the constraints that actually limit food systems: postharvest losses consume nearly 14 percent of global food production before it reaches retail, smallholder farmers face an estimated \$170 billion annual credit gap, and global agrifood systems confront an estimated \$1.1 trillion annual investment shortfall to become climate-resilient and low-emissions.

Published by the World Agriculture Forum, this Issue Brief highlights that innovation and infrastructure are being financed as separate problems when they are one. New technology reaches farmers only where roads, storage, cold chains and financial access exist to carry it; capital flows to agribusiness only where de-risked, bankable pipelines exist for investors. The Forum calls for infrastructure-first project design, blended and de-risked finance that reaches smallholders and agri-SMEs directly, and inclusive deployment of digital tools that closes rather than widens the rural divide.

Key findings

1. Global agrifoodtech funding held at \$16.2B in 2025 (-3% YoY); upstream farm-tech drew \$9B, up 7%.
2. 14% of food produced globally is lost between farm and retail, worth an estimated \$400B a year.
3. Smallholder farmers face an estimated \$170B annual credit gap; formal finance meets under a third of demand.
4. Global agrifood systems face an estimated \$1.1T annual investment shortfall to become climate-resilient and low-emissions.
5. Deeptech's share of agrifood deals rose from 22% to 32% over the past decade, but no deeptech company raised over \$200M in a single 2025 round.

Introduction and Context

Agribusiness sits at the center of global food security: the world's 500 million smallholder farms produce an estimated 80 percent of the food consumed across Asia and Africa south of the Sahara, and agrifood systems remain the world's largest labor sector, employing close to 1.3 billion people. Yet the system built to feed a growing population is chronically under-financed and structurally leaky. Globally, 14 percent of food is lost between harvest and retail, costing the global economy close to \$400 billion a year, with a further 17 percent lost at the household, food-service and retail stages.

Capital has not been absent from the sector. Global investment in agrifoodtech start-ups reached \$16.2 billion in 2025, roughly flat on the prior year, following a multi-year correction from the 2021 peak. But the shape of that capital has changed: investors are moving away from growth-at-all-costs consumer platforms and toward companies with defensible science and clear paths to revenue. Debt financing reached 18.2 percent of total agrifood funding in 2025, its highest share in a decade, and midstream technology - processing, logistics, and supply-chain software - drew the largest number of deals of any category.

This shift toward selectivity is rational, but it exposes a structural mismatch. The constraints that most limit food-system performance - unreliable roads, absent cold storage, thin rural credit markets, patchy connectivity - are exactly the infrastructure that early-stage venture capital is least suited to finance, and exactly the infrastructure that determines whether any single innovation reaches a farmer at all. The following sections examine this mismatch across three interlocking dimensions: innovation, infrastructure, and investment.



Innovation: Promise Without Reach

Agrifoodtech investment is increasingly concentrated in deeptech: gene editing, novel biologicals, sensing, and AI-driven decision tools. Deeptech's share of agrifood deals has climbed from 22 percent to 32 percent over the past decade, and seed-stage deeptech start-ups raised capital at a 78 percent premium over non-deeptech peers in 2025, a sign that investors see durable value in science-based ventures. Climate-tech investment within agrifood rebounded to \$3.9 billion in 2025, up from \$2.8 billion in 2024. Yet growth-stage caution persists: no deeptech company raised more than \$200 million in a single round in 2025, suggesting the sector still lacks the large-scale capital needed to commercialize proven science.

Where digital tools do reach farmers, the returns are well documented. India's Ama Krushi advisory platform delivered agronomic guidance by SMS, voice call, and call center to roughly 18 million farmers, at an estimated benefit-cost ratio of \$9-15. As of 2019, more than 390 digital agricultural service providers had been mapped across Africa alone.

But reach remains shallow and uneven. Mobile money account ownership across Sub-Saharan Africa averaged 28 percent of adults in 2022, and in the world's lowest-income countries, barely one rural resident in six was using the internet in 2024. Most smallholders who do use digital tools rely on basic mobile phones for calls and SMS rather than the sensing, credit-scoring, or marketplace applications that attract investor capital. Adoption is also shaped by distance to markets, digital literacy, and gender: the gender gap in mobile internet and financial account access across low- and middle-income countries has narrowed but persists, leaving women farmers with less access to digital advisory and financial tools than men, even within the same household or cooperative.

Infrastructure: The Missing Middle

Between the farm gate and the retail shelf sits the infrastructure that determines whether food, or the value of investment in producing it, survives the journey. Roughly 14 percent of global food production is lost before reaching retail, and in developing countries, cereal losses in storage alone can reach 50-60 percent where mechanized, moisture-controlled storage is unavailable, against 1-2 percent where it is available. The absence of adequate refrigeration was linked to the loss of around 12 percent of global food production in 2017 alone. The cold chain that does exist is itself carbon-intensive: it is responsible for roughly 4 percent of global greenhouse gas emissions.

These losses are not evenly distributed. Postharvest loss reduces the incomes of the world's 470 million smallholder farmers by at least 15 percent, with women farmers disproportionately affected, and losses concentrated in perishable produce rather than storable grain. In Brazil, transportation costs alone accounted for 23-24 percent of the total landed cost of soybeans shipped from Mato Grosso through the port of Santos in 2024, down from 45 percent in 2006, illustrating that infrastructure bottlenecks constrain even the world's most competitive exporters, not only subsistence producers.

Financing has not matched the scale of the gap. Global agrifood systems require an estimated \$1.1 trillion a year in additional investment to become climate-resilient and low-emissions, underlining how far current flows fall short. Up-front capital and operating costs for cold storage remain high relative to what most developing-country institutions or smallholder cooperatives can finance without credit enhancement, which is precisely why cold storage remains scarcest where postharvest loss is highest.

Investment: Capital Seeking a Bankable Pipeline

The agrifoodtech capital that does exist is not reaching the actors who most need it. Local financial institutions in the developing world supply an estimated \$70 billion a year in credit to smallholder farmers, against demand of roughly \$240 billion - a \$170 billion annual financing gap, and by some broader estimates, global smallholder financing need reaches \$450 billion. Global supply meets less than a third of demand, and value-chain finance - one of the more promising channels - is concentrated among the roughly 10 percent of smallholders selling into established export chains, leaving the 90 percent who sell into local markets far less served.

Regional and sector-specific gaps compound the global figure. The African Development Bank estimates a \$75 billion annual agricultural financing gap in Africa, even though smallholders and agri-SMEs account for roughly 80 percent of the continent's food production; the entire agricultural sector typically attracts less than 10 percent of commercial bank credit in Sub-Saharan Africa despite contributing up to 40 percent of regional GDP. Meeting SDG 2 targets by 2030 is estimated to require an additional \$33 billion a year in food-system investment, on top of an estimated \$212 billion a year that developing countries will need by 2030 for agricultural climate adaptation alone - a figure current adaptation finance flows fall far short of.

Where capital is flowing, it is concentrated and cautious. Debt financing's rise to 18.2 percent of agrifood funding, and the fact that midstream technology drew the highest deal count of any category in 2025, both point to investors favoring proven revenue models - processing, logistics, and supply-chain software - over the earlier-stage, higher-risk ventures that early adopters of new farm technology often are. Nearly half of 2025 deals - 46 percent - went to first-time-funded companies, evidence that new entrants can still raise capital, but seed-stage funding still dominates the pipeline, leaving a scale-up gap between early proof of concept and the growth capital needed for wide deployment.

Regional Patterns

Africa

Africa illustrates the innovation-infrastructure-investment gap most starkly. Smallholders and SMEs generate roughly 80 percent of the continent's food production against a \$75 billion annual financing gap. As of 2019, more than 390 digital agricultural service providers had been mapped across the continent, but mobile money account ownership across the region averages under a third of adults, and in the world's lowest-income countries barely one rural resident in six is online. The African Development Bank has committed a \$500 million facility designed to unlock \$10 billion in financing for smallholder farmers and small agribusiness enterprises across Africa, a scale of intervention that reflects how far current flows fall short.

Latin America and the Caribbean

Latin America shows what concentrated, well-targeted capital can do - and how uneven that concentration is. Brazil alone captured nearly 55 percent of all agrifoodtech investment in Latin America and the Caribbean in 2024, despite representing just 1.5 percent of global agrifoodtech investment. Rural finance and connectivity gaps persist alongside that concentration: an estimated 31 percent of the region's population, some 190 million people, live in areas with mobile internet coverage but do not use it, a usage gap that constrains embedded-finance and digital-advisory tools even where networks already reach Mexican and Brazilian supply chains. Logistics remains the binding constraint even for globally competitive exporters: transportation costs alone accounted for 23-24 percent of the delivered cost of Brazilian soybeans in 2024, down sharply from 45 percent in 2006.

Asia and the Pacific

Asia's agrifoodtech ecosystem has shifted decisively toward developing markets. India was 2024's top-funded developing-market agrifoodtech ecosystem worldwide, and agrifoodtech funding across developing markets overall grew 63 percent between 2023 and 2024, though much of that growth was concentrated in a small number of large deals. Smallholder finance demand across South and Southeast Asia is estimated at \$218 billion a year, with less than a third currently met. China's Development Plan for Digital Agriculture and Rural Areas illustrates an alternative model, using state-directed digital infrastructure investment to close gaps that private capital alone has been slow to fill elsewhere in the region.

Opportunities

1. De-risk the missing middle: blended finance and credit guarantees targeted at cold storage, rural roads, and processing infrastructure would unlock private capital that currently sees these assets as too risky to finance alone.
2. Scale-stage capital for proven deeptech: dedicated growth-stage vehicles for agricultural biologicals, sensing, and climate-adaptation technologies would close the gap between promising seed-stage science and commercial deployment.
3. Direct, trackable smallholder finance: routing a larger share of climate and development finance through digital-first, value-chain-embedded lenders would extend credit beyond the roughly 10 percent of smallholders that value-chain finance currently reaches.
4. Infrastructure-first project design: treating cold-chain and connectivity access as a precondition for agtech deployment, rather than an afterthought, would ensure new tools actually reach the farmers they are built for.

Key Messages

Treat infrastructure as the precondition for innovation to matter, not a downstream benefit of it.

1. Direct new agrifoodtech and climate finance toward jurisdictions and value chains investing simultaneously in cold storage, roads, and connectivity, rather than funding digital tools in isolation.
2. Require infrastructure and market-access assessments before scaling agtech pilots, since a proven tool with no cold chain or road to reach market delivers no measurable benefit.
3. Prioritize interim, lower-cost interventions - solar cold rooms, basic storage upgrades, feeder roads - in the years before larger infrastructure financing arrives, rather than leaving smallholders unprotected while capital is mobilized.

Close the smallholder finance gap with instruments built for agricultural risk, not retrofitted from other sectors.

1. Expand credit guarantees and blended finance vehicles that make smallholder and agri-SME lending viable for commercial banks, which currently allocate only a small share of their portfolios to agriculture despite its economic weight.
2. Scale embedded and value-chain finance models that bundle credit with inputs, off-take agreements, or crop insurance, since these consistently outperform standalone lending in reaching first-time borrowers.
3. Track disbursement of climate-adaptation finance against the estimated \$212 billion a year smallholders will need by 2030, and publish results by recipient type to hold intermediaries accountable.

Move deeptech innovation from seed-stage promise to growth-stage deployment.

1. Create dedicated growth-capital vehicles for agricultural biologicals, precision sensing, and climate-resilient inputs so that science proven at seed stage is not stranded before commercialization.
2. Pair public research investment with private scale-up capital, recognizing that public agricultural research delivers outsized returns but rarely funds the last mile of commercialization.

Design digital deployment to close the rural and gender divide, not widen it.

1. Fund basic connectivity and digital literacy alongside advisory platforms, since most smallholders still rely on basic mobile phones rather than the advanced applications investors fund.
2. Collect and act on gender-disaggregated adoption data, since women farmers consistently show lower access to digital advisory and financial tools within the same households and cooperatives.

Recognize agribusiness infrastructure as food-security infrastructure, not a separate commercial track.

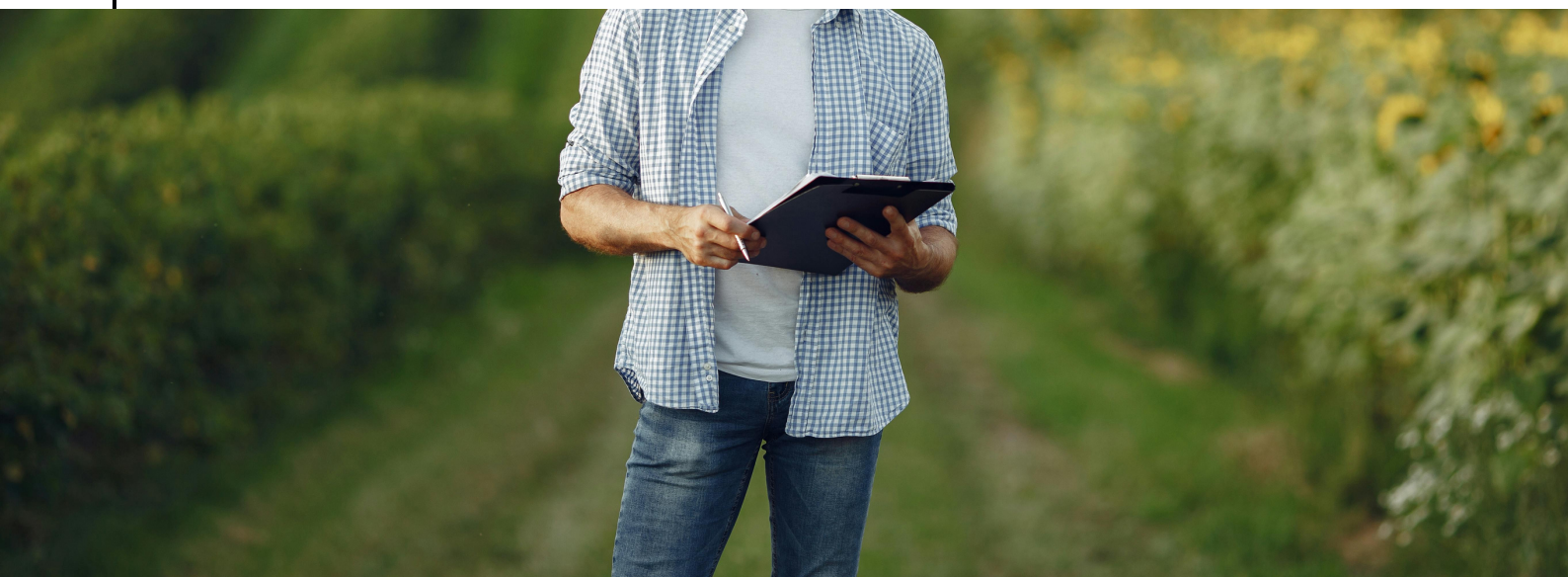
1. Frame rural roads, storage, and connectivity investment explicitly as food-security and climate-resilience infrastructure to strengthen the case for concessional and blended finance.
2. Align public agricultural-investment planning with the private capital already flowing to midstream processing and logistics, so public and private finance reinforce rather than duplicate each other.

Conclusion

The figures in this brief point to the same conclusion from three directions. Innovation without infrastructure does not reach the farmers it is built for. Infrastructure without finance does not get built. And finance without a bankable, de-risked pipeline does not flow, no matter how urgent the need. A sector that lost close to \$400 billion worth of food to postharvest loss in a single year, while smallholder farmers face a \$170 billion annual credit gap, is not a case of insufficient global capital. Agrifoodtech alone attracted \$16.2 billion in 2025. It is a case of capital and constraint failing to meet.

The instruments required are not novel. Blended finance, credit guarantees, growth-stage capital vehicles, and infrastructure-first project design are all established tools; what is missing is their deliberate, coordinated application to agribusiness and food systems at the scale the financing gaps demand. None of this is a matter of waiting for new evidence - the return on postharvest infrastructure, digital advisory platforms, and smallholder credit is already well documented. What remains is deployment.

As global agrifoodtech investment enters a more selective phase, the question is whether that selectivity is matched by deliberate investment in the roads, storage, and finance that make any single innovation deployable at scale. Every year that gap persists carries a measurable cost: continued postharvest loss, a widening rural digital divide, and smallholder farmers unable to invest their way out of climate exposure. The measure of progress will not be the size of the next funding round, but the share of it that reaches the infrastructure and the farmers it is meant to serve.



Disclaimer

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