TECHNICAL BRIEF

CGIAR Demand Intelligence Platform: responding to adaptive and responsive innovation scaling

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This technical brief was jointly developed by the authors listed below, drawing on their shared conceptual, analytical, technical, and implementation work on systemic demand signaling and the CGIAR Demand Intelligence Platform.

About CGIAR Scaling for Impact (S4I) Program

Scaling for Impact (S4I) is a CGIAR program (2025–2030) that tests, refines, and scales innovations in food, land, and water systems. It works to align those innovations with stakeholder needs to achieve transformative impact.

Website: https://www.cgiar.org/cgiar-research-porfolio-2025-2030/scaling-for-impact/

About CGIAR

CGIAR is a global research partnership for a food secure future.
Visit https://www.cgiar.org/research/cgiar-portfolio to learn more about the initiatives in the CGIAR research portfolio

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Front cover photo: Farmers' discussion on resources needed to invest in innovations in farming (*photo:* Thai Thi Minh/IWMI).

Back cover photo: Farmers install a solar-powered irrigation system, translating local demand into practical solutions that support sustainable agricultural scaling (*photo:* Thai Thi Minh/IWMI).

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Introduction

Intensifying poverty, food insecurity, water stress, and climate risk continue to expose the limits of current agricultural research for development (AR4D) and innovation scaling. Many innovations fail to scale not because the technologies are ineffective, but because systemic demand gaps persist across institutions, markets, finance, knowledge systems, and social inclusion (Sartas et al., 2020; Woltering et al., 2024) — recurring barriers of user relevance, policy alignment, market viability, and system readiness that explain why pilots succeed but rarely achieve system-wide transformation.

Effective innovation-scaling systems must catalyze change across land, food, and water systems by addressing constraints that limit adoption, while aligning with national priorities and large-scale investment (Wigboldus et al., 2016; Minh and Schmitter, 2025). This requires cross-disciplinary collaboration linking research to policy, markets, and investment, and demand intelligence systems that continuously capture, interpret, and coordinate demand across actors and scales — synchronizing AR4D investment with country priorities, stakeholder needs, and scaling constraints, and strengthening CGIAR's credibility as a trusted partner for governments, investors, and development actors.

Challenges to demand signaling for research and innovation scaling

Demand signaling is how demand is communicated among actors under information asymmetry, with signals passively received from policy, market, and donor landscapes (Akerlof, 1970; Boon & Edler, 2018). CGIAR research has historically been shaped more by researcher and funder priorities than real-time stakeholder demand, so innovations that perform well in pilots often stall in broader application (Stein & Bartel, 2023). Food and water systems increasingly rely on accelerators to mobilize capital (Lozano Lazo et al., 2025), yet climate change, political instability, and tightening budgets push many Global South countries into escalating risk (UNCTAD, 2025). Without structural change to financing, policy, and institutions, even promising innovations struggle to scale (Schut et al., 2019; Hermans et al., 2017).

The core challenge is not an absence of need, but the absence of trusted mechanisms to capture, validate, and act on demand signals. Signals are rarely synthesized across sources or translated into decision-ready intelligence for research teams and program managers (Boon & Edler, 2018). Efforts therefore often respond to researcher-identified or latent needs rather than effective demand — clearly articulated, institutionally owned, and backed by policy and financing (Edler & Georghiou, 2007). Weak signaling and fragmented ownership leave many innovations confined to short-term projects (Hermans et al., 2017; Edler et al., 2012).

Addressing this requires a shift toward systemic demand signaling that aligns innovation with evolving societal, institutional, and market realities. This brief conceptualizes systemic demand signaling as a process grounded in institutional coordination, policy alignment, inclusive participation, financing pathways, interoperable data, and continuous learning (Edler & Georghiou, 2007; Georghiou et al., 2011; Mazzucato, 2018), enabling innovations to respond to changing risks and opportunities (Lehoux et al., 2019; OECD, 2025), and reflects on lessons from operationalizing this through digital capability development.

Defining systemic demand signaling

Systemic Demand Signaling is the process of identifying, articulating, and interpreting user, market, and institutional demands—alongside systemic demand gaps—to generate demand intelligence that is visible, credible, and actionable across the wider system. It decomposes effective demand into three pillars: Funding Intelligence (can the system pay?), Clout Intelligence (does it have political and institutional support?), and Fit Intelligence (does it align with existing infrastructure, norms, and capacities?). All three must be present for demand to be actionable, shifting the unit of analysis from discrete technologies to the broader enabling system and turning demand signaling from passive evidence-gathering into an active strategic filter for research prioritization and scaling investment.

BOX 1. KEY CONCEPTS

Demand-related concepts

- **Need**: an objective, often-latent gap experienced by stakeholders, distinct from demand signals.
- **Demand**: interest in specific solutions articulated by stakeholders, without confirmed capacity or resources.
- **Effective Demand**: demand backed by financing, mandates, or market incentives — the platform's analytical target.
- **Demand Intelligence**: harmonized, multi-source signals turned into decision-ready insight for prioritization and matching.

Demand Signaling Dimensions

- **Geographical Priority:** filter high-need, high-impact contexts based on agro-ecological, socio-economic, and policy conditions, setting boundary conditions for all other dimensions.
- **Demand Signals:** biophysical, socio-economic, and institutional boundaries that filter demand signals.
- **Innovation Supply**: maps CGIAR and partner innovations against demand signals for gap identification.
- **Demand Gaps:** diagnoses systemic constraints preventing demand from becoming effective investment.
- **Investment Feasibility:** assesses economic, institutional, and operational viability to inform prioritization.
- **Scaling Opportunity:** synthesizes where demand, supply, and enabling conditions align for scaling.

Data Signal Domains

- **Scaling Context:** biophysical, socio-economic, and institutional boundaries that filter demand signals.
- **Sector:** food, water, seed, climate, and agribusiness systems shaping sectoral goals.
- **Stakeholders:** innovators, investors, facilitators, and end-users who generate and transmit signals.
- **Enabling Environment:** policies, institutions, and governance shaping incentives and adoption feasibility.
- **Resources and Investment Ecosystem:** finance and credit systems behind investable demand.
- **Market and Market Intelligence:** demand trends, pricing, value chains, and commercial viability.
- **Innovation Portfolio:** CGIAR and partner innovations mapped by maturity and matching potential.

This framework links priorities, demand signals, innovation supply, demand gaps, investment viability, and scaling opportunities into an integrated structure for evidence-based decisions. Its inner layer comprises the six demand-signaling dimensions (Figure 1), all of which must align for effective demand to emerge; its outer layer of seven data-signal domains supplies and filters the evidence that populates them, organized through a sequenced decision logic.

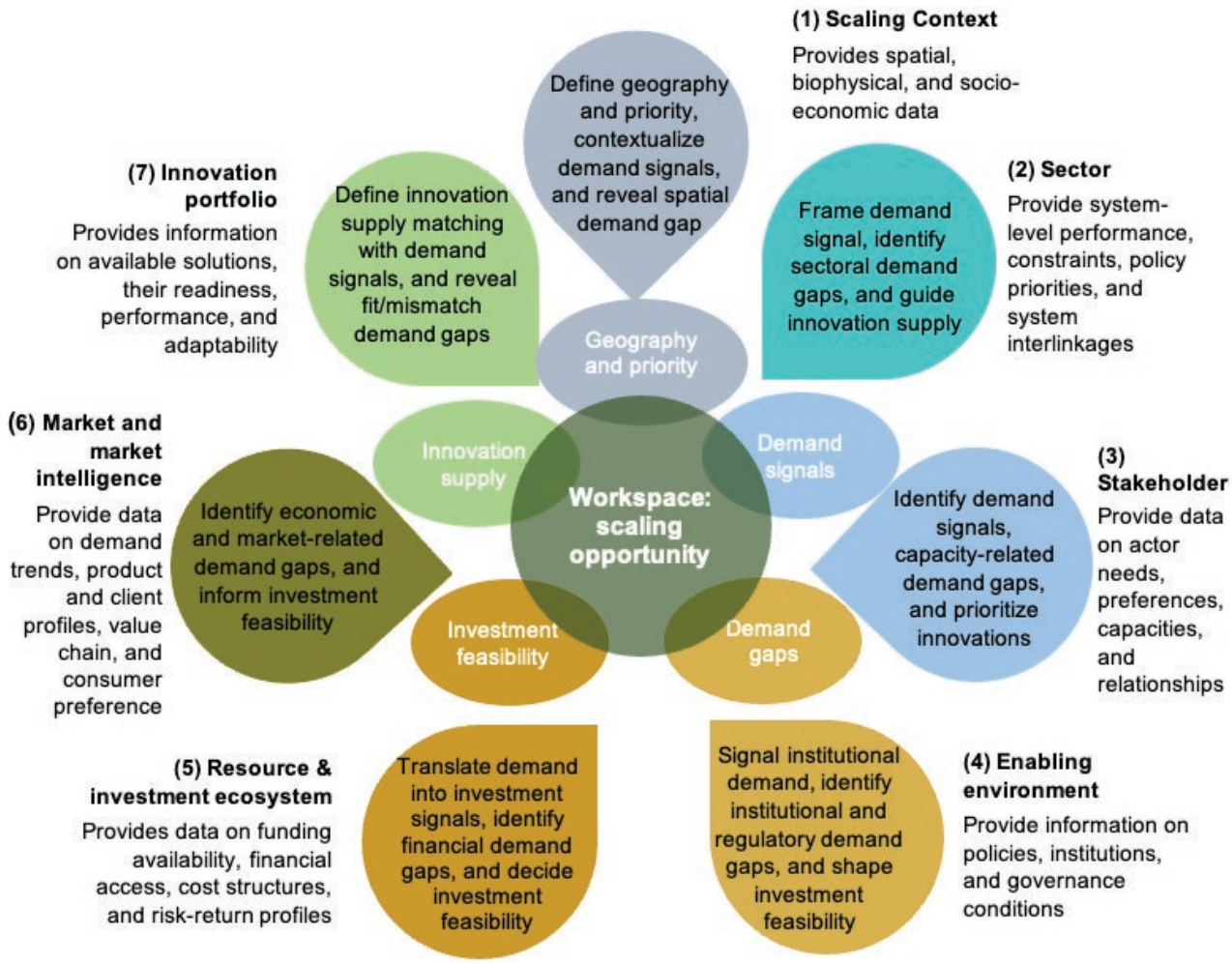


Figure 1. Systemic Demand Signaling framework (Source: Minh et al., 2026)
Source: Authors' creation

What is the CGIAR Demand Intelligence Platform

Vision and services

The CGIAR Demand Intelligence Platform (CGIAR-DIP) — evolved from the earlier CGIAR Demand Intelligence Dashboard (CGIAR-DID) — operationalizes the Systemic Demand Signaling framework, transforming fragmented demand signals into structured, actionable intelligence for evidence-based scaling decisions. It shifts from one-off assessments to institutionalized capability, and its interoperable semantic architecture can ingest external signals while integrating seamlessly with CGIAR infrastructure.

Its long-term vision is to function as a digital public good — shared infrastructure that shifts agricultural innovation from supply-driven dissemination to evidence-based, demand-led scaling. For CGIAR Science Programs and Accelerators (SP&As), it is a trusted source informing research prioritization, investment, and resource allocation by identifying emerging demand, critical gaps, supply, and viable pathways; for the wider sector, it shows how AI, human-centered design, and participatory validation can close persistent demand gaps.

The platform is expected to deliver four outcomes:

- SP&As access structured, evidence-based demand intelligence for country- and regional-level research and scaling decisions.
- Demand signals from multiple actor groups are systematically captured, harmonized, and compared across countries and domains.
- Demand gaps are identified and quantified, targeting investment in the conditions needed to convert interest into effective demand.
- CGIAR's innovation portfolio is aligned with real-world demand, supporting innovation bundling, partnerships, and investment sequencing.

Structure and function

CGIAR-DIP operates as a shared analytical capability that continuously captures, processes, and communicates stakeholder demand through a four-layer architecture (Figure 2).

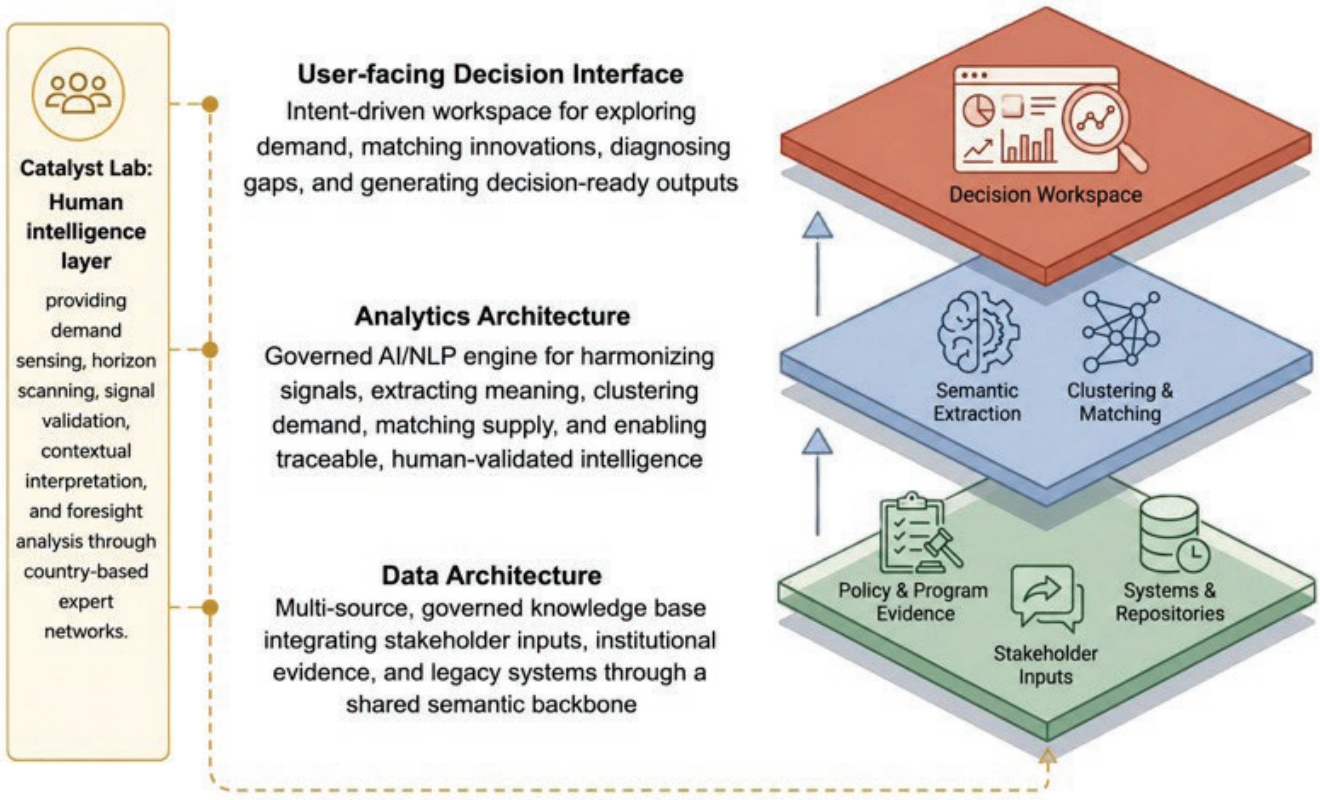


Figure 2. CGIAR-DIP structure and function
Source: Authors' construct

The **Data Architecture Layer** provides a governed, multi-source knowledge base spanning all seven signal domains, integrating primary data (surveys, stakeholder engagement, key informant interviews), secondary data (legacy systems, policy documents, publications, CGSpace), and partner-validated data from country and regional platforms.

At its core, a lightweight union schema standardizes heterogeneous inputs, distinguishes needs from demand, and links signals to innovations, stakeholders, geographies, and cross-cutting themes such as gender, climate, and poverty, creating an auditable, traceable foundation for downstream analytics. The schema nests intelligence by increasing granularity: over 60 themes structure the signal domains, operationalized through 300-plus indicators drawing on more than 1,000 attributes, all mapped to CGIAR's five Impact Areas so insights can be aggregated for decisions or traced back to their evidence.

The **Analytics Architecture Layer** is a framework-governed AI engine that converts the knowledge base into traceable, decision-grade intelligence. It combines large language models for reasoning, retrieval methods for evidence discovery, and deterministic software for validation. The DIP framework guides the process: seven signal domains organize evidence, while six dimensions structure the assessment. The pipeline comprises three stages:

- **Demand signal identification:** A language model develops domain-based search plans, including queries for contradictory evidence. Searches cover the DIP knowledge base, CGIAR repositories, market intelligence, scholarly indexes and the open web. Sources are de-duplicated, screened and classified by domain and theme. Evidence statements are extracted and linked to exact quotations, sources, locations, stakeholder voices, supporting or contradicting positions, and relevant dimensions. Software verifies each quotation against its source.

- **Signal enrichment:** Demand is matched with (CGIAR) innovation supply through keyword ranking and semantic search. Verified evidence is synthesized across five dimensions: geography and priority, demand signals, innovation supply, demand gaps and investment feasibility. Conflicting evidence is retained, not averaged. A more capable model verifies critical claims and samples other evidence, flagging partial support.

- **Reporting:** Language models generate cited evidence reports and demand intelligence assessments. Each dimension is rated strong, moderate or weak, with a confidence level. Software aggregates ratings, identifies aligned scaling opportunities and maintains audit trails. Independent fact-checking precedes publication. Ask DIP provides citation-supported conversational access to platform reports and data.

- **AI models and methods:** The engine uses general-purpose models not trained on DIP data: Claude Sonnet for search, screening, extraction and synthesis, and Claude Opus for verification, intelligence reporting and fact-checking. Retrieval combines BM25 ranking with Amazon Titan text embeddings for semantic search. Deterministic software handles quotation checks, de-duplication, rating aggregation and audit trails, recording all model calls and retrieved sources.

The **User-Facing Decision Interface** is an intent-driven workspace letting research managers, program officers, and policy analysts explore demand and assess intelligence via four entries: innovation or bundled innovations, theme, commodity or sector, and country. Users are both contributors and consumers, submitting and validating data through a structured workflow that produces customizable reports for prioritization, partnerships, and investment planning, with confidence indicators and source traceability embedded throughout.

The **Catalyst Lab Layer** is CGIAR-DIP's human intelligence layer: while AI identifies and clusters signals at scale, country-based domain experts validate relevance and distinguish real trends from noise, functioning as a virtual cross-CGIAR network for data validation, foresight, and stakeholder engagement. Foresight is the platform's key differentiator, letting it anticipate system transitions and give SP&As forward-looking intelligence unavailable elsewhere in CGIAR, while the Lab's contribution and curation workflows keep the platform continuously learning.

CGIAR-Demand Intelligence Platform business model

CGIAR-DIP operates a value-creation model serving multiple user segments (Table 1) through three service streams: generating demand intelligence for CGIAR and partners; institutionalizing it as a core analytical capability; and establishing CGIAR-DIP as a shared digital public good — transitioning the platform from an S4I-funded pilot to sustainable, multi-stakeholder infrastructure.

Its core value proposition addresses a largely unmet need — transforming fragmented demand signals into decision-ready intelligence — by synthesizing institutional demand, matching innovations to country priorities, and informing prioritization and adaptive management where demand intelligence is otherwise costly, fragmented, and unrepresentative.

Table 1. User segments: Journey and proposition

User group and needs	How CGIAR-DIP Helps	Value Delivered	Engagement Mechanism
CGIAR research managers and researchers - Demand-supply alignment - Adaptive research prioritization	- Clusters and visualizes demand for evidence-informed portfolio decisions	- Aggregated demand signals informing technology blueprints, improving market fit and adoption	-Demand–supply explorer; product-profile alignment workshops
SP&A directors and Science Directors - Portfolio responsiveness to verified demand - 2027 prioritisation	- Demand match scores and cross-country signal summaries tracking demand-responsive research shares	- Traceable evidence linking portfolio decisions to verified demand, supporting annual prioritization	- Dedicated intelligence reports integrated into planning cycles
Donor agencies and development banks - Identify high-priority demand signals - Defensible investment decisions	- Ranks demand by urgency and impact against thematic investment areas	- Investment-ready, due-diligence-grade signal assessment that reduces information asymmetry	- Demand maturity assessments and investment-readiness dashboards

Policymakers and advisors - Evidence of country and regional priorities - Early detection of emerging gaps	- Geospatial maps, trend dashboards, and policy-demand overlays for anticipatory policy design	- Country priorities and gaps surfaced in time for planning cycles	- Country demand-intelligence portals and briefings, co-produced via bilateral data-sharing agreements
NARES and national R&D institutions - Articulate national demand - Access demand-response feedback - Avoid duplication	- Interactive demand submissions and capability mapping aligned with CGIAR innovation supply	- A sovereign planning tool coordinating priorities and donor investment with national demand	- Country portals with progressive national-dashboard transfer
Private-sector actors - Identify commercially viable, demand-backed innovation opportunities	- Market intelligence and enabling-condition diagnostics that reduce investment risk	- Reduced smallholder risk and early identification of market-entry opportunities	- Open-access demand exploration tools; private-sector engagement via the Catalyst Lab

Strategic positioning

CGIAR-DIP sits at the intersection of several shifts in agricultural development: from supply-driven dissemination to demand-led innovation, from researcher-defined needs toward system readiness and institutional ownership, and from fragmented data systems toward integrated, traceable intelligence frameworks that align AR4D investment with systemic demand and scaling opportunities.

Demand intelligence from domestic institutions — ministries, public agencies, local partners — is among the most valuable yet hardest-to-access evidence for decision-making. CGIAR-DIP differentiates itself through four strengths: a multidimensional framework spanning all seven signal domains; integration of diverse data sources; human-in-the-loop validation beyond automated extraction; and CGIAR's embedded access to innovation portfolios, country networks, and SP&A decision processes.

Its open architecture enables interoperability with systems such as GloMIP, PRMS, AgWaterDS, the Climate Action Hub, and national platforms. Rather than competing with parallel CGIAR initiatives, it functions as an integrating layer that connects and contextualizes existing data investments (e.g., Policy Innovation hub, IFPRI climate finance dashboard, Sustainable Farming data work).

Revenue and sustainability model

CGIAR-DIP's sustainability strategy rests on four resource streams that progressively reduce reliance on any single source. S4I Program Funding (2024–2026) supports core staffing and platform development. CGIAR Centre Cost-Sharing (from 2026) mobilizes in-kind contributions from centres such as IITA and IRRI under co-ownership arrangements. External Partnership Funding (2026–2027) leverages bilateral and donor investment, positioning CGIAR-DIP as a due-diligence service. Institutional Adoption and Embedding (from 2027) makes demand intelligence a recurring operational function rather than a standalone product.

Cost structure

Primary cost drivers are AI/cloud infrastructure (LLMs, hosting, storage); the Catalyst Lab's human intelligence layer (expert validation, country coordination, contributor training); platform development and data engineering, including integration with GloMIP, AgWaterDS, PRMS, and CGSpace; and country-level engagement (Osei-Amponsah et al., 2026; Chakraborty et al., 2026).

Key risks include moving AI services from personal accounts to institutionally governed infrastructure, and articulating CGIAR-DIP's value relative to general-purpose AI tools: not AI alone, but a framework-governed, human-validated system combining structured methodologies, traceable evidence, and transparent decision logic. Alignment with CGIAR-wide AI governance policy will be essential for credibility.

Scaling prospect for the CGIAR-DIP

CGIAR-DIP generates impact through three complementary, reinforcing pathways that move the platform from a shared analytical capability toward a structural shift enabling adaptive, responsive innovation and scaling: Co-creation, Institutionalization, and Catalyzation (Table 2).

Table 2. The CGIAR-DIP scaling prospect: pathways, outcomes, and impact

Dimension	Co-creation pathway	Institutionalization pathway	Catalyzation pathway
Activities	- Develop the demand-signaling framework and co-design CGIAR-DIP (sprints, user journeys, Catalyst Lab) - Build and deploy a PoC/MVP with AI-enabled clustering and country-level portals	- Facilitate innovation scaling and differentiate SP&A strategies using demand intelligence - Apply adaptive management via the Demand Match Score; embed demand signaling in portfolio management	- Deploy CGIAR-DIP as public infrastructure for investment due diligence - Transfer to national governments, private sector, and civil society; enable coordinated cross-actor investment
Key Partners	- CGIAR researchers, data scientists, and early users - National governments, private sector, and civil society - Donors, with a dedicated partnership manager per Centre	- CGIAR programmes and Science Directors - Breeding, agronomy, and policy-innovation teams	- Development banks and donors; (sub)national governments - Private-sector firms, CSOs/NGOs, and research institutions
Outputs	- Conceptual framework and validated indicators - Country demand profiles; the global CGIAR-DIP platform, country portals, and Catalyst Labs - Training and operational guidelines	- CGIAR-DIP integrated into workflows via the demand–supply explorer and assessment engine - Demand-informed product profiles and	- The global CGIAR-DIP platform and due-diligence protocols - National dashboards and public demand-intelligence tools
Influencing Factors	- Data quality and fragmentation; stakeholder trust - Institutional ownership and incentives - Technical capacity and interoperability constraints	- Data availability and quality - Institutional incentives and leadership commitment - Capacity for data use	- Policy and regulatory environment - Data-sharing agreements and trust - Market conditions and digital infrastructure

Adaptive management	- Embed inclusive, iterative co-design and user testing - Simplify interfaces; develop shared standards - Maintain human-in-the-loop validation and continuous feedback loops	- Iterative learning cycles with continuous data updating - Capacity building; rapid feedback and flexible portfolio adjustment	- Open data standards; partnership brokering and adaptive governance - Real-time analytics and iterative tool refinement
Outcomes	- Platforms reflecting partner mental models; identified priority gaps and scaling opportunities - Traceable demand intelligence with improved adoption readiness	- Precise targeting of demand zones; higher share of demand-responsive research - Improved adaptive decision-making	- Better investment decisions and stronger national/public ownership - Reduced private-sector risk and improved donor alignment
System-level Changes	- Shift from supply- to demand-led innovation - Standalone tools transitioned to interoperable platforms with a distributed Catalyst Lab - Strengthened global–national data ecosystems	- Shift to demand-led, science-for-impact research with institutionalized demand signaling	- Shift from the pilot trap to scalable, demand-led investment - Demand intelligence as public infrastructure
Collected Evidence	- Sign-ups and recurring users - CGIAR-DIP citations and PRMS attribution	- Adoption metrics (SP&A portfolio decisions, adaptive-management use), Demand Match Scores, and data-contribution/PRMS-attribution records	- Higher adoption rates; increased funding, trust, and partnerships
Means	- User interaction surveys and uptake tracking outside CGIAR-DIP	- Annual reporting cycles, SP&A adaptive-management reviews, and a shared output/outcome tracker - Quarterly delivery and validation sessions per SP&A	- Partner and SP&A publications - Stakeholder engagement surveys and Catalyst Lab outputs

Source: Adopted from Agyekumhene et al., 2026

Co-creation pathway

The co-creation pathway builds CGIAR-DIP from evidence to deployed infrastructure through four activities — conceptual framework development, technical proof of concept, participatory co-design, and institutionally embedded deployment — using iterative co-design with SP&As and national and international actors. Its strategic pivot is delivering structured demand intelligence in time to inform SP&A cycles, not building a complete system first. Guiding principles include:

- **Build on existing systems:** integrate and reuse existing tools and evidence before creating new data streams or parallel platforms.
- **Design around decisions, stay flexible on method:** structure the platform around users' decisions on emerging demand, gaps, and viable action, adapting method while holding purpose fixed.
- **Maintain traceability and human validation:** AI supports extraction and synthesis, but credibility depends on transparent sources and human-in-the-loop review.
- **Reduce stakeholder burden:** keep new data collection justified, coordinated, and light-touch, avoiding duplication of existing requests.
- **Country engagement as a capability:** country-level validation and interpretation should be recurring, not a one-off event.

The co-creation pathway includes four key activities:

- **Evidence synthesis and conceptual framework development (2025)**. A PRISMA-guided systematic review of 1,132 records (83 eligible studies) assessed global demand-signaling tools across food, land, and water systems. Its central finding — the Participatory Paradox — showed that effective demand signaling stays deeply participatory: AI adds value alongside trust and contextual expertise but cannot substitute for them, shaping CGIAR-DIP's hybrid architecture of AI-driven extraction, human validation, and country-level Catalyst Labs.
- **Technical proof of concept (2025).** A Proof of Concept operationalized the demand-signaling logic: a lightweight semantic model treating demand as the primary analytical object, a curated union dataset integrating policy inventories, stakeholder surveys, and CGIAR innovation-supply records, and an AI-enabled BERTopic pipeline clustering raw text for demand–supply matching. A React-based Explorer and Power BI system demonstrated feasibility on roughly 1,500 records.
- **Participatory co-design and concept validation (2025).** A three-stage human-centered design process, including a two-day sprint, translated stakeholder needs into validated architecture. It surfaced four adoption risks — tool fatigue, low trust in centralized systems, complexity, and abandonment without updating — and converged on the Catalyst Lab concept: demand intelligence is most credible when generated by trained, country-based teams, not centralized algorithms alone.
- **Institutionally Embedded Deployment (2026 onward).** integrates CGIAR-DIP with the CGIAR Demand Intelligence Ecosystem, building on existing partner infrastructure (Box 2). 2026 deployment covers five CGIAR Programs and S4I priority countries, with interoperability across GloMIP, AgWaterDS (Nigeria, Kenya, Zambia), CGSpace, and PRMS. A four-layer governance structure supports this: Country Engagement & Learning; Agile Delivery & Co-creation; Technical Oversight & Integration (AoW1 Lead, GloMIP Product Owner, PPR representative); and **Strategic Alignment & Endorsement** (Chief Scientist's Office, S4I Advisory Committee and Leadership). Validation stays with the country layer's Catalyst Labs, feeding insights back through a continuous learning loop.

BOX 2. CGIAR DIP DEMAND INTELLIGENCE ECOSYSTEM

GLoMIP (IRRI): Market intelligence spanning 600+ segments, 200 countries, and 50 crops; a future automatic API sync (license under negotiation) would add market and commercial demand signals.

AgWaterDS (IWMI DTA): Spatially explicit water demand and availability maps for Nigeria, Kenya, and Zambia, in a bidirectional integration where CGIAR-DIP also informs AgWaterDS's priority crop selection.

PRMS/CGSpace (CGIAR): Foundational Innovation Supply data — historical CGIAR innovation portfolios ingested as authoritative supply-side evidence for demand–supply matching.

AKIS (Alliance of Bioversity International and CIAT): Coordination to avoid duplicative stakeholder engagement, integrating demand-signaling questions into AKIS diagnostic instruments so CGIAR-DIP captures signals already generated through AKIS country processes.

IITA Demand Intelligence Portal: An AI judgment layer turning existing research into cited, decision-ready analysis, assessing effective demand (Funding/Clout/Fit) and surfacing new opportunities to innovate.

Institutionalization pathway

The institutionalization pathway embeds the platform into CGIAR workflows, SP&A planning, and portfolio management, enabling SP&A Directors to assess portfolio alignment with verified demand signals and make evidence-based decisions on research priorities, investment, and scaling. Guiding principles include:

- **Intelligence before interface.** intelligence is the product; the platform is only its delivery mechanism for credible demand signals, gap analyses, and scaling assessments.
- Replace fragmented, supply-biased signals with a structured, cross-country demand intelligence layer that reduces supply-side bias and demand misalignment.
- Enable innovation bundling through demand-gap diagnosis, shifting from technology-push to demand-led portfolio management.

The institutionalization pathway includes five key activities:

- **Facilitate CGIAR innovation scaling using demand intelligence:** engage and co-design the demand intelligence impact package (DIIP) with SP&A teams and portfolio-management leadership.
- **Differentiate scaling strategies for SP&As:** structured demand intelligence and gap analyses ahead of planning and adaptive-management cycles let SP&As decide what to research, where to invest, and how to scale based on evidence rather than assumption.

- **Apply adaptive management using a Demand Match Score,** giving SP&As a quantitative measure of portfolio alignment — the share of outputs and outcomes traceable to verified demand signals, gaps, or scaling opportunities. A verified signal would be one reviewed by the country-based Catalyst Lab against agreed validation criteria; the score would be developed with AoW 5 MELIA. Tracked over time, it would let Science Program Directors flag misalignment ahead of planning cycles — though it is not yet embedded in a CGIAR results framework.

- **Profile stakeholder demand and feedback:** country-level profiling of actors' typology, roles, motivations, and capacities — beyond individual surveys — builds an updatable map of the demand ecosystem that distinguishes latent needs, expressed demand, and effective demand. Structured feedback (SP&A validation sessions, Catalyst Lab review, data-contribution logs) closes the loop between intelligence generation and user response, improving signal quality over successive cycles.

- **Embed demand signaling in portfolio management:** integrating demand intelligence with CGIAR's portfolio, reporting, and knowledge-management systems links demand signals, gaps, opportunities, investments, and outcomes so CGIAR can learn which innovations respond to which demands, under what conditions. This creates direct traceability between demand, investment, and results — strengthening coordination and future prioritization decisions.

Catalyzation pathway

The catalyzation pathway emphasizes deploying CGIAR-DIP as digital public infrastructure for innovation, investment due diligence, national planning, private-sector market intelligence, and donor alignment. Its investment-related contribution sits within AoW 4 (TAAT and clearinghouse functions), with CGIAR providing technical assistance rather than originating or brokering investment. Guiding principles include:

- **Position demand intelligence as public infrastructure, not a project output:** shared analytical infrastructure accessible to governments, investors, and civil society, not CGIAR-controlled reporting.

- **Reduce information asymmetry to unlock coordinated investment:** act as the shared evidence layer that makes coordination possible and defensible.

- **Transfer ownership progressively to national and regional actors:** build country-portal transfer to NARS and governments into the platform architecture from the outset, not as an afterthought.

The catalyzation pathway includes four key activities:

- **Deploy CGIAR-DIP as digital public infrastructure:** a public-tier version of the Demand–Supply Explorer for national governments and private-sector market entry (seed companies, mechanization providers, digital climate advisory firms) reduces information asymmetry by showing aggregated, anonymized demand clusters where demand exceeds supply and market entry is viable.

- **Contribute to AoW 4 investment due diligence and clearinghouse functions:** CGIAR provides technical assistance and curates demand intelligence for TAAT and related processes, while origination, financing, and brokering stay outside CGIAR-DIP's role. Engagement with International Finance Institutions (the World Bank, IFAD, African Development Bank) can support due diligence and help avoid the 'Pilot Trap.'

- **Open and transfer CGIAR-DIP to national governments, the private sector, and civil society:** through co-design with NARS, government, private-sector, and finance partners, country portals can progressively transition to national ownership, letting governments coordinate investment around nationally articulated priorities. Public-facing tiers with open data standards and role-based access expand participation while safeguarding data integrity — a sustainable model beyond individual projects.

- Surface where demand intensity is high, enabling conditions are partly in place, and specific gaps remain, using the shared intelligence layer to help donors, DFIs, and governments identify complementary entry points rather than duplicate investments. Structured investment-opportunity summaries can map demand clusters to financing gaps and flag where blended finance or concessional funding fits, shifting coordination mechanisms from ad hoc project funding toward portfolio-level investment aligned with national priorities.

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