Activating agricultural transitions to sustainability **through participatory research and co-innovation**

Stories of change across Africa, Asia and Latin America from the DeSIRA initiative

DeSIRA LIFT

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The multi-actor mechanism provides a neutral space, helping to build trust, foster shared understanding and encourage joint decision-making, enabling partners to align their actions and execute projects successfully.

Sheleme Demissie, a landscape specialist and project focal person at ECFF, emphasises: *"The current achievements have been possible due to effective strategic management, synergistic collaborations and transparent communication among implementing partners".*

The Yayu Coffee multi-stakeholder mechanisms can facilitate the replication and adaptation of successful models and solutions across different regions, sectors and contexts. For example, ECTA has picked up the project's FFS methodologies and started introducing them to all coffee-growing regions of the country. The potential for local innovations to be scaled up and out is thus magnified. In addition, the project aims to compensate smallholder families for their invaluable ecological services to support reforestation by certifying forest coffees, an underway effort.

Fekadu Deferes, chief executive at ECTA, believes that *"farmer field schools are a valuable repository of knowledge and a voluntary innovative extension approach that should be adapted and expanded for coffee farmers. Thus, ECTA renamed these as coffee farmer field schools, to extend this innovative approach and methodology to coffee-growing regions nationwide. This policy element in the coffee sector is paramount and set to receive top priority for scaling up by the government".*

The project has initiated a shift in attitudes by targeting training of development agents in soft skills, including building consensus, promoting collaboration, and fostering an environment of mutual respect and trust, needed to foster joint learning through the co-creation approach with farmers. As a result, the project has achieved considerable success in motivating hundreds of farmers to implement good agricultural practices within the woredas where the project operates.

Mohamedzin Yesuf, FFS group facilitator in Alge Sachi Woreda, shares that "by implementing innovative good agricultural practices, we have left behind traditional backward practices". At the social/family level, the project is making strides in gender equity by fostering a gender household approach through sensitisation, home visits and seminars for couples. Many couples are now practising making mutual decisions, for example by opening joint bank accounts.

The development agents have been instrumental in achieving many of these positive advancements. Collaborating with local communities of different ethnic, religious and economic backgrounds to tackle complex challenges related to diverse agroecological systems is a new and unique experience within the Yayu Coffee platform.

The Yayu Coffee project is more than just about coffee, it is a ray of hope that shows how collaboration can revolutionise agriculture through local innovation, empowering communities and preserving the precious Yayu Coffee forest ecosystem for future generations.

YAYU COFFEE FOREST BIOSPHERE RESERVE ETHIOPIA

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Elevating Livestock Health through Innovative Multi-Stakeholder Collaboration

LIDISKI project, Nigeria

Yakubu Pamguang is a livestock farmer in Plateau State, Nigeria. Yakubu's family and many Nigerian households are heavily reliant on livestock, which is a source of both animal protein and income, and represents critical assets to cope with shocks:

"Keeping these animals is very important to the family because when we face challenges like sickness in the family and we don't have money, we take some goats or chickens to sell and pay the medical bills".

Livestock is of utmost importance to poor rural and peri-urban farmers, with over 20 million Nigerian households relying on their livestock for nutrition. In Nigeria, women are key stakeholders in poultry and small ruminant value chains. Supporting the livestock sector therefore contributes to food security, improves the quality of life, notably for the country's smallholders, and empowers women.

The challenge of livestock diseases

However, livestock diseases and their related management costs are a threat to the livelihoods of livestock owners. Peste des petits ruminants (PPR) in small ruminants and Newcastle disease (ND) in chickens are among the most devastating diseases capable of wiping out entire flocks and exposing farmers to devastating economic shocks. *"We normally put some kind of plants or wild fruit in their water to prevent them from dying",* say farmers in Kabwir in Plateau State, *"though we do not know the name of the disease, we know that seasonally, almost all the birds in the village will die due to mura, zawo, whitish and greenish stool, bori/madness and cycling. The chickens become sleepy, thirsty and die suddenly".* Farmers have little or no knowledge of the diseases, their causes, proper handling and mitigation strategies. Exposure of animals to high-risk areas of disease circulation such as animal markets contributes to high morbidity and mortality rates. With increasing climate variability and change, livestock migration becomes common, which exposes the animals to transboundary diseases, and creates a need for strengthening disease surveillance and control systems in the concerned countries. The European Union-funded Livestock Disease Surveillance Knowledge Integration (LIDISKI) project aims to reinforce PPR and ND surveillance and control systems in the Bauchi (North East), Plateau (North Central) and Kano (North West) states of Nigeria, through the development of tools and guidelines specific to the context, to improve food security and increase the revenue of smallholder livestock farmers. This relies on three main outcomes: improving the understanding of the socio-economic and epidemiological context of the two diseases, strengthening the human and material capacities of national partners, and improving the engagement of local stakeholders in vaccination and disease reporting.

Implementing partners engage farmers through the CAHW network

To improve the engagement of local stakeholders in vaccination and disease reporting, the project created a network of community animal health workers (CAHWs). To put this network in place and make it functional, the LIDISKI project's implementation partners work in collaboration with actors including the state, statutory bodies, veterinary pharmaceutical companies, vet retailers/distributors and farmers. Some 138 CAHWs from various states were trained by the Veterinary Council of Nigeria (VCN)'s certified trainers, recruited among veterinarians and specially trained.

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Organised by Ikore International Development, in collaboration with the VCN, who designed the curriculum for the CAHW training with inputs from the National Veterinary Research Institute (NVRI) and the French Agricultural Research Centre for International Development (CIRAD), the CAHW programme was established to train CAHWs on the basics of disease identification and management with a focus on PPR and ND, vaccination, animal handling and disease reporting. The role of veterinarians did not end with the training. They play supervisory roles to the CAHWs, handling disease cases that are beyond the CAHWs' abilities, and guiding them in administering treatments. Their trainer certification allows them to strengthen the capacities of more CAHWs beyond the project duration. CAHWs are introduced in their communities and formally endorsed by the project. They are involved in communication campaigns implemented at the community level to raise awareness of the importance of reporting PPR and ND cases, and of requesting animal health services. They educate farmers on the importance of seasonal vaccination and implementing biosecurity measures.

Understanding the disease context through participatory approaches

To make sure that awareness campaigns are well-suited to the context, the NVRI, CIRAD and Ahmadu Bello University work with communities using participatory approaches. These approaches include field data collection to understand the epidemiological aspect of the diseases and pinpoint the socio-economic impact on local communities. Marion Bordier, an epidemiologist at CIRAD states: *"We are sampling animals to better understand the occurrence of the disease, their geographical distributions as well as the strains in circulation. We are also implementing some questionnaires with farmer households to better understand their socio-economic conditions and how they get resilient to shocks".* Findings from the analysis of collected data inform the feedback given to farmers as best practices to prevent disease entry into their farms, for disease control and eradication. The information gathered is used to better tailor the contents of communication materials to drive behaviour change for vaccine adoption and consistent engagement with animal health workers.

Bridging the knowledge gap for farmers

Farmers in Plateau State recall the lessons learned from their CAHW: *"We learned about the importance of seasonal vaccination for all our livestock. She [the CAHW] taught us to keep the animal sheds and surrounding areas very clean and take care of all the spaces in which the animals stay. To always separate sick animals from healthy ones and not to put back unsold animals that were taken to the market with the ones left at home. She told us to try and always confine our animals."* Through the CAHWs' engagement with farmers, they can build trust and facilitate behaviour change for the adoption of vaccination and livestock farming best practices.

CAHWs are also trained to report suspected cases of ND and PPR through the open data kit. The reporting is done using an electronic-based form accessible on smartphones. Each CAHW submits data of each farmer to whom they provide their service. The implementing partners organise participatory sessions and develop tools to integrate CAHWs's reports into the animal disease surveillance system. The reports are sent to the State Department of Veterinary Services and the NVRI which co-ordinates the investigation of disease outbreaks.

Some teething problems in the implementation

The CAHW network faced some implementation challenges. The biggest one was that vaccines were unavailable locally. As Abdulkadir, a CAHW from Bauchi State, explained: *"It used to take us 40 km to access vaccines of good quality and after getting their vaccine, farmers complained about its enormous cost due to the cost of transport".* The farmers began to accept and adopt vaccination but had to wait till demand was aggregated before a vaccine purchase was made. Other challenges include the unstable mobile networks they have in rural communities which hampers disease reporting. Some CAHWs do not have smartphones to access the new data collection tool.

Newcastle disease virus pathotyping tests. *Photo: LIDISKI project*

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Chicks vaccination. *Photo: LIDISKI project*

To overcome these challenges, linkages had to be made with private-sector actors. Ikore linked the CAHWs with agro-vet distributors registered with the NVRI – a major vaccine producer. The institute prioritises these distributors who ensure that the CAHWs are supplied. Some of the CAHWs also serve as retailers for vaccines and other agriproducts within their communities. Also, the open data kit functions offline and online. Thanks to this, the CAHWs can enter the details of their engagements with farmers offline and the report will be uploaded when the network is available. The project made smartphones available to those who could not afford them.

Improving access to vaccines and disease diagnostic services

The NVRI and the Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe), an Italian public health institute, jointly developed guidelines to improve ND vaccine efficacy. The commercial vaccines produced at the NVRI were evaluated on their effectiveness against the ND strains circulating across the West African region. CIRAD and the IZSVe trained the institute's staff and provided equipment and guidelines to increase vaccine production, and maintain the cold chain in the delivery of PPR and ND vaccines to geographically isolated areas. The LIDISKI project facilitated the installation of solar panels as a solution to the frequent electricity shortages, allowing for better storage and delivery of diagnostic samples and vaccines. The solar panels were installed at the headquarters and five other outstations. It also allowed for computerised data collection on suspected diseases in the field.

The IZSVe and the NVRI worked on a study to address the need for a rapid and updated molecular test to identify virulent and avirulent viruses, putatively of any current genotype. The rapid recognition of an ND case is of utmost importance so that health authorities may establish timely control measures to prevent the spread of the disease. This new test was developed and validated. The new test can detect and diagnose all tested avian paramyxovirus-1 (APMV-1) genotypes (which cause ND) and is suitable for routine use in clinical samples. Isabella Monne, a researcher at the IZSVe, says: *"To improve the ability of the entire veterinary diagnostic community to identify and diagnose ND, the new molecular test has been published open access in an international journal (Journal of Virological Methods, Volume 322, December 2023, 114813 – Elsevier)".*

From research to sustainable innovation

The newly developed protocol for rapid ND diagnosis will have a remarkable impact on the surveillance system beyond the project's duration. Following the impact of solar panels on the NVRI's capacity to provide services in vaccine delivery and disease investigation, solar panels have been installed in 11 additional outstations, paving the way to scale-up these innovative solutions for animal disease control and surveillance. In the same vein, the engagement of CAHWs with farmers over the project period has empowered some of them financially to establish businesses and purchase solar-powered fridges. These results will serve as motivation for continuous disease reporting from the CAHWs. Subsequently, the disease reporting system will be handed over to the state for direct management of CAHWs and disease reports. The three states will plan their state-wide vaccination strategies based on investigations of diseases reported. After the end of the project, opportunities for retraining will be extended to the CAHWs, with some virtual technical support from Ikore where needed. The reporting system will be integrated into the current surveillance system by the State Department of Veterinary Services who will be trained in the tool usage. The project team will work with the Federal Ministry of Agriculture and Rural Development to integrate the tool with the national animal disease information system. Based on the knowledge gathered throughout the project and shared with stakeholders, guidelines are being co-constructed for project scale-up and adoption at the national and regional level.

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Flavors of jungle and sea
ABRIGUE project, Colombia

Colombia is a country known for the richness of the biodiversity of its ecosystems and the cultures of its inhabitants, where a variety of severe socio-environmental conflicts and violence has emerged prominently over the last seven decades. In Meta and Caquetá, a transition zone between the Andes and the Amazon, peasant settlers derive their income from cattle ranching.

It is home to the main centres of active deforestation in the Amazon rainforest, which contribute to about 37% of the greenhouse gas (GHG) emissions of the agriculture, forestry and other land use (AFOLU) sector in the country. The prevalence of coca cultivation generates an illegal economy controlled by armed groups. In Chocó, on the Pacific Ocean coast, Afro-Colombian settlers are dedicated to artisanal marine fishing, and coconut and vanilla cultivation. Two armed groups are fighting for control of the territory's economy generated by the illegal extraction and commercialisation of timber, mining and the transport of coca paste.

Due to the strategic importance of these territories rich in biodiversity, since the 1990s, the Colombian state has promoted practices for sustainable cattle farming and the sustainable use of the forest, which include species to generate bio-based products for incorporation into the value chain. In that way, it has sought to reduce the dependence of peasants and Afro-Colombian communities on illegal economies and extractive activities. The goal is to reverse deforestation and degradation, and consolidate actions that lead to peace.

After 30 years of efforts and investment, several local family ventures or small producer groups have been created. The change in the model has been gradual due to the trust that has been established between communities, the institutional framework and cooperation.

Thus, there is now some perceptible progress in reversing low quality of life indices, food dependence on other regions, illegal economies, deforestation rates, land degradation and high GHG emissions in the AFOLU sector.

Strengthening capacities

Mid-2021, the ABRIGUE project took on the challenge of demonstrating that strengthening territorial capacities for innovation in agroecology and circular bioeconomy, and marine artisanal fisheries, in a favourable policy and governance context, can generate solid foundations for communities to transition towards sovereign, profitable and resilient agri-food systems. ABRIGUE is a partnership between the Amazonian Institute for Scientific Research (SINCHI), the Colombian Corporation for Agricultural Research (AGROSAVIA), the Ministry of Science, Technology and Innovation, the Technological University of Chocó and the French Agricultural Research Centre for International Development (CIRAD). From the outset, the implementation of ABRIGUE allowed the partners to realise that capacity building was needed for the proposed changes, which had not been systematically thought of in the territories. In this way, beyond the transfer of knowledge and technical skills in the traditionally used methods, the researchers faced, in a novel way, the need to acquire skills, knowledge and attitudes to think, plan and act in a transdisciplinary and multi-actor way, and to assume leadership to promote functional capacities in local innovation platforms.

"It took us 10 months to start the actual implementation in the territories. Digesting the conceptual and methodological aspects necessary to think in a "Common Framework" mode and having the capacity to adapt it to territorial circumstances took us long days of reading and training with allies. Aware of the advantages, we realised