PERSPECTIVE BRIEF

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DeSIRA LIFT

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The future of R&I as driver of agrifood systems transformation and sustainability transitions

Perspectives from

Latin America and the Caribbean

This brief presents the outcomes from the regional DeSIRA workshop in the Latin America and Caribbean region

The DeSIRA Perspectives Brief Series: a roadmap for research & innovation from stakeholder perspectives in Latin America and Caribbean, Africa and Asia-Pacific regions

The DeSIRA Perspective Briefs present lessons learned by the community of implementers of the EC-funded DeSIRA initiative and their views on the future of research & innovation (R&I) as drivers of agrifood system transformation and sustainability transitions in their respective regions.

By distilling key lessons from DeSIRA's successes and challenges, these perspectives offer actionable insights in agricultural innovation systems for innovation stakeholders, decision-makers, policy actors, and investors.

Each perspective brief focuses on a specific region where the DeSIRA Initiative was deployed (Latin America and the Caribbean, Africa, Asia-Pacific),

In order to capture the joint learning and pending challenges among the DeSIRA community, DeSIRA-LIFT organized a series of four regional workshops entitled the "DeSIRA Connect Days". These gatherings were designed to assess the progress of innovations within DeSIRA projects, foster collaboration among stakeholders, amplify the cross-project impacts within countries and cultivate peer learning on open and responsible R&I for Agricultural Innovation Systems (AIS) transformation. Moreover, they serve to strategize the subsequent steps post-DeSIRA. In a nutshell, they were designed to strengthen the **Community of Action and Reflection** among DeSIRA projects and their stakeholders. These events aimed to facilitate collaboration through regional field and in-person meetings with the following objectives:

- Facilitating discussions among projects aligned with the joint learning agenda, focusing on progress, challenges, and developing recommendations to sustain momentum.
- Carry out meetings and roundtables with policymakers, stakeholders, private sector representatives, and regional organizations to promote innovation adoption and strengthen AIS.
- Promote discussions to develop exit strategies, handover processes, and pathways for ensuring continuity.

These workshops served as a platform for sharing innovations, research contributions, experiences, good practices and lessons learned from implementing DeSIRA projects, while fostering stronger engagement with policymakers, regional organizations, and private sector actors. Key themes included scaling agricultural innovation, farmer-led research, and fostering enabling environments for innovation scaling. Regional agricultural innovation stakeholders were invited to attend and to identify priority actions and key messages for the region, to connect the DeSIRA community to broader initiatives or opportunities for putting at scale the outcomes of the DeSIRA projects.

The workshops facilitated discussions among research, extension and education actors; farmers organizations, advisory service providers, civil society, international organizations, funders and policy actors to evaluate efforts and identify challenges.

The regional workshops took place in Bogota (25th to 27th June 2024), Kigali (29th to 31st July 2024), Accra (24, 25, 26 September 2024) and Hanoi (14th to 16th January, 2025). The three-day event included keynote presentations, two workshops, and six thematic panel discussions focusing on three main themes:

- New Paradigms in Research for Innovation – Enhancing the impact of research through participatory and system-based approaches.
- Farmer-Led Innovations and Research – Strengthening farmer organizations (FOs) as key actors in scaling agroecology and sustainable agriculture.
- Creating a Conducive Environment for Scaling – Addressing food system governance, policies, education, and financing to foster sustainability.

These themes structured the workshop discussions and informed the synthesis of insights and recommendations in the Perspective Briefs series.

By engaging in these workshops, DeSIRA-LIFT contributed to building a collective understanding of what it takes to codevelop innovations for sustainability transitions through international research and innovation partnerships and public investments.

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Key messages

The DeSIRA initiative has yielded significant insights into new models of research for innovation in agriculture. This brief synthesizes key outcomes and recommendations from DeSIRA projects, focusing on conceptual shifts, multi-stakeholder approaches, the evolving role of science and research, adaptive management, sustainability transitions, capacity building, and policy influence. It also offers some insights on future directions for research and innovation in Latin America and the Caribbean (LAC).

The DeSIRA initiative has catalyzed a shift from linear value chains to interconnected value networks, recognizing the complex web of relationships in agricultural systems. It has standardized multi-actor and multi-level collaborations for R&I, bringing together diverse stakeholders from farmers to policymakers. The role of researchers has diversified, adding to that of knowledge producers and external experts, the role of facilitators of co-learning processes, fostering more inclusive and participatory approaches to agricultural innovation.

A key focus has been on sustainability and agroecological transitions, with increased emphasis on incorporating bioeconomy principles and agroecological practices. Capacity building of all stakeholders has emerged as a crucial component, particularly in strengthening functional capacities for innovation and improving communication skills for policy advocacy. The initiative has also demonstrated significant potential for evidence-based policy influence, with several projects contributing to tangible policy changes.

Looking forward, the brief recommends that future initiatives based on R&I efforts (1) adopt long-term, territorial approaches to agricultural development, (2) reinforce inclusiveness in innovation approaches with the integration of the diversity of stakeholders' perspectives, (3) integrate economic considerations into project designs, (4) enhance communication and knowledge sharing, (5) strengthen capacity building efforts, (6) foster multi-stakeholder collaboration, and (7) promote adaptive management practices.

Connect Days Bogotá. Closing table - future DeSIRA, lessons and pathway to SDGs and COP16

DeSIRA in Latin America and the Caribbean

1. Challenges of agrifood systems transformation in Latin America and the Caribbean

Food security and import dependence are significant challenges in the region, particularly in the Caribbean. Many countries rely heavily on food imports, which makes them vulnerable to global market fluctuations and supply chain disruptions. This dependency is exacerbated by low agricultural productivity in some areas, due to reduced investments and lack of innovation in recent decades. The COVID-19 pandemic and the conflict in Ukraine have further highlighted the fragility of these import-dependent food systems. Two very affected regions are the Caribbean and Central America, where 60% and 34% of the population is at risk of food insecurity respectively. Food insecurity is 8.3% points higher in rural areas than in urban areas. Simultaneously, ALC also faces the challenge of malnutrition, with an increase in the prevalence of overweight in children under 5 between 2000 and 2022 and the prevalence of obesity in adults between 2000 and 2016, in both cases exceeding the global average[1].

Among the factors affecting these vulnerable populations are insufficient local food production that affects local availability and leads to high food prices, as well as unaffordability of imported foods.

LAC is the world's largest provider of ecosystem services, including climate change mitigation, through its forests and watersheds[2]. However, environmental and climate-related challenges pose significant threats to food systems in the region. Severe soil degradation particularly in the hillside areas of Mesoamerica and in the Andean Region, deforestation mostly due to expansion of livestock and soybean production, and biodiversity loss, which are often linked to the prevalence of unsustainable agricultural practices are prevalent challenges. Climate change is altering weather patterns, leading to more frequent extreme events, such as droughts and floods, that can devastate crops and disrupt food production. In the Caribbean as in vulnerable regions of Central America[3], altered climate patterns directly contribute to food loss and waste, creating a ripple effect on food security and nutrition. Additionally, the need to balance food production with environmental sustainability and climate change mitigation (including addressing Agriculture, Forestry and Other Land Use emissions, AFOLU) presents a complex challenge for policymakers and farmers alike.

Structural and economic challenges within food systems are prevalent across the region[4]. These include fragmented and often inoperative local and regional food value chains and markets, insufficient provision of public extension services, weakened public research organizations[5], and limited access to post-harvest technology such as cold chain and storage facilities. There's a need for sustainable intensification and diversification of production, improved organization of producers, and better market linkages. In many countries, there's also a disconnect between the agricultural sector and other potential economic drivers, such as tourism in the Caribbean. LAC is the world's most unequal region; the 10% highest earners make on average 12 times more than the poorest 10%[6]. Therefore, ensuring decent livelihoods for producers, just remuneration, and social and income equity for populations remain significant challenges in creating sustainable and equitable food systems.

1] FAO, IFAD, UNICEF, WFP and WHO. 2024. The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms. Rome. 2] https://lac.ifpri.info/research/climate-change/. 3] United Nations Office for Disaster Risk Reduction. 2024. Forensic Insights for Future Resilience, Learning from Past Disasters. Geneva. 4] https://www.undrr.org/media/100220/download?startDownload=2025021. 5] Innovation for Transforming Food Systems in Latin America and the Caribbean. In: Science and Innovations for Food Systems Transformation. Von Braun, J., Afsana, K., Fresco, L.O. Hassan, M.H.A. Editors. Springer.

6] Nin-Pratt, A., Gert-Jan, S., De los Santos, L., and Muños, G. 2023. Unlocking Innovation: Assessing the Role of Agricultural R&D in Latin America and The Caribbean. Inter-American Development Bank. Washington, D.C. https://publications.iadb.org/en/publications/english/viewer/Unlocking-Innovation-Assessing-the-Role-of-Agricultural-RD-in-Latin-America-and-the-Caribbean.pdf 5] Gáfaro, M., Ibáñez, A. M., Sánchez-Ordoñez, D., & Ortiz, M. C. (2023). Farm Size and Income Distribution of Latin American Agriculture New Perspectives on an Old Issue. https://doi.org/10.18235/0005088

2. A brief look of the ALC cluster of DeSIRA projects

The ALC DeSIRA project cluster has fifteen national and regional projects. The six national projects are located in Brazil (SEBRAE[7]), Costa Rica (GIZ[8]), Cuba (INIFAT[9]), Haiti (AgriCord), and two in Colombia (SINCHI[10] and ONF Andina). There are four multi-country projects: two in Central America, one carried out by IICA[11] and the other by WCS[12]; one in the lowlands of the Andean Region by the Alliance Bioversity/CIAT; and one in Brazil and Uruguay by AgriCord.

There are also global DeSIRA projects with activities in LAC: the three Transitions projects: Transitions 1 in Peru (ICRAF[13]), Transitions 2 in Brazil (Alliance Bioversity/CIAT), and Transitions PSii project in Peru (Bioversity International/WLE). The EcoFoodSystems project (IFAD/University of Galway) and TAP AIS (FAO) are also being carried out in Colombia.

Project acronym	Country/ies of implementation	Leader organization	Themes
Sustenta & Innova	Brazil	**SEBRAE**	Innovation, biodiversity conservation, deforestation reduction, landscape restoration, mitigation, climate change adaptation
Transforma e Innova	Costa Rica	**GIZ**	Climate-smart agriculture, low GHG emissions
MAS	Cuba	**INIFAT/FAO**	Agroecology
ABRIGUE	Colombia	**SINCHI**	Innovation, Territorial capacities, bioeconomy, climate adaptation
IdEAS	Colombia	**ONF Andina**	Stabilization of the agricultural frontier
FORI	Haiti	**AgriCord**	Diversification, agroforestry, farmer-led R&I
AGROINNOVA	Central America	**IICA**	Adapted Agroforestry Systems
Five Great Forests	Central America	**WCS**	Protect forests, local empowerment
ClimaLoca	Colombia, Ecuador and Peru	**Alliance Bioversity/CIAT**	Innovation, climate adaptation, low cadmium cocoa
FO-RI	Brazil and Uruguay	**AgriCord**	Farmer-led research, diversification, agroecology
Transitions 1	Peru	**ICRAF**	Holistic metrics for agrifood systems
Transitions 2	Brazil	**Alliance Bioversity/CIAT**	Digital tools, agroecology
Transitions 3	Peru	**Bioversity International/ WLE**	Private sector investments, agroecology
EcoFoodSystems	Colombia	**IFAD/University of Galway**	Agroecological transitions, climate resilience
TAP AIS	Colombia	**FAO**	Strengthening functional capacities for innovation

7] Serviço Brasileiro de Apoio às Micro e Pequenas Empresas.
8] Deutsche Gesellschaft für Internationale Zusammenarbeit.
9]Instituto de Investigaciones Fundamentales en Agricultura Tropical Alejandro de Humboldt.
10] Sinchi Amazonic Institute of Scientific Research.
11] Inter-American Institute for Cooperation on Agriculture.
12] Wildlife Conservation Society.
13] World Agroforestry Centre

3. Objectives and challenges of the DeSIRA projects

Each project is unique because it was conceived and developed based on the challenges faced by the stakeholders in the agrifood systems in the diverse environments where they operate, however, there were some common themes among them. The thematic areas of the projects include agroecological transition, agroforestry systems, agroecological intensification, farmer-led innovation, action research in AIS, process governance, and capacity development for agriculture R&I. Some project activities target strengthening governance in conflicting environments. For example, IdEAS and ABRIGUE work towards sustainability in post-conflict territories and forested regions in Colombia; while Five Great Forest deals with similar issues in Central America where the few remaining forests are threatened by advancing cattle ranching and drug trafficking. In both cases engaging and organizing stakeholders and institutions to stabilize the agricultural frontier is a priority.

Most projects are undertaking agricultural research activities operating within the concept of AIS, with multiple stakeholder platforms (MSP) formed at the local / territorial, country and multi-country levels. There has been a longstanding recognition of the role of MSP in LAC due to the work of regional organizations, chiefly IICA and FAO, however in many countries this approach has not been institutionalized.

When DeSIRA projects started, project implementers identified several constraints due to the multi-stakeholder and multi-complex nature of the projects, which could hinder their implementation. Several projects' representatives indicated difficulties operating in unstable political contexts, for example the extreme case of Haiti, with frequent government changes, gang violence, and policy adjustments

Map of DeSIRA projects in Latin America and the Caribbean

that result in increased bureaucracy. These conditions do not always favour participatory processes and affect negatively project management and execution.

In relation to support services, there is high variability because of the inequalities between and within countries in term of support services to agriculture such as research, extension, public and private advisory services, as well as financial mechanisms in support of innovation. In some DeSIRA projects, researchers were not only fulfilling their research function but also had to assume other responsibilities and engage in non-research activities, such as advocacy and policy formulation without having the necessary skills, which deviate their efforts, and took time away from other key research investment.

Project implementers expressed support needs related to the co-design of technical and organizational innovations; strengthening the role of the intermediary organizations; strengthening functional capacities. Such capacities include: approaches to collaboration, reflection, and mutual learning; implementing and operationalizing monitoring, evaluating, and learning (MEL) strategies; and managing innovation in unpredictable environments (such as conflicts, insecurity, COVID 19). The challenges mentioned also included strengthening
the capacity to navigate complex environments, for example, natural resources constraints at the niche level, and social conflict; managerial challenges between actors in platforms; and sustainability and result scaling.

When they started, the projects of this regional cluster jointly identified cross-cutting areas for joint learning and collaboration:

1. Sharing lessons learned on implementing technological, organizational, and institutional innovations towards agroecological transition.
2. Lowering greenhouse gas –emissions and promoting climate-smart agriculture.
3. Influencing and enabling institutions that are supportive of innovation.
4. Promoting and guiding policy dialog for innovation.
5. Producing decision-support tools for farmers.

4. DeSIRA stakeholders at the regional workshop

The “DeSIRA Connect days” workshop took place from 25th to 27th June 2024 in Bogota. With a total of 95 attendees (55 face-to-face and 40 virtual) from Latin American and European institutions. Among the institutions that attended were representatives from (1) national research organizations: AGROSAVIA; (2) NGO: ONF ANDINA, Instituto Sinchi , CRESOL Brazil, (3) international research centers: Alliance Bioversity/CIAT, CIRAD; (4) donors: EU Delegation in Colombia, FAO, GIZ; (5) Civil society organizations: Red Adelco, Ofrenda Abunna, National Indigenous Organization in Colombia (ONIC), Organization of Indigenous Communities in the Amazon (OPIAC); (6) private sector: Trulab, E-Natura, DENKEN SAS; (7) public organizations: Instituto del Café Costa Rica, Fondo Patrimonio Natural, Ministerio Agricultura Colombia; National Parks of Colombia, Ministry of Science Colombia (MINCIT), Chamber of Commerce Cartagena Ministry of Tourism Colombia, ; (8) academic institutions: Universidad Javeriana, Campus Universitas, Technological University of Chocó, Universidad Tecnologica latinoamericana, UNAD, Groningen University Netherlands; (9) media outlets UniMinuto, Revista Turismo Hoy; (10) regional ALC organizations: IICA, CATIE, Red RELASER; (10) others: Robert Daza (Senator).

The ‘DeSIRA Connect days’ workshop took place end of June 2024 in Bogota. With a total of 95 attendees from Latin American and European institutions.

Main lessons learned in the DeSIRA community

The main lessons that were shared and created convergence among the DeSIRA community in LAC cover seven areas:

1. A shift from linear value chains to interconnected value networks
2. Emphasis on multi-actor and multi-level collaborations
3. Evolution of researchers's roles from experts to also include facilitation functions
4. Increased focus on sustainability and ecological transition
5. Importance of capacity building for innovation and policy advocacy
6. Significant potential for evidence-based policy influence
7. Need for long-term, territorial approaches to agricultural development

These lessons are detailed and packaged below with reference to three groups of stakeholders: researchers, innovation communities and AIS actors.

1. New ways of doing research in support of innovation

1.1. Conceptual Shifts in Agricultural Research

DeSIRA projects have led to important conceptual shifts in approaching agricultural research and development. These shifts represent a more nuanced and holistic understanding of agricultural systems and their place within broader socio-economic and environmental contexts.

The first major shift has been from viewing agriculture through the lens of value chains to understanding it as part of complex value networks. This change acknowledges that agricultural systems are not linear progressions from production to consumption, but rather intricate webs of relationships and interactions between various stakeholders. Value Networks bring about the economic and transactional relationships that create value throughout the agricultural supply chain. For instance, ABRIGUE project states its main objective "to promote technical and organizational innovations in agroecology and circular bioeconomy and value chain management". IdEAS project leader reinforced the need to strengthen value network with innovative incentives (SINCHI), and the opportunity to include ecosystem services. This network perspective allows for a more comprehensive understanding of how value is created, distributed, and potentially lost within agricultural systems. Within this framework, factors that lead to value creation include collaboration, communication, trust, knowledge, production, diversification, entrepreneurism, funding, policy[15]. The research element crosses several factors mostly being embedded in the co-creation of knowledge for which collaboration and communications are needed.

Another significant shift has been in the conceptualization of agricultural frontiers. The traditional notion of an agricultural frontier as a boundary over which different interests compete has given way to the concept of a "dynamic stabilization edge." This new framing emphasizes areas where diverse interests can converge to address the dual challenges of halting environmental degradation and ensuring economic sustainability. It represents a more collaborative and holistic approach to managing the interface between agricultural expansion and environmental conservation.

Lastly, there has been an increased focus on food systems as demand-led, and representing the full agricultural value chain, which includes growing, harvesting, processing, transporting, marketing, distributing, consuming and

Ministry of Agriculture of Colombia: "International cooperation has played a fundamental role in building on public policy. The responsibility is to continue accompanying. The policy needs to be implemented after it has been designed."

Sinchi: "DeSIRA has helped us to build alliances with partners and has led to a meeting of knowledge."

15] Sadovska, V.; Ekelund Axelson, L.; Mark-Herbert, C. Reviewing Value Creation in Agriculture—A Conceptual Analysis and a New Framework. Sustainability 2020, 12, 5021. https://doi.org/10.3390/su12125021

disposing of food and food-related items, plus the inputs needed and outputs produced at each of these steps. Food systems integrate nutrition, health, resource use, biodiversity, transformation, jobs and livelihoods. This approach encourages discussion and collaboration among all stakeholders involved. It also highlights the importance of urban drivers in shaping food systems and draws attention to potential vulnerabilities in supply chains. By fostering dialogue around food systems, DeSIRA projects have promoted a more integrated and systemic approach to addressing agricultural challenges.

1.2. Multi-Stakeholder Approaches as a new standard for research

The DeSIRA initiative has emphasized multi-stakeholder approaches to R&I across its projects, recognizing that complex agricultural challenges require input and cooperation from various actors at different levels. This approach has been particularly effective in fostering dialogue and building trust among diverse stakeholders. These collaborations bring together a wide range of actors, including farmers, researchers, policymakers, private sector entities, NGOs, and local communities. By involving stakeholders at local, regional, national, and sometimes international levels, these projects have been able to address complex agricultural challenges from multiple perspectives and scales.

These collaborative structures serve several crucial purposes. They provide spaces for knowledge co-creation and sharing, allowing stakeholders to exchange ideas, best practices, and research findings. They facilitate capacity building by enabling training and skill development across different groups. Additionally, these alliances and platforms can amplify the voices of stakeholders in policy discussions, potentially leading to more informed and inclusive policy decisions.

DeSIRA consortia have demonstrated a unique "convening power," bringing together diverse actors to work towards more integrated, systems-based strategies in agricultural R&I. This ability to convene and coordinate diverse stakeholders has been crucial in addressing complex challenges that require multiple perspectives and coordinated efforts.

1.3. Evolving Role of Science and Research

The DeSIRA initiative has highlighted the significant role of science and research to contribute to agricultural innovation. These changes reflect a more participatory and context-sensitive approach to generating and applying knowledge in agricultural systems.

Science-based decision making has been emphasized across DeSIRA projects, with a focus on using scientific evidence to inform policy and practice. This approach aims to ensure that decisions are grounded in empirical evidence, potentially leading to more effective and sustainable outcomes. However, there's also a recognition that for scientific information to be useful, it must be accessible and understandable to all stakeholders. This has led to efforts to translate complex scientific findings into language that is comprehensible to policymakers, farmers, and other non-scientific stakeholders. For example, the Clima Loca project is using Digital Soil Mapping (DSM) to cooperatively develop maps to determine the levels of Cadmium in soils in the Andean Region and inform decision-making by farmers and policy makers about where to plant cocoa to that it can be exported to markets with stringent upper limits for CD content. The Ideas project has developed tools for landscape planning using the FORLAND platform. In both cases, multi-stakeholder dialogues have enhanced participation of local stakeholders in the decision-making process on land use, while strengthening the capacity of national organizations.

The initiative has promoted a holistic view of innovation that covers three key facets: technology, processes, and governance. Technological innovation refers to new tools, techniques, practices or products. Process innovation involves new ways of doing things or organizing work. Governance innovation encompasses new approaches to decision-making, collaboration, or management. This broader view of innovation acknowledges that improvements in agricultural systems should articulate these three dimensions to be truly effective and sustainable.

Perhaps one of the most significant shifts has been in the role of researchers themselves. Traditionally viewed as external experts providing knowledge, researchers in DeSIRA projects have increasingly taken on the additional role of facilitators in co-learning processes. This new role involves managing networks of actors and knowledge, facilitating dialogues, generating evidence for policy, and bridging gaps between different stakeholders. They are assisting in reconfiguring the relationship between scientific research and local knowledge systems. This evolution aligns with the emphasis on multi-stakeholder collaboration and recognizes the value of local and traditional knowledge alongside scientific expertise which is essential for innovative transition pathways adapted to each type of agricultural and food systems.

1.4. Adaptive Management of Projects

The DeSIRA initiative has underscored the importance of adaptive management in agricultural research and development projects. This approach allows project teams to respond flexibly to changing circumstances and emerging insights, enhancing their effectiveness and relevance.

A key component of this adaptive management approach has been the development and implementation of robust MEL systems. These systems go beyond traditional project management tools to become instruments for learning, adaptability, and policy influence. DeSIRA has promoted MEL systems that are context-specific, recognizing that what

works in one setting may not be appropriate in another. These systems serve multiple purposes: tracking progress and outcomes, providing data for decision-making and course-correction, supporting policy advocacy, and assessing the potential for scaling successful interventions.
Alongside robust M&E systems, there has been a strong emphasis on learning and adaptability. Participants in DeSIRA projects have stressed the importance of using M&E systems not just for accountability, but as tools for continuous learning and improvement. This involves embedding evaluation and learning into the core of adaptive management processes, using evaluation as an adaptation mechanism, and fostering a culture of continuous improvement through cycles of adaptation and validation.

This focus on learning and adaptability recognizes that agricultural development occurs in complex, dynamic environments where flexibility and responsiveness are crucial. By emphasizing these aspects, DeSIRA projects have been able to respond to changing conditions or unexpected challenges, incorporate new insights and knowledge as they emerge, and continuously refine and improve their strategies and interventions.

CIRAD regional director:
"The DeSIRA projects are characterised by the appropriation of rural actors, the generation of hybrid knowledge (scientific and traditional), the predominant role of platforms, and communication with decision-makers."

EU Delegation Colombia:
"DeSIRA innovations are more integrated in both public and community processes."

16] ECLAC, FAO & IICA (2019) The Outlook for agriculture and rural development in the Americas: a perspective on Latin America and the Caribbean 2019–2020. Available at: https://www. agrirural.org/en

2. Empowering innovation communities

2.1 Sustainability and Ecological Transition: "towards increased ownership of concepts and practices"

The DeSIRA initiative has fostered increased ownership of sustainability concepts and of application of sustainable practices among the communities it serves. This represents a crucial step towards more resilient and environmentally friendly agricultural systems.

A key focus has been the transition towards bioeconomy and agroecology, which are two topics of growing interest in LAC. Significant technological developments are being applied in traditional and export food crops, using biotechnological applications, conservation and regenerative agriculture, and sustainable livestock production systems[16]. The bioeconomy approach aims to reduce dependence on non-renewable resources and promote circular economy principles within agricultural systems. This might involve using agricultural waste as inputs for other processes or developing bio-based products. Agroecology, on the other hand, focuses on working with natural processes to enhance productivity while minimizing environmental impact. This approach recognizes the interconnectedness of ecological and social systems in agriculture.

DeSIRA projects have also placed significant emphasis on conserving and making sustainable use of agrobiodiversity and implementing inclusive practices with indigenous communities. Agrobiodiversity is recognized as crucial for enhancing resilience to pests, diseases, and climate change, improving nutrition through diverse food sources, and preserving local and traditional crop varieties and livestock breeds. Inclusive practices have been promoted to address the specific needs of different groups, including women, youth, and indigenous communities. This approach aims to ensure equitable access to resources and opportunities and promote the participation of all stakeholders in decision-making processes. It was mentioned in the Connect that land tenure insecurity in many countries prevents farmers from investing in some key agroecological practices, such as agroforestry systems.
The project Transforma e Innova operating in Costa Rica executed three calls for innovation, in cooperation with key stakeholders from government, academia and national chambers and associations of the different commodities. The objective is to support the implementation of the national mitigation strategies. The funds are used to demonstrate agroecological technologies and practices and bring stakeholders together for scaling up[17].

2.2. Capacity development as a key lever of empowerment

Capacity development has emerged as a key lever of empowerment in DeSIRA projects, with a focus on enhancing the ability of individuals and organizations to innovate effectively in agricultural systems.

A major focus has been on strengthening functional[18] capacities for innovation, which goes beyond technical knowledge to include skills such as problem-solving, adaptability, collaboration, and leadership. Strengthening leadership appeared as a common thread among the DeSIRA projects (IdEAS, ABRIGUE, FO-RI Brazil/Uruguay) and this has been a recurrent trend since the projects started interacting, as has been mentioned before in DeSIRA training events. For instance, the project 5 Great Forests is strengthening leadership among the local communities that live in the buffer zones of the Central American forests to empower them to advocate for their resources.

The FO-RI project in Brazil has implemented training of facilitators and entrepreneurs, especially to empower women and the youth, which also included local leadership, as the project aims to support on-going innovations in selected supply chains with products from agrobiodiversity and promote markets.

EU Delegation Colombia: "All DeSIRA inputs should be shared with the EU at national level, so that they nourish the existing structured dialogue and complement other inputs."

FAO: "The relationship between the agri-food system and food and nutrition security requires revolutionising food systems based on the right to food and nutrition, science and innovation."

17] Valeria Zumbado and José Fabio Sojo, Instituto de Café en Costa Rica, PPT in Connect Colombia. 18] Paula Couceiro, SEBRAE, Sustenta e Innova. PPT dring DeSIRA connect. 19] Ana Garcia Hoyos, TAP project leader. PPT in DeSIRA Connect, Colombia 2023.

Several DeSIRA projects in LAC were carried out in extremely insecure environments, so managing conflict came up as an important capacity to facilitate the work of professionals, as have social skills or "functional capacities" more generally that allow for sensemaking in collective action and innovation in the territories.

The Tropical Agriculture Platform (TAP) framework has been a key reference in this effort, providing a structured approach to capacity development for collaborative innovation, as exemplified by its execution in Colombia. By enhancing these functional capacities, DeSIRA projects aimed to improve the ability of stakeholders to develop and implement new ideas, technologies, and practices in agriculture. Several innovation facilitators from DeSIRA projects received training on functional capacities for innovation and are now part of a wider network of practitioners from other regions.

TAP project in Colombia is making strides influencing the public policy environment (Law 1876 of 2017 creation of the AIS system in Colombia). The project is using a rural innovation measurement tool, for the dairy and beekeeping chains, and promoting process and product innovations[19]. Another crucial area of capacity building has been communication, particularly for public policy advocacy. Recognizing the need to bridge the gap between scientific research and policymaking, DeSIRA projects have emphasized training in strategic communication. This includes learning how to effectively communicate research findings and project outcomes to policymakers and other stakeholders, adopting accessible language, and developing skills in policy advocacy and spokespersonship. DeSIRA made a concerted effort to provide project implementers with tools and knowledge and several projects engaged in designing a communication strategy. The ABRIGUE project made an effort to develop a communication strategy aligned with the project Theory of Change; while the projects Five Great Forests, Clima Loca, Transforma e Innova and AGROINNOVA utilize the communication strategy and platform of the lead organization.

3. Strengthening national agricultural innovations systems (AIS)

Most of the DeSIRA projects contributed to policy influence and evidence-based decision making. They initially formulated an objective of influencing policies as follows: "Commitment of research to policy that involves the whole sector for significant changes" which was gradually operationalized along project implementation, partners engagement and production of knowledge and insights into innovation and change processes at local levels.

Projects have demonstrated significant potential for influencing agricultural policies. Achieving this potential however requires connecting scientific research with policymaking and needs solid scientific evidence.

Evidence-based public policy development has been a key focus, with DeSIRA promoting the use of robust M&E systems not only for project management but also to influence policy. This approach aims to ensure that agricultural policies are grounded in solid scientific evidence. Specific examples of policy changes influenced by DeSIRA projects include the Action Plan of the Antioquia Department Committee (Colombia) and the National Development Plan for the Cocoa Chain in Peru.

The initiative has also worked to strengthen science-policy interfaces. This has involved building alliances between research institutions and policy-making bodies, encouraging researchers to take on roles as facilitators and knowledge managers, and ensuring that research findings are communicated in accessible language to policy audiences.

Ministry of Agriculture Colombia: "The agricultural sector drives the Colombian economy and food sovereignty under a sustainable approach is the MADR's public policy focus. Solutions through research and innovation contribute to face the challenges."

Andres Mauricio Leon from Planning Advisory Office at the National Natural Parks System (Parques Nacionales Naturales). "Changing politics can transform institutions, modernise them to increase their efficiency."

4. Supporting "transitions that are on tracks"

DeSIRA projects worked hand in hand with several Ministries (Agriculture, Environment, Sciences) in many cases and under both bottom up and territorial approaches to balance food production with environmental sustainability and climate change mitigation, including to address AFOLU emissions. DeSIRA projects are good examples of how to work under a 'rights'-based approach i.e. right to food and nutrition enhancing science and innovation contributions.

DeSIRA projects made a necessary and positive contribution in attempting to balance conservation and food production. Conservation must be linked to productive dynamics: conservation agreements, ecological restoration and rehabilitation can contribute more effectively to the agricultural sector when their contribution to ecosystem services is made visible and valued. More research is needed on the reconciliation between production and conservation. Some DeSIRA projects have started to address this issue, for instance Sustenta & Innova in Brazil, Five Great Forests in Central America and IdEAS in Colombia.
DeSIRA projects contributed to improve resilience in strategic ecosystems, creating spaces for action-research for adaptation and resilience to climate change in production systems in areas of high vulnerability, such as the Dry Corridor in Central America. Broad community platforms with technical and academic participation promote the dialogue between science-based and traditional / local knowledge. Such a dialogue becomes a priority to expand platforms' viability in tropical dry forest regions in Latin America and the tropics in general. Some advances are being made by Five Great Forests, ABRIGUE and Sustenta e Innova.

The relationship between the agrifood system and food and nutrition security is very important and requires a transformation in food systems based on the right to food and nutrition, science and innovation. The EcoFoodSystems project working in Colombia is linking national to subnational food systems for decision support to demonstrate how to generate sustainable data streams for decision-making that are relevant and actionable at both scales.

Finally, it is important to create private sector incentives. For example, the Transitions PSii project in Peru, focuses on developing and integrating agroecological metrics into digital traceability tools, as indicators to measure the performance of these practices. It uses a blend of approaches that includes market and non-market incentives, regulatory incentives, and cross-compliance to leverage private sector actors to promote agroecological practices.

Recommendations on the way forward

Based on the outcomes of DeSIRA projects, several key recommendations emerge for the future of agricultural research and development in LAC:

1. Adopt Territorial and Long-Term Approaches: There is a need to shift focus from short-term localized projects to sustained territorial development processes. This involves thinking beyond project cycles to consider long-term development trajectories of specific regions or territories. It requires building trust and maintaining long-term relationships with local stakeholders, recognizing that meaningful change often requires sustained effort over extended periods in each territory.

2. Reinforce Inclusive and Diverse Perspectives: Future initiatives should implement gender-differentiated and lifecycle approaches, recognizing that different demographic groups within communities may have distinct needs and challenges. To define priorities, the participation of local communities is essential, and should promote a convergence of scientific and traditional / local knowledge. There should also be a particular focus on engaging youth through innovative agricultural initiatives to ensure the sustainability of agricultural communities and bring new ideas to the sector. Promoting horizontal dialogue that respects local knowledge and cultures is crucial for integrating diverse knowledge systems and fostering truly inclusive innovation.

3. Integrate Economic Considerations: While focusing on sustainability, it's crucial to ensure that innovations are economically viable and scalable. This involves developing both market and non-market incentives for sustainable practices, such as partnerships with financial institutions or tax agencies to create favorable conditions for sustainable agriculture.

4. Enhance Communication and Knowledge Sharing: There is a need to ensure the use of accessible language for all stakeholders to bridge gaps between researchers, policymakers, farmers, and other actors. Strategic communication approaches should be implemented, tailoring messages to specific audiences and selecting appropriate communication channels for maximum impact.

5. Strengthen Capacity Building: Continued efforts should be made to develop a broader set of functional and managerial capacities for innovation, going beyond technical skills to include problem-solving, adaptability, and leadership. Training in communication for policy advocacy should be prioritized to enhance the impact of research on policy decisions.

6. Foster Multi-Stakeholder Collaboration: Future initiatives should further develop and support alliances and platforms for knowledge exchange and collective action. Multi-level and multi-actor approaches should be encouraged in project design to ensure diverse perspectives are included from the outset. Also, new initiatives should build on existing platforms to uptake their scalable results and

7. Promote Adaptive Management: Robust M&E systems that support learning and adaptability should be implemented across projects. Flexible project designs that can respond to emerging challenges and opportunities should be encouraged, fostering a culture of continuous learning and improvement.

Finally, future initiatives aiming to transform AIS cannot ignore two very relevant themes in ALC: (1) youth outmigration and employment -which means more attention to financial outcomes and farm viability; and (2) land access and tenure reform. These are beyond the realm of innovation projects but are components of the macro-environment in which projects operate and affect severely the implementation of these initiatives, and potential scaling of results.

Conclusion

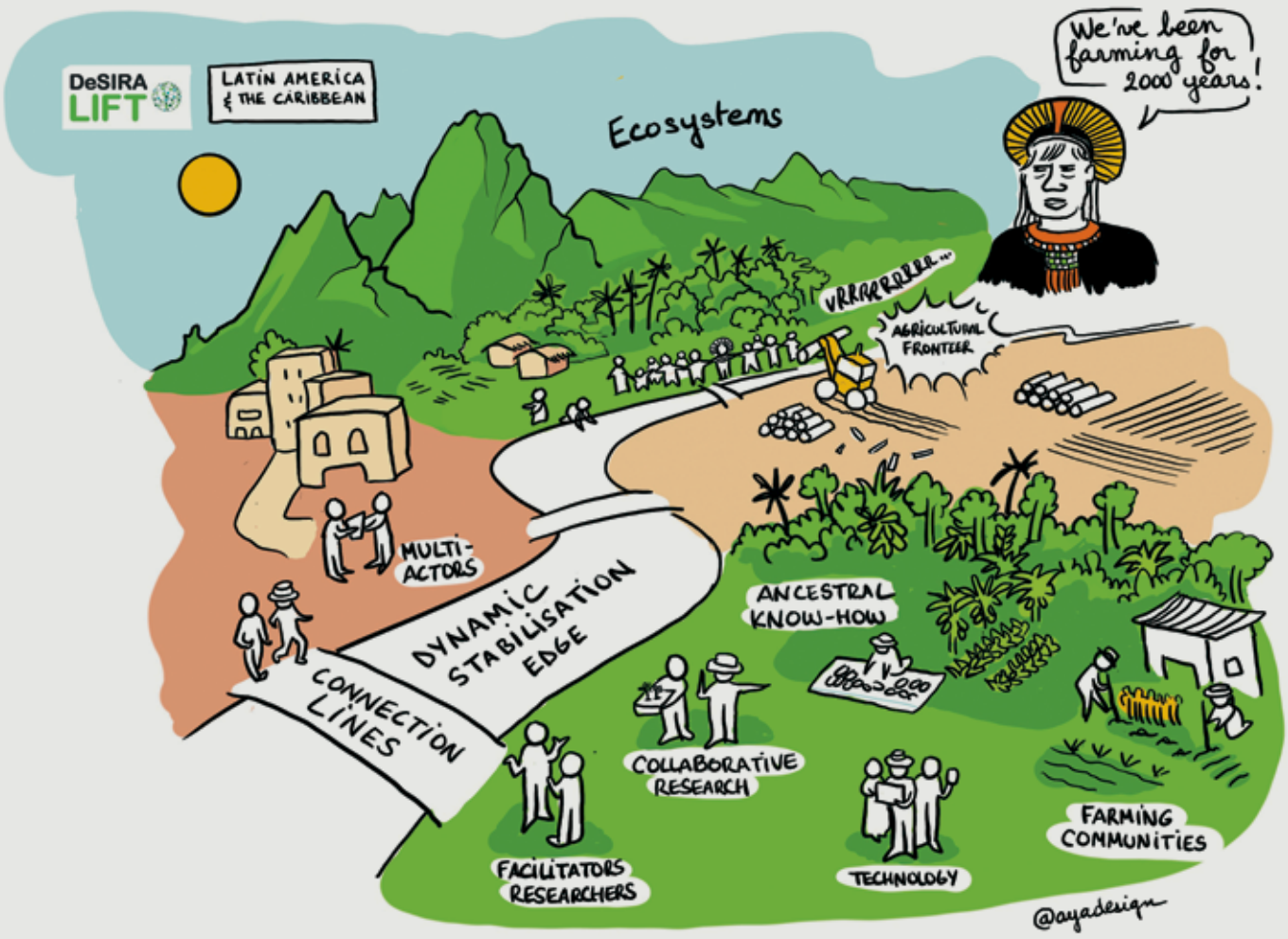
The DeSIRA initiative in Latin America and the Caribbean has demonstrated the potential of new participatory, inclusive and territorial approaches of research and innovation to support sustainable development of agrifood systems.

By embracing systems thinking, fostering collaboration, and adapting to local contexts, these approaches offer promising pathways for sustainable agricultural development.

Moving forward, it is crucial to build on these insights, focusing on long-term, inclusive strategies that balance environmental sustainability with economic viability and social equity.

The lessons learned from DeSIRA provide a valuable foundation for future efforts to transform agriculture and food systems in low and middle-income countries, contributing to global food security and sustainable development goals.

Key takeways in a picture



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This Perspective Brief forms part of a collection of knowledge products, building on combined activities of the DeSIRA-LIFT Service Area 1 team that has been providing support to the 70 DeSIRA projects of DeSIRA pillar 1 in their various contexts. These knowledge products were developed in close interaction and with inputs of the DeSIRA project teams.

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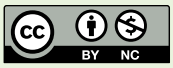

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