



Ministry of Foreign Affairs

Impact Clusters – Case Studies

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Impact Cluster – Case Study

PoultryTech – Uganda

1. Introduction to the case

Country Uganda, Central Region	Timeline 2021-2024
Subsector Agri-food / poultry production.	
IC consortium	
<ul style="list-style-type: none"> Dutch partners: Larive International B.V. (lead partner), Aeres Training International (training and capacity building), Royal Pas Reform (hatchery and broiler management training), Nutreco Africa (feed and nutrition expertise), Hendrix Genetics (Genetics, DOC production systems), Ottevanger Milling Engineers (feed technology). Local partners/beneficiaries: Asigma Capital Advisory Services (local implementation support), Kukuchic (hatchery training), Asiima Agri Concern (layer demo farm, knowledge partner, local DOC producer), Champrisa International (local technology installation partner demo farms), Biwooma farm (broiler demonstration farm). 	

In short

The project aimed to create a resilient and profitable Ugandan poultry value chain by substituting imported inputs, particularly Day Old Chicks (DOCs), with locally produced alternatives, while improving farming practices for small and medium-sized poultry farmers in the broiler and layer segments to increase productivity, sustainability, and resilience and to strengthen business relationships between Dutch and Ugandan companies. Overall effects were positive for beneficiary partners, with notable improvements in farming practices and business performance for local businesses. Dutch partners already active in Uganda maintained or expanded their client base, but the DOC problem was not resolved due to market readiness and sector knowledge gaps. The communication activities exceeded initial targets but resulted in limited visibility and local awareness relative to the activities.

FIGURE 1: SIMPLIFIED BIOSECURITY MEASURE FOR SMALL SCALE CONTEXT AT A LOCAL POULTRY FARM - STILL IN PRACTICE TO DATE.



TABLE 1 CHALLENGES AND INTENDED CHANGE

Market barrier / capacity gap	Intended changes
<ul style="list-style-type: none"> High dependency on imported DOCs; Low and inconsistent quality of locally produced DOCs; Weak broiler and layer management practices; Emerging group of mid-size commercial poultry farmers with limited farm management skills; Low adoption of appropriate poultry technology. 	<p>At company level:</p> <ul style="list-style-type: none"> Adoption of professional farm and hatchery management practices, technology, and improved decision-making capacity Increased use of locally produced, higher-quality DOCs Enhanced capacity for training (multiplier effect) De-risking market entry and expansion in Uganda <p>At sector level:</p> <ul style="list-style-type: none"> Decrease import dependency Greater resilience to market and supply-chain shocks Improved local market intelligence and sector understanding Higher and more consistent quality of local poultry inputs Increased competitiveness of mid-size farmers

2. Findings related to Context-Mechanism-Outcome hypotheses

2.1 Outcomes

 <p>Dutch companies</p>	<ul style="list-style-type: none"> • The project strengthened Dutch Ugandan connections in the poultry sector and enabled some partnerships, but these outcomes remained limited and with limited translation into sustained trade or investment. • The consortium was under Larive’s coordination, with Aeres delivering trainings together with the local demonstration partners. From the available evidence, the most concrete post-project relationships are observed for Hendrix Genetics and Nutreco, both of which have continued engagement with the local market and secondary beneficiaries with advisory support, input supply. • For Pas Reform and Ottevanger, partnerships were established during the project period, but there is no evidence from our informants of sustained commercial increased activity due to the IC alone after project closure. Overall, the project generated learning effects, visibility, and local reference cases for Dutch companies, but did not lead to demonstrable increases in trade or investment attributable to the Impact Cluster. • The IC was well aligned with Dutch sector strengths and local development needs, based on the poultry roadmap findings, from which Dutch companies indirectly benefited. However, the broader business climate did not change as a result of the IC, and constraints of market readiness and scale limited the resolution of the DOC challenge and further scaling of Dutch business.
 <p>Local companies</p>	<ul style="list-style-type: none"> • The project produced practice-level and commercial effects for local partner companies, but sector-wide transformation is limited by broader market constraints. • There was significant impact on local companies Asiima Agri concern, Kukuchic and Champrisa. The project led to observable changes in practices and market positioning. Asiima, which combines a demonstration function with its role as a local DOC supplier, strengthened its training capacity and its commercial position. DOCs originating from Asiima are reported by external parties to be of good quality and sold in the region. Kukuchic benefited from hatchery management training and technological improvements. Champrisa benefited with increased commercial activity on technical implementation. Together with Tunga Nutrition (Nutreco + Unga joint venture) it expanded business with farmers and benefitted from increased uptake of feed and related products from Dutch suppliers such as Hendrix Genetics and Nutreco. • Asigma Capital played a key role in the first year with stakeholder mapping, planning of the impact tour, and contextual analysis but its involvement declined in the second and third year due to a shift in project coordination by Larive; it nonetheless remains connected to the poultry and broader agrifood sector.
 <p>Beneficiary companies</p>	<ul style="list-style-type: none"> • For demo farms Asiima and Biwooma, the project resulted in clear and observable organisational changes. Both evolved into recognised demonstration and training hubs, adopting improved biosecurity, farm management, record-keeping, and training practices. Facilities remain on site and were being used to train women (Biwooma) and youth (Asiima). Biwooma in particular developed a viable post-project business model that combines poultry production with paid trainings and continued knowledge dissemination. Asiima strengthened its long-standing on-farm training approach and expanded its reach to larger numbers of farmers

	<p>but is unable to continue providing training on the same scale as during the IC.</p> <ul style="list-style-type: none"> • Knowledge transfer was substantial and consistently confirmed by interviews and field visits, covering biosecurity, farm management, vaccination protocols, record-keeping, construction and layout of facilities, hot weather management, beak trimming, water, medicine and feed management. • The demonstration farms and associated hardware proved to be a critical enabling condition, providing concrete, practical settings for trainings and workshops and functioning as strong role models for farmers and entrepreneurs across Uganda; Biwooma in particular stood out as an inspiring, women-led operation.
 <p>Local organisations</p>	<ul style="list-style-type: none"> • No NGOs or knowledge institutions were actively involved in the project. While the project proposal mentioned the involvement of TVET teachers in an exploratory manner, this was only limitedly implemented in practice: some teachers from agricultural training institutes attended trainings, but no structured or sustained engagement took place. • The knowledge sharing with educational institutions, including curriculum development or integration, was ultimately not realised. At the same time, several interviewees highlighted limited access to formal agricultural education as a major constraint in knowledge of the sector and emphasised the added value of the multi-day, practice-oriented trainings delivered at the demo farms.
 <p>Spill-over effects</p>	<ul style="list-style-type: none"> • Spillover effects from the project were observable at local and community level, but not at the level of the poultry sector as a whole. • The strongest effects occurred around the demonstration farms and among farmers who participated in multi-day trainings at Biwooma and Asiima, including participants from more rural regions. In total, more than 260 local farmers were trained at the two training farms. Interviewees confirm that many farmers adopted improved practices, that the trainings transformed their businesses, helped them remain active as poultry farmers, and even caused them to transfer knowledge to peers within their farming communities, where good practices from the trainings were sometimes replicated. • The IC also contributed to improved biosecurity and animal health practices within parts of the local poultry supply chain. • There is no clear causal evidence that the IC led to sector-wide substitution of imported or low-quality DOCs. Interviewed farmers confirmed increased use of local DOCs and a more positive perception of their quality. • Broader systemic change remained limited. The overall business climate and poultry sub-sector did not change significantly as a direct result of this Impact Cluster alone, although the timing was favourable with increased government attention to the sector. • From an output-based perspective, the publicity and outreach component performed well; the number of outreach activities exceeded the initial targets set by the IC. At the same time, feedback from Ugandan stakeholders indicates that this did not translate into a high level of visibility and awareness of the IC within the sector in Uganda. This indicates that the communication channels used, although extensive, were not as effective in the sector.

2.2 Contextual findings

TABLE 2 HELPING AND HINDERING CONTEXTUAL FACTORS

	Helping	Hindering
Assumed contextual factors (in the original project plan)	<ul style="list-style-type: none"> • Growing demand for poultry products in Uganda, driven by population growth, urbanisation, and rising incomes, creating a favourable market context for productivity improvements and local input substitution; • Well-selected demonstration farms (Asiima and Biwooma) provided settings where farmers could see and practice improved poultry management. Trainings focused on hands-on learning rather than classroom theory; • Dutch expertise (e.g. genetics, nutrition, and farm management) was effectively combined with locally appropriate, low-cost practices; • A supportive policy and strategic context, including the prior poultry (and piggery) roadmaps and increasing government attention to the poultry sector. 	<ul style="list-style-type: none"> • Persistent structural market constraints beyond project control. Volatility in feed prices, lack of scale and contractual reliability in the DOC market, and low trust among large buyers remained; • Many small and medium poultry farmers lacked adequate knowledge of biosecurity, farm management, animal health, and record-keeping, leading to low productivity and high mortality.
Unforeseen contextual factors	<ul style="list-style-type: none"> • Farmers from rural areas were willing to travel and stay multiple days at the demonstration farms, including adaptations e.g. childcare. 	<ul style="list-style-type: none"> • COVID-19 travel restrictions and disruptions in early phase of the project delayed implementation; • The discovery of poultry disease at a demonstration farm led to the cancellation of a planned official opening; • Multiple day stays at demo farms was not always possible due to family and farm responsibilities.

2.3 Change mechanisms / applied approach

We distinguish three main components in the change mechanism of the PoultryTech Uganda project: (1) Technical / operational mechanisms, 2) Behavioural / learning mechanisms, and (3) Business / partnership mechanisms. Together, these mechanisms were intended to improve poultry production practices and performance, stimulate adoption of locally appropriate technologies and inputs, and foster sustainable commercial relationships between Dutch and Ugandan actors, thereby strengthening the productivity, resilience, and long-term viability of the Ugandan poultry value chain.

TABLE 3 TECHNICAL/ OPERATIONAL MECHANISMS

Intention	Realization
Establish a hatchery and layer demonstration farm using Dutch technologies (ventilation, climate control, drinking systems, lighting, biosecurity) to showcase and provide training facilities for farm management, animal-welfare and biosecurity improvements.	A broiler demonstration farm (Biwooma) was established with new hardware and became a fully operational training farm with post-project continuation. A layer demonstration farm (Asiima) functioned as a training site but required little new hardware. Kukuchic served as a host site for hatchery management

Intention	Realization
	training and received upgrade of existing hardware.

TABLE 4 BEHAVIOURAL/ SOCIAL MECHANISMS

Intention	Realization
Transfer knowledge and good practices through training, a train-the-trainer (ToT) model and farm-based demonstrations to stimulate wider adoption.	101 trainees completed the two-day layer management training. 162 trainees completed the five-day broiler management training. 14 farmer field days conducted across 11 different farm locations. Farmers reported behavioural changes, including improved biosecurity routines, better farm management and record-keeping, more systematic vaccination, and increased attention to animal welfare.

TABLE 5 BUSINESS / PARTNERSHIP MECHANISMS

Intention	Realization
Increase uptake of local DOC, stimulate farm upgrading and strengthen Dutch–Ugandan commercial partnerships across the poultry value chain.	The IC reinforced existing commercial ties and generated market learning for Dutch partners. However, the structural market constraints for DOC remained and de-risking did not materialise. New commercial uptake remained modest.

3. Other findings

3.1 Sustainability of case results

Overall, the sustainability of the case results is strongest at the level of local capacity and practice rather than at the level of formal partnerships or sector-wide change. The project worked with strong local partners and relevant Dutch partners, and while some local–Dutch linkages have persisted, these have largely remained transactional or opportunistic rather than evolving into long-term strategic partnerships. Knowledge and awareness of the basics for healthier and more productive poultry farming have been sustained and continue to grow through ongoing trainings delivered by Biwooma and, to a lesser extent, Asiima, with additional spillover effects observed through networks such as B2Africa. Interest among farmers in professionalising and scaling up poultry farming remains high. This indicates that even though the commercial partnership dimension has weakened over time, the behavioural and capacity-related results of the IC show a higher degree of sustainability.

FIGURE 2: A NEIGHBOUR'S FARM WHO STARTED KEEPING BROILERS AFTER TRAININGS AT BIWOOMA



3.2 Additionality of IC support

The additionality of Impact Cluster support lies primarily in its timing, approach, and combination of actors. At the time of design and implementation, the intervention was still relatively unique in Uganda, particularly in its use of privately led demonstration farms, multi-day practice-oriented trainings, and direct involvement of Dutch private-sector expertise. These elements would not have materialised at the same scale or speed without IC support, as local partners indicated that similar developments would otherwise have taken several more years. Since project completion, government attention to the poultry subsector has increased, reducing the relative uniqueness of the approach.

4. Conclusions

Overall, the PoultryTech Uganda Impact Cluster delivered clearly positive effects for beneficiary partners, with notable improvements in farming practices, skills, and business performance. Dutch partners already active in Uganda were able to maintain or modestly expand their client base. The project faced limitations as the structural DOC problem was not resolved due to persistent market readiness issues and there were some changes in coordination roles. The case study confirms that the intervention logic of the IC programme is valid for generating localised practice change through demonstration, training, and learning-by-doing, but less effective in triggering systemic market transformation or sustained strategic business partnerships.



Impact Cluster – Case Study

Better chicken for a better future- Ghana

1. Introduction to the case

Country
Ghana

Timeline
2021- 2024

Subsector
Agriculture development (Poultry and Feed Production)

IC consortium

- Dutch partners: Solidaridad Europe (Foundation Solidaridad Nederland), EBIT+ / IGrowChicken, Hendrix Genetics, MS Schippers, Transnational Agri, Trouw Nutrition (a Nutreco company)
- Local partners: Solidaridad West Africa, AgriDepot

In short

The project aimed to establish an integrated poultry value chain to create employment and improve incomes for poultry farmers in Ghana. Several core components were successfully established, including a feed mill producing commercial feed, an operational breeder farm, and a fully functioning hatchery used for hatching PS2 eggs in line with required vaccination and management protocols. However, the project did not establish a slaughterhouse, despite all necessary equipment being procured and shipped. This was due to a change in priorities by the local partner. Implementation was significantly delayed by COVID-19, during which costs increased without corresponding benefits. High inflation further raised project costs, while capped RVO funding led to an uneven risk-sharing arrangement, placing additional financial pressure on the consortium. The project was also constrained by over-reliance on a single local partner and by unmet farmer expectations regarding inputs, production timelines, pricing, and loan conditions. Finally, the complexity of synchronising all elements of the value chain was underestimated, leaving limited capacity to absorb delays or shocks.

TABLE 1 CHALLENGES AND INTENDED CHANGE



Market barrier / capacity gap	Intended changes
<ul style="list-style-type: none"> • Fragmented poultry value chain • 75% poultry meat imported • Smallholder farmers lack scale and market power • Limited access to finance, quality inputs and training • Women and youth face exclusion • Poor slaughterhouse and cold chain infrastructure 	<p>Company level:</p> <ul style="list-style-type: none"> • Build complete value chain demonstration (farm to slaughterhouse) • Set up Village Savings and Loan Association for farmer financing • Train farmers in best practices and business skills <p>Sector level:</p> <ul style="list-style-type: none"> • Cut import dependence • Create 560+ jobs (focus on women/youth) • Raise incomes for 500+ farmers • Promote sustainable farming • Strengthen local agribusiness sector <p>Partnership level:</p> <ul style="list-style-type: none"> • Showcase Dutch-Ghanaian collaboration model • Transfer Dutch knowledge and technology • Open West African market for Dutch companies

2. Findings related to Context-Mechanism-Outcome hypotheses

2.1 Outcomes

TABLE 2 OBSERVED OUTCOMES PER TARGET GROUP

Target group	Observed outcomes
 <p>Dutch companies</p>	<ul style="list-style-type: none"> The project's impact on Dutch organisations, including Hendrix Genetics, was limited. Hendrix Genetics provided some feeding equipment, but its engagement did not expand significantly during the project. While the supply of parent stock was part of the project design, uptake and integration into the broader value chain remained limited. Several factors help explain this limited effect. First, the absence of a functioning poultry processing plant in Ghana constrained the potential for Dutch partners to see tangible results from their inputs. Although the necessary equipment was shipped, the local partner did not allocate the resources or infrastructure required to establish the plant at the time. Without a complete operational chain, the downstream demand and utilisation of imported technologies and inputs were restricted. Second, there was a lack of strong evidence demonstrating the cost-benefit of newly introduced poultry farming methods. Without clear, locally verified results, Dutch organisations had limited incentive or basis to scale their involvement or promote further spill-over effects. The absence of demonstrable economic and operational benefits therefore restricted the project's influence on Dutch partners and limited the potential for broader market or knowledge spill-over.
 <p>Local partner companies</p>	<ul style="list-style-type: none"> The main beneficiary of the project has been AgriDepot, which used the project-supported infrastructure to significantly expand its operations, growing its workforce from about 10 to over 100 staff and increasing production capacity substantially. The company also adopted improved poultry breeds, feed formulations, and biosecurity and vaccination practices, although a processing facility was not established. AgriDepot experienced notable growth and professionalisation during the project period. Its workforce expanded from about 10 to over 100 staff, while production increased from 28,000 eggs per week to 50,000 chicks per cycle, with plans to scale to 250,000 chicks. The company also adopted improved practices in breeds, feed management, hygiene, and vaccinations, reflecting strengthened organisational capacity and learning at the level of the local partner company.
 <p>Local beneficiary companies</p>	<ul style="list-style-type: none"> Outcomes for poultry farmers were mixed. Many improved their technical knowledge and professional skills and increasingly viewed poultry farming as a viable business. However, some farmers reduced or discontinued poultry production, shifted to other livestock activities, or redirected resources away from poultry. The IC did allow AgriDepot to introduce different varieties of chicken to the poultry sector, of which other farms could benefit. The lack of a processing plant constrained full value chain integration and downstream opportunities, resulting in benefits being concentrated largely at the level of AgriDepot, with limited spill-over to other businesses or farmers. In addition, conditional loans were channeled to the company rather than directly to individual farmers, further limiting farmer-level gains.

Target group	Observed outcomes
 <p>Other local organisations</p>	<ul style="list-style-type: none"> The project had limited engagement with other local organisations, with KNUST being the main exception for research and practical learning activities. While financial institutions expressed willingness to provide conditional loans, these were structured to pay AgriDepot directly rather than farmers, limiting broader local financial impact. Poultry processing relied on third-party facilities rather than a dedicated project-supported plant. These outcomes reflect the fact that engagement with external organisations and broader institutional linkages were not explicitly addressed in the project design or implementation approach.
 <p>Spill-over effects</p>	<ul style="list-style-type: none"> The project increased recognition of poultry as a serious agricultural business, including among government stakeholders. Farmers gained knowledge, using tools such as the internet and AI to improve farm management, and the VSLA concept was adopted by a few groups beyond the project. However, broader effects on the business environment and sector growth were limited. While the poultry sector is expanding—especially in Kumasi and Bekwai—systemic improvements and wider market development remain modest. This was partly due to negative effects on beneficiary partners, unsynchronised delivery of project components, and unequal power dynamics within the consortium and with farmers. In line with realistic project scale, benefits were also geographically concentrated around Kumasi and Bekwai, limiting wider spill-over.

2.2 Contextual findings

Below the main contextual factors that impacted the IC's performance.

TABLE 3 HELPING AND HINDERING CONTEXTUAL FACTORS

Helping	Hindering
<p>Internal factors</p> <ul style="list-style-type: none"> Strong project design aligned with clear market demand Adoption of new technologies and improved practices by AgriDepot and participating farmers Partnerships with Dutch firms and Solidaridad that enhanced technical knowledge, credibility, and business networks <p>Contextual factors</p> <ul style="list-style-type: none"> Government support for poultry production as an import-substitution strategy Solidaridad's institutional links with the Ministry of Food and Agriculture (MoFA), which facilitated farmer outreach and engagement 	<p>Internal factors</p> <ul style="list-style-type: none"> Over-reliance on a single partner, limiting flexibility and adaptability Farmer expectations regarding inputs, timelines, pricing, and loans not fully met High value chain complexity requiring simultaneous operation of multiple components, with delays reducing overall effectiveness <p>Contextual factors</p> <ul style="list-style-type: none"> COVID-19-related delays and high inflation, increasing operational costs Capped RVO funding, leading to uneven risk-sharing Limited access to finance for farmers, constraining investment and uptake

2.3 Change mechanisms / applied approach

The (internal) factors under control of the project / change mechanism itself that determined the results of the project include:

TABLE 4 HELPING AND HINDERING FACTORS

Helping	Hindering
Concerning partnership composition and performance.	
<ul style="list-style-type: none"> • Consortium combined complementary expertise, technical knowledge, and local networks. • Solidaridad’s reputation and MoFA links enhanced engagement and credibility. • Dutch partners facilitated knowledge transfer and professionalisation. 	<ul style="list-style-type: none"> • Over-reliance on AgriDepot created a monopoly-like situation and reduced flexibility. • Unequal power distribution limited participation of other partners and farmers. • Limited engagement with other local organisations restricted wider learning. • Coordination challenges led to delays and constrained value chain integration
Concerning project design and implementation	
<ul style="list-style-type: none"> • Clear, attractive project concept with strong market demand. • Integrated value chain approach covering feed, breeding, and hatchery. • Introduction of new technologies and improved practices. • Engagement with government and international partners. 	<ul style="list-style-type: none"> • Complexity of the value chain underestimated; all components needed to operate simultaneously. • Insufficient contingency planning for delays, COVID-19, and inflation. • Slaughterhouse not implemented due to local partner priorities. • Limited financial access for farmers; loans went to AgriDepot who gave out input advances in return to farmers. • Minimal engagement with local organisations beyond KNUST.

3. Other findings

3.1 Sustainability of case results

The project laid a foundation for lasting benefits, though with some limitations. Engagement with Dutch partners created useful contacts, but these are largely transactional rather than strategic. Farmers have retained knowledge of healthier and more productive practices in feed, breeding, hygiene, and vaccinations, and remain motivated to professionalise and scale up poultry farming.

Broader systemic sustainability, such as market linkages, financial integration, and processing capacity, remains limited due to infrastructure gaps, reliance on a single local partner, and constrained institutional support. Overall, technical knowledge and farmer motivation are likely to persist, but value chain-level impacts will depend on continued partnerships, investment, and supportive policies.

3.2 Additionality of IC support

At the time of implementation, the project provided a unique and additional contribution to the poultry sector in Ghana. It introduced an integrated approach to the value chain, combining feed production, breeding, hatchery operations, and planned processing, alongside technical support, farmer engagement, and exposure to international practices. This combination of interventions was not replicated elsewhere, making the project a distinct catalyst for professionalising poultry farming and building value chain capacity. Since then, some of the project's unique contributions have been absorbed into broader sector developments. The government has increasingly focused on the poultry subsector, including plans to establish a national processing plant, which mirrors and builds upon elements initially piloted by the project. While the project's interventions remain relevant, some aspects are no longer entirely additional, as government-led initiatives now complement or replicate them.

FIGURE 1 EGGS IN THE HATCHERY (2026)



In essence, the project's additionality was strongest during its active phase, creating pioneering approaches and capacity, but over time, government engagement (under the *nkoko nketenkete* (small chicken) project) has begun to institutionalise and scale similar activities, reducing the relative uniqueness of the project's contribution but indicating local fit and feasibility of the projects' activities.

4. Conclusions

The project contributed to the establishment of selected components of an integrated poultry value chain, notably a feed mill, breeder farm, and hatchery, and introduced improved practices in breeding, feed management, and hygiene. These interventions supported organizational development of AgriDepot and helped improve perceptions of poultry farming as a more professional and potentially viable business among participating farmers.

However, the project fell short of its more ambitious objective of creating a fully functioning and self-sustaining poultry value chain. The slaughterhouse was not implemented, reliance on a single partner constrained adaptability, and farmer expectations related to inputs, timelines, pricing, and access to finance were only partially met. External shocks including COVID-19 disruptions, high inflation, and capped funding further limited implementation and reduced the depth and scale of outcomes. Engagement with other local organisations and market actors remained limited, restricting knowledge spill-over and broader sectoral effects.

FIGURE 2 INSIDE THE FEEDMILL'S STORAGE ROOM (2026)



While some farmers strengthened their skills and interest in poultry production, these gains did not consistently translate into significant expansion, professionalisation at scale, or the emergence of sustainable and profitable farmer enterprises. As a result, the project's tangible impacts beyond directly targeted actors were modest, and claims of broader value chain transformation remain limited.

Overall, the project demonstrated that integrated value chain approaches can influence mindsets and introduce improved practices, but it also highlights the substantial gap between changing perceptions and achieving structural, market-driven transformation. Future initiatives will require stronger financial and market linkages, diversified partnerships, and phased, realistic ambitions if meaningful scale, sustainability, and wider sectoral impact are to be achieved in Ghana's poultry industry.



Impact Cluster – Case Study

Plastics in Circles - Indonesia

1. Introduction to the case

This Impact Cluster consisted of two sub-projects: PiCi 1 and PiCi 3, each with their own consortium and project-specific activities. We focus only on PiCi 1 in this case study.

Country

Indonesia (Ambon, Maluku Province)

Timeline

2022-2024

Subsector

Solid waste management / circular plastics (collection, sorting, pre-processing of post-consumer plastics).

IC consortium

- Dutch partners: MVO Nederland (lead partner), SweepSmart (system integrator/technical lead), Geesinknorba (compactor truck – bankruptcy during the project), Upp! (bankruptcy during the project).
- Local partners: RECO’s local subsidiary Million Limbah Ambon (commercial waste operator, co-investor and operator of TPS3R sorting facility), Green Moluccas (community intermediary, responsible for socialisation, collection-point management and liaison with communities), Ambon City Government - DLHP and municipality (co-financier and co-owner of infrastructure (land, buildings, truck) and regulator).

In short

PiCi 1 piloted a “circular plastics” model in Ambon: five community collection points and a sorting facility intended to divert plastics from landfill into higher-value recycling chains and create safer jobs and cleaner neighbourhoods. In practice, the project delivered functioning collection points (still in use) and improved collaboration between municipality, waste operator and NGO, but the central sorting line failed quickly and the business case for low-value plastics in a remote island setting proved structurally weak.

FIGURE 1 ONE OF THE COMMUNITY COLLECTION POINTS



TABLE 1 CHALLENGES AND INTENDED CHANGE


Market barrier / capacity gap	Intended changes
<ul style="list-style-type: none"> • Ambon’s waste system is characterised by mixed waste, informal picking, limited infrastructure, and high logistics costs to Java-based recyclers. • Local operators lack capital for higher-spec sorting technology, community collection infrastructure and improved QHSE standards. 	<p>At company level:</p> <ul style="list-style-type: none"> • Upgrade MLA/RECO from “collector/hauler” to value-adding sorter with a bankable business case for higher-quality plastic fractions. • Professionalise Green Moluccas as an intermediary structuring community collection and linking into formal value chains. <p>At sector level:</p> <ul style="list-style-type: none"> • Demonstrate a viable “circular plastics” model for island settings that could be replicated to 10–20 sites and linked to Dutch technologies further downstream.

2. Findings related to Context-Mechanism-Outcome hypotheses

2.1 Outcomes

TABLE 2 OBSERVED OUTCOMES PER TARGET GROUP

Target group	Observed outcomes
 <p>Dutch companies</p>	<ul style="list-style-type: none"> • MVO Nederland was an efficient lead partner but was not technically involved in strategic guidance or implementation. • SweepSmart and Geesinknorba (to a lesser extent as SweepSmart took over their budget for containers instead of trucks) used the IC to test technology, partnerships and a mixed-waste model in a challenging setting. • SweepSmart has used the experience with MLA/RECO to jointly design more scalable facility concepts elsewhere in Indonesia. Even though this specific set of technology and practices did not yield a feasible business case in Ambon, the IC trajectory sharpened their sense of when an IC can be a market-entry step and when it is a high-risk learning investment.
 <p>Local companies</p>	<ul style="list-style-type: none"> • The IC helped MLA/RECO test improved sorting, operate several waste collection points and raise their profile with government and communities; without the project they would almost certainly not have experimented with this higher-risk, community-based model. • Accessed technology and infrastructure they state they would not have financed without IC support. At the same time, quick breakdown of the sorting line and limited capital for maintenance underline that the business case for additional sorting activities is fragile and not bankable at present – a weakness that, with hindsight, could have been flagged at design stage. MLA already reverted to landfill-based sorting with lower productivity and value added during the project lifetime.
 <p>Beneficiary companies</p>	<ul style="list-style-type: none"> • Waste pickers and small suppliers saw some (income) benefits: they gained better insight into which plastics have value, new outlets to sell to and in some cases higher volumes as centralised collection grew. • However, they still face volatile prices, transport constraints, competition with government trucks, limited and self-financed PPE and social stigma, which together cap welfare gains and keep plastics income at “extra cash” level rather than a structural livelihood upgrade.
 <p>Local organisations</p>	<ul style="list-style-type: none"> • NGO Green Moluccas strengthened its role as a community-embedded intermediary, organising collection, liaising with government and channeling materials into formal chains. They also professionalised their operations (basic equipment, systems) and grew volumes from roughly 1 t/month to around 5 t/month at peak (not fully attributable to PiCi). • Ambon City government maintains the five PiCi collection points, pays quality managers and has started replicating the logic of (more basic) collection points elsewhere, indicating institutional uptake of the simpler model elements.

Target group	Observed outcomes
	<ul style="list-style-type: none"> • PiCi 1 showed that structured community collection points with a dedicated quality role can work in Ambon and encouraged the municipality to maintain and modestly replicate this in a more basic functionality. • This led to visibly cleaner streets around project sites and stronger public–CSO–private collaboration. • Yet most waste still arrives mixed, incentives for households remain weak and trucks often re-mix sorted waste, so the main legacy lies in institutional learning, prototypes and partnerships rather than a fully circular local waste system – more “living lab” than finished product.

2.2 Contextual findings

In table 3 the main contextual factors that impacted the IC’s performance are introduced. Our research indicates that the most critical factors that hindered the project’s performance were the ones indicated in *italic*: namely the feasibility of the business case from the onset (point 1 and 2) and low buy-in from the government at design and inception (point 3).

TABLE 3 HELPING AND HINDERING CONTEXTUAL FACTORS

	Helping	Hindering
Assumed contextual factors (in the original project plan)	<ul style="list-style-type: none"> • Presence of a professional waste operator willing to test new models and a motivated local CSO. • Ambon City acknowledged its waste problem, signed a Letter of Intent and co-invested in land, buildings, fuel and staff. • Strong national attention to marine plastics and circular economy created legitimacy and interest for piloting new approaches. 	<ul style="list-style-type: none"> • <i>Ambon’s remoteness from Java-based recyclers, high transport costs and structurally constrained municipal budgets made the economics tight from the start. (1)</i> • <i>Market values for low-value plastics remained structurally low and volatile, limiting profitability. (2)</i> • NL government later removed waste from its priority sector list, limiting Embassy leverage and programming space for follow-up.
Unforeseen contextual factors	<ul style="list-style-type: none"> • Community members in several neighbourhoods were relatively receptive to cleaner collection points and willing to cooperate with quality managers. 	<ul style="list-style-type: none"> • <i>Early facilitation choices and actor dynamics created frictions with local government and affected the pace of political buy-in. (3)</i> • Municipal trucks continued to re-mix mixed waste, undermining the credibility of source segregation in the eyes of communities. • OPEX and spare-parts for the sorting line proved more fragile than anticipated, leading to early breakdown and halted sorting.

2.3 Change mechanisms / applied approach

We recognize three main components in this IC’s change mechanism: 1) the Technical/Operational elements, 2) the Behavioural/Social elements and 3) the Business/Partnership element. The business and partnership mechanism – or specifically the learning around it – was effective in the sense that it produced actionable insights and networks for future configurations. This was mostly around what does *not* work well. Technical and behavioural mechanisms delivered visible local improvements (cleaner sites, some sorting, some income) but could not compensate for a weak business case and misaligned system practices.

TABLE 4 TECHNICAL/ OPERATIONAL MECHANISMS

Intention	Realization
Establish 5 collection points with 1 quality manager each and 1 sorting facility and introduce improved QHSE at sites to reduce costs and improve working conditions.	Infrastructure and technology were installed and operated, but the single sorting line stopped working soon as maintenance and spare-parts arrangements proved inadequate. Jobs at the sorting facility disappeared but the quality managers remain in function.

TABLE 5 BEHAVIOURAL/ SOCIAL MECHANISMS

Intention	Realization
Conduct community socialisation, develop guidebooks and appoint quality managers at collection points to encourage source separation and pride in cleaner neighbourhoods.	Behaviour change activities and community outreach were implemented, but mainly as short “campaign bursts” (e.g., a few days per year) rather than as an ongoing presence. Locals bring their waste to the bins but there is limited sorting happening after the project closed.

TABLE 6 BUSINESS / PARTNERSHIP MECHANISMS

Intention	Realization
Build B2B linkages along the chain (MLA–SweepSmart–downstream recyclers), use IC funds to de-risk first-of-its-kind investments.	Partnership and learning mechanisms worked relatively well: Dutch and Indonesian partners, PSD coach and RVO built a shared view of what does and does not work in this setup, even if that view was a bit sobering. RECO and SmartSweep continue their business partnership in a different location & model.

3. Other findings

3.1 Sustainability of case results

On the hardware side, the flagship TPS3R sorting facility with the projects’ flagship sorting line was not sustained; once OPEX and spare-parts issues became problematic, operations stopped and MLA reverted to simpler landfill-based sorting, so the core circular plastics supply concept does not survive beyond the project. By contrast, lower-tech components proved more durable: the five improved collection points continue to function under the municipality, quality managers are still in place, and neighborhoods around these sites experience sustained cleaner environments and clearer responsibilities. Institutionally, both MLA and Green Moluccas retain upgraded capabilities, networks and credibility that they leverage in other initiatives.

FIGURE 2: BROKEN DOWN SORTING LINE



3.2 Additionality of IC support

The IC itself is a bit of an ‘outsider’ in the IC portfolio due to its second main funder P4G and the inclusion of multiple sub-projects, each with their own consortia, activities and timelines – which followed P4G funding timelines, not RVO. This IC (PiCi 1) was initiated by SweepSmart based on

the availability of another available funding stream (P4G), and RVO IC funding was attracted to complement this. Without the P4G funding, the IC co-financing up to 50% would not have been financially feasible for the PiCi 1 cluster led by a social enterprise and a local business partner and a local CSO with no cash contribution. SweepSmart, MLA/RECO, the municipality and Green Moluccas indicate they would not have invested without IC funding, given thin margins and low political salience for waste. The RVO IC team confirms strong instrument-level additionality. Non-financial support of the Dutch government was also experienced as helpful by the consortium of PiCi 1. In addition to the PSD coach's more administrative support at lead partner level, the Netherlands embassy played a comparatively active role for this waste sector IC through a.o. joint trade fair participation and a joint think tank session involving external stakeholders.

However, the costs associated with piloting relatively high-spec Dutch technology in a remote island context could be considered quite high compared to the tangible and lasting outcomes. In addition, the financial instability of key partners (with partners GeesinkNorba and Upp! Going bankrupt during the project) raises questions about the robustness of RVO's original risk assessment and the sustainability assumptions underpinning the project design.

4. Conclusions

The PiCi 1 case shows an Impact Cluster used at the far end of the risk spectrum: it successfully mobilised an unusual coalition around a first-of-its-kind circular plastics pilot in a very challenging island context, but it did not deliver a viable business model for low-value plastics. The project generated clear, localised gains in cleanliness, collaboration and organisational capacity (particularly for Green Moluccas and, to a lesser extent, MLA and the municipality), yet the business case proved financially fragile and could not be sustained. As a result, PiCi 1's main lessons lie in revealing hard constraints and design flaws that future circular-plastics ICs will need to avoid. It is a good example of an IC functioning as an expensive but strategically useful learning experiment: high additionality, modest direct impact, and significant value in preventing repetition of the same model in similar settings. However, given the high capital expenditure, operational fragility, and limited replicability under prevailing market conditions (low plastic prices, high logistics costs), the project can reasonably be characterized as disproportionately costly relative to its durable impact. The experience suggests that stronger upfront feasibility screening, more conservative technology choices, and clearer financial stress-testing of partners would have been warranted before committing funds at this scale.



Impact Cluster – Case Study

Tailor-made Greenhouses - Ghana

1. Introduction to the case

Country

Ghana

Timeline: 2018 - 2023

Subsector

Agriculture development (horticulture and seeds)

IC consortium

- Dutch partners: Delphy B.V. (lead partner), Bosman International B.V., Enza Zaden B.V., Rijk Zwaan Zaadteelt en Zaadhandel B.V., Koppert B.V., Ludvig Svensson B.V., Ridder Growing Solutions B.V.
- Local partners: Agri-Impact Consult

In short

The project's aim was to develop a strong and supportive knowledge infrastructure in horticulture and thus contribute to improving the position of small to medium-sized vegetable producers in Ghana, to sustainable development of the sector and to contribute to food safety and security.

In practice, a 4500m² greenhouse was built, and is currently being operated by a sister company of the local partner (Fresh Logistics Pvt Ltd.) that is still open for visitors who are interested in the concept. Local staff has been trained to manage the greenhouse.

The project, however, has not triggered any replication as the concept does not fit local market conditions (too high-tech / expensive), especially as competing PSD projects offered more appropriate and affordable technology. In addition, project implementation was complicated by COVID and experienced several set-backs, struggles in project management, and crop diseases. This makes that the project is not considered much of a success, though project partners do look back at the project as a rich learning opportunity.

TABLE 1 CHALLENGES AND INTENDED CHANGE


Market barrier / capacity gap	Intended changes
<ul style="list-style-type: none"> • Ghana's horticulture sector relies primarily on open ground production with little to no knowledge and experience in greenhouse production. • Open ground production makes crops vulnerable to diseases, which affects the quality and productivity and with that the income of vegetable farmers. • Vegetable farmers rely on low-quality seeds and inadequate farming practices. 	<p>At company level:</p> <ul style="list-style-type: none"> • Construction, operation and demonstration of a modern greenhouse for protected vegetable production. • Vegetable farmers adopt greenhouse technology with improved farming practices that result in higher yields and income. <p>At sector level:</p> <ul style="list-style-type: none"> • Greenhouse vegetable production becomes more widely spread among Ghanaian vegetable farmers, leading to a financially stronger and modernized horticulture sector in Ghana.

2. Findings related to Context-Mechanism-Outcome hypotheses

2.1 Outcomes

TABLE 2 OBSERVED OUTCOMES PER TARGET GROUP

Target group	Observed outcomes
 <p>Dutch companies</p>	<ul style="list-style-type: none"> The project has allowed the partners that offer the Greenhouse technology (Bosman-van Zaal: Greenhouse, Ridder: water and electrical equipment, Ludvig Svensson: Screens) to construct a demo-version of their products in Ghana. They are still being called upon incidentally by the local partners for maintenance and repair. The growth related partners (Enza Zaden, Rijk Zwaan, and Koppert) have had the opportunity to introduce and expose their inputs to greenhouse production in Ghana. This is not perceived as a success, as diseases also affected greenhouse production, while there have been tensions within the IC consortium about how the project has been managed with untransparent decision-making and agreements not being honored. Seed companies are still active, and increasing sales in Ghana (through HGT), but claim that this has not much to do with the Greenhouse project. This commercial development is largely driven by existing market developments rather than being directly linked to the Greenhouse project.
 <p>Local companies</p>	<ul style="list-style-type: none"> Occasionally, the facilities are still visited by farmers interested in the concept. It is, however, likely that this has more to do with the neighbouring YUGEP project also operated by Agri-Impact consult through which a more appropriate (lower-tech, smaller scale, lower investment) greenhouse solution is demonstrated, including a financing construction via the state-owned EXIM bank, that sees a much broader uptake. The local partner now owns and operates the facilities that were established under the project on his own land, although this still required substantial investment to prepare the construction area and connect to infrastructure. The greenhouse is used for vegetable production for the local market that are produced and sold through its sister company Fresh Logistics Ltd.
 <p>Beneficiary companies</p>	<ul style="list-style-type: none"> There are no signs or reports that reflect uptake / replication of the greenhouse technology by local vegetable farmers. Nevertheless, greenhouse production is getting more widely introduced through other, Ghanaian government-backed, PSD projects that offer more appropriate technologies and financing arrangements for interested farmers (e.g. YUGEP project through EXIM bank). The project did inform vegetable farmers that were exposed to the project about new production techniques and disease control, including the important of restricted access and hygiene protocols.
 <p>Local organisations</p>	<ul style="list-style-type: none"> In project design, reference is made to knowledge transfer and capacity building through open days for policy makers and researchers, and workshops for researchers and students and the initiation of collaboration with knowledge institutes. In practice, these activities were not realized.

Target group	Observed outcomes
 <p>Spill-over effects</p>	<ul style="list-style-type: none"> There are no clear broader effects that can convincingly be attributed to the IC project, apart from the fact that the project has provided insight into alternative technologies that proved not to be fitting the market conditions in Ghana.

2.2 Contextual findings

In table 3 are the main contextual factors that impacted the IC's performance.

TABLE 3 HELPING AND HINDERING CONTEXTUAL FACTORS

Helping	Hindering
<ul style="list-style-type: none"> Market opportunity is there for better and more productive vegetable farming. Clear need for and interest in increased knowledge about 'protected' vegetable farming. 	<ul style="list-style-type: none"> Beneficiary farmers do not have access to finance. Emerging competitive PSD initiative with government backing offering a more affordable and fitting greenhouse technology. Spanish Greenhouse constructor having a more competitive value proposition (smaller scale, lower costs Greenhouse) COVID complicating completion of project deliverables, including travel and building relationships between Dutch and local partners.

2.3 Change mechanisms / applied approach

In table 4 are the (internal) factors under control of the project and the change mechanism that determined the results of the project.

TABLE 4 HELPING AND HINDERING FACTORS

Helping	Hindering
Concerning partnership composition and performance	
<ul style="list-style-type: none"> Local partner relatively familiar with its expected role, having access to necessary means (land and financial resources) to cover the local contribution and well-connected with local authorities and other development partners. Comprehensive partnership including technological and growth related partners. 	<ul style="list-style-type: none"> Tensions and distrust among partners related to lack of consultation, untransparent decision-making and promises not being kept. Mutual expectations concerning ownership and operations insufficiently worked out or complied with. Insufficient mutual consultation / no consensus about contextualization of project (overly expensive technology, adaptation to Ghanaian climate). Frequent staff changes on the side of the lead partner.
Concerning project design and implementation	
<ul style="list-style-type: none"> Complete package of a new technology, agricultural inputs and training / capacity building 	<ul style="list-style-type: none"> Inadequate business case development for greenhouse production, with underestimated costs and overestimated yield increases. Absence of a financing component Insufficient eye for / adaptation to emerging competitive initiatives. Single location, which reduces accessibility.

3. Other findings

3.1 Sustainability of case results

The most obvious sign related to the sustainability of results concerns the technical infrastructure (greenhouse, pumphouse) that is still being used and maintained by Fresh Logistics to produce vegetables. In doing so, Fresh logistics continues to use and expand the knowledge gained related to greenhouse management and protected production practices. At the same time, they remain open to short study visits by interested farmers to expose them to the way they run the greenhouse.

In addition, the connections built between the local partner and the Dutch partners remain. Fresh logistics still buys seed from the participating Dutch seed partners, mostly through HollandGreenTech. Moreover, transactional contacts remain with the technology partners to get advice or inputs for maintenance and repair of the technical facilities.

The local partner has furthermore been able to use its international network/profile based on, among others, the IC project, to strengthen its own reputation/credibility as prominent consultancy firm in agricultural development. This now results in Agri-Impact consult undertaking further projects like the Happy project (<https://www.agriimpactgroup.com/projects/happy-program>) for Mastercard Foundation. In line with this, Agri-impact remains interested in staying connected with its international partners to get updated about further technological developments in the sector.

As effects beyond the IC partners have been limited, no signs of sustainable results beyond these partners were encountered.

3.1 Additionality of IC support

There have been and are multiple projects working on (protected) horticulture production to increase agricultural productivity in Ghana, including the introduction of (low-cost) Bamboo Greenhouse technology and the earlier mentioned YUGEP project by the EXIM bank (see picture below). The IC project has been additional in the sense that it set-out to introduce a greenhouse technology with all the associated knowledge of greenhouse management, that would be new to Ghana as it would be more advanced and of larger scale (5000m², while in comparison the YUGEP project established greenhouses of 650m²).

The IC project is also unique in its set up, as it is operated through a subsidized consortium of private firms including one local partner, making a significant own contribution. This means that the creation of international connections is built in, with all partners having at least some skin in the game. Other PSD interventions, some of which implemented by the same local partner, are based on more conventional funding arrangements with a donor financing the efforts of a (commercial or non-commercial) contractor to lead project implementation.

FIGURE 1 VEGETABLE PRODUCTION AT FRESH LOGISTICS



FIGURE 3 SCALE OF THE IMPACT CLUSTER VERSUS YUGEP PROJECT



4. Conclusions

In conclusion, the relevance of the project was real, as the opportunity, capacity needs and interest for protected horticultural production among farmers and the government was there. Also the project logic of introducing a new technology in combination with capacity building of farmers, researchers and policy makers, remains valid. The project results do, however, show that the chosen technological solution was insufficiently contextualised and not fitting the local context. It appears that project costs were underestimated, while cooperation arrangements among IC partners were not clear or not respected. Moreover, the (projected) business case for the targeted beneficiary organisations was not worked out properly and did not include a serious consideration of 'access to finance'. In light of the (known) high investment costs of the proposed technology this is seen as a clear omission.

The project, therefore, failed in having a broader effect on the farming practices and performance of the horticulture subsector in Ghana. The project only had effects on the local partner, who continues to use and benefit from the established facilities and connections, while for most of the Dutch partners the project has primarily been a strong practical learning opportunity that influences (decisions about) the way they do business in Ghana and their participation in other subsidized PSD interventions.



Impact Cluster – Case Study

FoodTech – Indonesia

1. Introduction to the case

Country

Indonesia (Central Java)

Timeline: 2019 - 2023

Subsector

Agri-food / poultry production (layer (egg) production systems, including housing systems, feed management, and farm management).

IC Consortium

- Dutch partners: Larive International B.V., Aeres Training Centre, De Heus (feed and nutrition), DSM (feed additives and health), Hato (housing systems), Kanters (water and hygiene systems), Marel Poultry (processing and grading), Mavitec (manure and waste solutions), Moba (egg handling and grading), Pas Reform (hatchery systems), Trouw Nutrition (nutrition and advisory), Van Aarsen (feed milling).
- Local partners: PT Sumber Rejo (medium-sized layer farm and host of the demonstration farm in Central Java), Clarity Research (Indonesian cluster co-coordinator and implementation partner), and participating broiler and layer farms involved in the ToT programme and downstream farmer trainings.

In short

The FoodTech Indonesia Layer sub-project's overall objective is to pilot an integrated layer modernisation model based on Dutch technologies, a layer demonstration farm, and structured training to improve productivity and professional management in the Indonesian egg sector.

TABLE 1 CHALLENGES AND INTENDED CHANGE

Market barrier / capacity gap	Intended changes
<p>Indonesia's poultry sector faces productivity, sustainability, and food-safety challenges, including inefficient use of inputs, variable biosecurity standards, and limited adoption of modern production systems.</p> <p>Medium-sized farms have limited access to integrated technologies and professional know-how for climate-controlled housing, ventilation, feeding, and water systems.</p> <p>Commercial linkages between Dutch and Indonesian poultry value-chain actors remain underdeveloped, constraining trade, investment, and technology transfer.</p>	<p>At company level:</p> <ul style="list-style-type: none"> • Improve farm management practices, productivity, and cost efficiency among participating layer farms. • Strengthen biosecurity, animal welfare, and sustainable production practices. • Build managerial and technical capacity through training and hands-on demonstration. • Demonstrate modern closed housing systems using integrated Dutch technologies. <p>At sector level:</p> <ul style="list-style-type: none"> • Support the Indonesian poultry sector to become more competitive, sustainable, and responsible. • Establish layer demonstration farms as reference sites for best practices. • Stimulate entrepreneurship, ethical business practices, and Dutch-Indonesian commercial partnerships. • Contribute to increased trade, investment, and institutional cooperation in the poultry value chain.

2. Findings related to Context-Mechanism-Outcome hypotheses

In practice, the project delivered clear learning effects and practice-level improvements at the demonstration farm but did not trigger large-scale adoption of capital-intensive closed house systems. The main legacy lies in upgraded farm practices, strengthened learning among participating actors (training participants), and realistic lessons about the limits of technology-driven scaling under prevailing financial, cost, and risk conditions.

2.1 Outcomes

TABLE 2 OBSERVED OUTCOMES PER TARGET GROUP

Target group	Observed outcomes
 <p>Dutch companies</p>	<ul style="list-style-type: none"> The IC enabled Larive, Clarity, Aeres, Trouw Nutrition, and DSM to introduce Dutch equipment, training, and advisory support in the Indonesian layer sector. Aeres delivered the master trainer programme, though its effectiveness was constrained by online delivery and English-language instruction during Covid. Trouw Nutrition and DSM already supplied to Sumber Rejo prior to the IC, so the project largely reinforced existing commercial relationships. Overall, the IC functioned mainly as a learning and market-familiarisation trajectory for Dutch partners, with unclear prospects for major new commercial opportunities.
 <p>Local companies</p>	<ul style="list-style-type: none"> The IC enabled Sumber Rejo to pilot a closed house system by upgrading one pullet house with integrated Dutch technologies, delivering clear technical gains in bird uniformity, mortality, feed use, and egg production. However, high upfront investment and electricity OPEX mean full closed house conversion remains economically unattractive for most small and mid-sized farms. The absence of a structured feasibility and payback analysis weakened the investment de-risking function, and Sumber Rejo is therefore only considering limited incremental upgrades rather than full replication.
 <p>Beneficiary companies</p>	<ul style="list-style-type: none"> Other farms improved their understanding of biosecurity, ventilation, nipple drinkers, and climate control through the train-the-trainer (ToT) programme and limited downstream trainings, but exposure to the demonstration farm itself was very limited. Awareness of closed house and semi-closed technologies is high but there is no evidence that the IC triggered adoption beyond incremental, low-cost upgrades, with affordability remaining the dominant constraint on farmer behaviour.
 <p>Local organisations</p>	<ul style="list-style-type: none"> No local organisation emerged as a strengthened intermediary or institutional anchor. Farmer associations, universities, and extension bodies were not formally engaged, and the demonstration or training model was not embedded in Indonesian intermediary institutions, significantly constraining dissemination, legitimacy, and spillovers.
 <p>Spill-over effects</p>	<ul style="list-style-type: none"> The project demonstrated that integrated Dutch closed house technologies can deliver clear technical benefits under Indonesian conditions, but it did not become a visible sector reference point. Broader adoption of closed house and semi-closed technologies continues to be driven mainly by market forces and the availability of cheaper Chinese equipment rather than by the IC itself.

2.2 Contextual findings

Our research indicates that the most critical factors that hindered the project’s performance were the ones indicated in *italic*: namely high investment risk and cost volatility affecting farmers’ willingness to invest (point 1), the weak and insufficiently localised business case for full closed house systems (point 2), and the absence of strong institutional anchoring and government buy-in at design and inception (point 3).

TABLE 3 HELPING AND HINDERING CONTEXTUAL FACTORS

	Helping	Hindering
Assumed contextual factors (in the original project plan)	<ul style="list-style-type: none"> Strong national demand growth for eggs and government priority to strengthen domestic poultry productivity and food safety. Presence of a professionally managed medium-sized farm (Sumber Rejo) willing to host a demonstration facility. Broad technical recognition that ventilation, climate control, and hygiene upgrades improve productivity under rising temperatures. 	<ul style="list-style-type: none"> <i>High electricity costs and unstable egg prices are among the key factors reducing farmers’ willingness to take financial risks. (1)</i> <i>Full closed house conversion is capital-intensive and perceived as economically unviable for medium-sized Indonesian layer farms (payback periods are uncertain and electricity OPEX is high). (2)</i> The growing availability of lower-cost Chinese equipment, perceived by farmers as being of “good-enough” quality, reduces the relative competitive advantage of Dutch technologies.
Unforeseen contextual factors	<ul style="list-style-type: none"> Heat stress and disease outbreaks increased technical interest in more controlled production environments. Many farmers already pursue incremental “semi-closed” upgrades (e.g. nipple drinkers, ventilation improvements), indicating openness to partial modernisation. 	<ul style="list-style-type: none"> <i>No structured cost–benefit modelling or payback analysis was provided for Indonesian conditions, weakening the mechanism of investment de-risking. (2)</i> <i>Local government, extension services, universities, and farmer associations were not institutionally embedded in the demo-farm and training model, limiting legitimacy and downstream diffusion. (3)</i>

2.3 Change mechanisms / applied approach

We distinguish three main components in the change mechanism of the FoodTech Indonesia Layer sub-project: (1) Technical / operational mechanisms, (2) Behavioral / learning mechanisms, and (3) Business / partnership mechanisms. Together, these mechanisms were intended to demonstrate the technical and commercial viability of closed house layer production under Indonesian conditions, de-risk investment decisions for medium-sized farms, and stimulate wider adoption and Dutch Indonesian commercial partnerships.

FIGURE 1 FGD WITH MEMBERS OF THE LAYER FARMERS ASSOCIATION OF CENTRAL JAVA



TABLE 4 TECHNICAL/ OPERATIONAL MECHANISMS

Intention	Realization
Establish a layer demonstration farm using integrated Dutch technologies (ventilation, climate control, drinking systems, lighting, biosecurity) to showcase productivity, animal-welfare and biosecurity improvements.	One pullet house at Sumber Rejo was upgraded to a closed house system. The installation remained fully functional and delivered clear technical gains (lower mortality, better uniformity, improved FCR and egg output), but high electricity costs and capital intensity limited replicability.

TABLE 5 BEHAVIORAL/ SOCIAL MECHANISMS

Intention	Realization
Transfer knowledge and good practices through training, a train-the-trainer (ToT) model and farm-based demonstrations to stimulate wider adoption.	ToT and farmer trainings were delivered (mostly online during COVID), with generally positive feedback. However, language barriers, generic content and limited follow-up weakened knowledge diffusion. Most neighbouring farmers were unaware of the demo farm, and behaviour change beyond Sumber Rejo remained minimal.

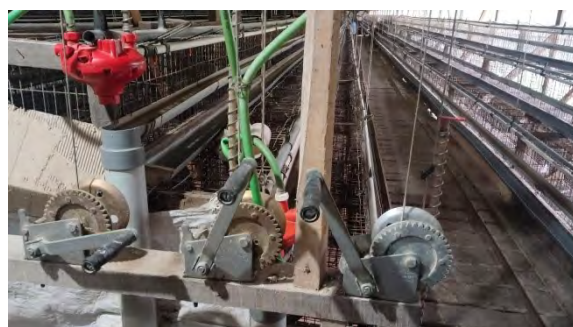
TABLE 6 BUSINESS / PARTNERSHIP MECHANISMS

Intention	Realization
De-risk investment in modern layer systems, stimulate farm upgrading and strengthen Dutch–Indonesian commercial partnerships across the layer value chain.	The IC reinforced existing commercial ties (notably DSM and Trouw Nutrition) and generated market learning for Dutch partners. However, the absence of a structured local cost–benefit case and high CAPEX/OPEX meant that investment de-risking did not materialise and new commercial uptake remained modest.

3. Other findings

3.1 Sustainability of case results

At farm level, the upgraded closed house pullet facility at Sumber Rejo remains fully functional and continues to deliver clear technical benefits, including improved bird uniformity, lower mortality, reduced feed use, and higher egg production. Encouraged by these results, the farm plans to purchase two additional high-quality fans, one to replace a damaged unit and one for an existing layer house, indicating partial continuation of the modernisation pathway. However, full closed house expansion is not planned due to high

FIGURE 2: SEMI-CLOSED HOUSING SYSTEM AT SUMBER REJO LAYER DEMONSTRATION FARM

capital costs, high electricity OPEX, and uncertain payback periods, suggesting that the business case remains unconvincing even for the demonstration partner. While knowledge gains among Sumber Rejo staff and ToT participants are likely to persist, broader diffusion has been weak, and no institutionalised training or extension mechanism emerged after COVID. Local intermediary institutions were not structurally anchored into the model, limiting continuity and sector-facing ownership of results.

3.2 Additionality of Impact Cluster support

The Impact Cluster enabled investments and activities that would not have occurred under purely commercial conditions. The closed house conversion at Sumber Rejo involved capital intensity, technical risk, and operational uncertainty beyond what the farm was willing to finance independently, and the underlying business case remains too weak to justify self-financed scale-up. Similarly, the ToT programme and downstream farmer trainings delivered by Aeres and Dutch partners would not have been organised without IC funding, given weak commercial incentives for capacity-building with uncertain uptake. For Dutch partners, the IC functioned as a risk-sharing market-entry and learning platform, allowing them to pilot an integrated modernisation model, assess Indonesian market conditions, and refine their understanding of cost sensitivities and adoption barriers.

4. Conclusions

The FoodTech Indonesia Layer case illustrates an Impact Cluster operating in a livestock sector where technical feasibility does not automatically translate into scalable adoption. The Impact Cluster demonstrated that integrated Dutch closed house technologies can deliver productivity and animal-health benefits under Indonesian conditions and enabled Sumber Rejo to pilot a level of farm modernisation it would not have undertaken independently, while also generating meaningful learning for Dutch partners about market conditions, cost sensitivities, and adoption barriers. However, the investment-de-risking hypothesis was only partially validated, as high upfront capital requirements, high electricity OPEX, price volatility, and the absence of a localised cost-benefit and payback analysis meant that full closed house conversion remained economically unattractive for most small and mid-sized farms. As a result, scaling stalled at the demonstration stage, with only limited incremental upgrades planned and no evidence of wider uptake attributable to the Impact Cluster.



Impact Cluster – Case Study

Dairy Clusters - Uganda

1. Introduction to the case

Country

Uganda – Western Uganda- Rushere

Timeline: 2019 - 2024

Subsector

Dairy farming – genetics, animal nutrition, knowledge transfer, data in farm management and farm equipment

Impact Cluster (IC) consortium

- Dutch partners: Bles Dairies Consultancy BV, Koudijs Animal Nutrition BV, Uniform Agri, Ante BV, Bles Dairies Livestock BV, Aeres
- Local partners: no formal local partners but engaged demonstration farmers to help stimulate uptake of products and services: Rubyerwa Dairy Investment (Mbarara), Mutanoga farm, Obuteka Farm, Gaza farm

In short

The project's overall objective is to support and strengthen the emerging commercially oriented dairy sector (production and processing) by providing relevant expertise (Knowledge partner Aeres), services (Data management- Uniform Agri), and production resources (Ant BV-farm equipment, Koudijs – Animal Nutrition, Genetics Bles Dairies) in a clear and structured manner. The Dutch partners' additional commercial objective is to gain market access or improve the current presence, with the services and products offered by the cluster participants.

TABLE 1 CHALLENGES AND INTENDED CHANGE

Market barrier / capacity gap	Intended changes
<p>The project was seen as a follow up from SNV/TIDE project that focused on increasing capacity of dairy farmer by bridging knowledge gaps, access to equipment and tools to increase market production.</p> <p>Specifically, there is a market access gap that was being assessed. The IC cluster did not conduct a specific study due to COVID 19 disruptions and therefore relied on contextual information provided by SNV/TIDE.</p>	<p>At Dutch company level:</p> <ul style="list-style-type: none"> • A boost for the market activities of the cluster participants, with increasing sales of their products and services and an expansion of their local sales team; <p>At sector level:</p> <ul style="list-style-type: none"> • An improved commercially oriented dairy sector and an increase in <i>know-how</i> among dairy farmers and higher milk quality; • A boost for the market activities of the cluster participants, with increasing sales of their products and services and an expansion of their local sales team; • In addition, the IC strives to contribute to the well-being of people, to take responsibility for the planet in a good balance with making knows; • The IC strives to do business sustainably with a meaningful development impact.

2. Findings related to Context-Mechanism-Outcome hypotheses

It is important to note that the approach in this Impact Cluster varied from other Impact Clusters and the local companies were merely facilitators. The outcomes are therefore limited to the local companies and organizations.

2.1 Outcomes

TABLE 2 OBSERVED OUTCOMES FOR DEMO FARMS

Local demo farms	Observed outcomes
Rubyerwa Dairy Investment (RDI) Mbarara district	<ul style="list-style-type: none"> • Direct link with the Impact Cluster (IC) as a demonstration farm. • This farm operates a dual-purpose dairy business, combining commercial milk production with the supply of high-quality genetic material. While a formal partnership with Bles Dairies was discontinued due to volume requirements, the genetics are still actively distributed to farmers in Western Uganda. Rubyerwa Dairy Investment (RDI) complements this by providing training, improving local husbandry practices to enhance both milk quality and yield. Beyond this successful initiative and occasional farmer field days, regular engagement between RDI and the Innovation Centre partners has been limited.
Mutanoga farm Kiruhura District	<ul style="list-style-type: none"> • Direct link with IC as a demonstration farm. The farm itself like the others is a beneficiary of the SNV TIDE project and was well equipped and has a value addition factory producing yoghurt and still selling milk. • Under the IC they participated in farmer days together with the Dutch partners however the follow-up did not happen due to unclear structures on who was to fund the farmer days. • Did not have an active role beyond the farmer days and therefore the outcomes are not visible on the ground. • The farm has continued with its operational activities and continued to make strides however, the outcomes is leaning more to the contribution of SNV TIDE programme.
Obuteka farm Kazo District	<ul style="list-style-type: none"> • No direct link with the IC but participated in farmer days with the other IC demonstration farms • Like Mutanoga, this is a farm that benefited from SNV/TIDE and therefore had received support in equipment and training on various dairy farming aspects • The linkage between IC activities and the current state of the farm is weak. In the context, we delved deeper into why contribution favours SNV/TIDE rather than the IC.
Gaza farm Luweero District	<ul style="list-style-type: none"> • No direct link with IC as engagement was cancelled. • Despite discussing an MoU, it was never signed. This farm was the only one in Central Uganda with proximity to large market access. This was a huge loss in terms of improving market access. The farm however has continued with its commercial activities and ambitions.



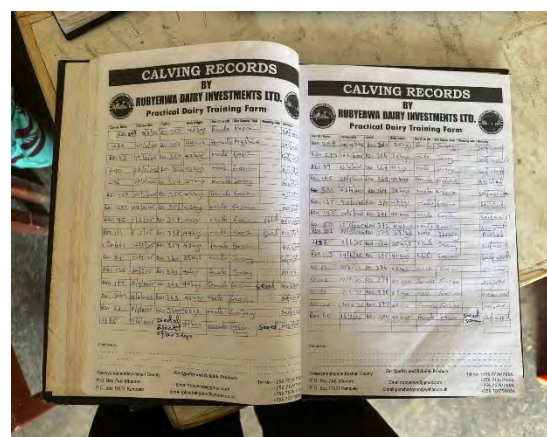
2.2 Contextual findings

Contextual factors - hindering factors

The Impact Cluster had a strong market focus, meaning they wanted participation in equipment, nutrition and genetics. The approach had no local partners except the demo farms whose involvement was limited. Overall the following factors explain why the outcomes were limited or invisible on the ground:

- **Animal Nutrition:** the goal was to get the farmers to embrace purchasing high quality feeds. In the target regions, however, farmers have access to large tracts of land that allow free grazing which is substantially cheaper, though leads to less yields. The business case to get these farmers to embrace farm feeds was weak and it shows on the ground. In addition, SNV TIDE had supported farmers to select and grow high quality fodder as well as to build silos. These factors unfortunately hindered the market approach selected by the Impact Cluster.
- **Genetic material:** In Obuteka farm (not an Impact Cluster' partner but a participating farmer) they felt genetic material was too expensive and opted to do the breeding themselves. RDI being a seller of genetic material, explained that the cost benefit of using genetic material versus breeding can be made, however, it is a long-term value which has not been adequately communicated to the farmers. As a result, uptake while still present in the region was not enough to justify the Dutch partners' involvement. This knowledge gap will persist to limit uptake in the future.
- **Data Management:** The opportunity here was to work with farmers to take up software packages from Uniform Agri. During our visit, we found out that most of the farmers keep minimal to no records. One of the IC partners sells hardcopy record keeping books for farmers to track their resources (figure 1), which are much more tailored to the context than a digitalised online system. In addition, the cost and availability of ICT resources made this approach ideal but ahead of its time.
- **Farm equipment:** Ante BV was already operating in Uganda and continues to date. The scale of the farmers might have been too low to take up large scale equipment, however, this is one of the areas that has fared well on the market approach through organic growth. The demonstration farms some have equipment from Ante BV and indicated that others had taken up the farm equipment even after the Impact Cluster had ended.

FIGURE 1: RDI DESIGNED MANUAL BOOKKEEPING SYSTEMS FOR LOCAL FARMERS, WHICH SUITED THE LOCAL CONTEXT AND NEEDS



Contextual factors - Helping factors

SNV/TIDE put in a strong foundation for technical and operational aspects of dairy farming in the region. This in theory made the market approach more feasible as a lot of work had been undertaken to raise the profile of the farmers in the region. The farms (demonstration farms especially) continue to operate at high levels. Some even going for value addition, like genetics among others. This counted as a helping factor to the Impact Cluster.

2.3 Change mechanisms / applied approach

TABLE 3 KEY MILESTONES REACHED

Indicators	Status at end of the project	Additional comments
> 10 cooling tanks installed (by Ante BV)	<i>Not achieved:</i> No cooling tanks sold.	<i>Ante BV has sold some equipment to other farmers after the project ended.</i>
1000 farmers trained through open days through 25 workshops/trainings with an average of 20 participants	<i>Not achieved:</i> 7 open days with 688 participants (of which 98 women and 253 youth (<35))	
Improved herd administration at 100 farms in 2022 and Uniform Agri would make an acquisition of 15 farmers who will install the necessary software	<i>Not achieved:</i> 11 farmers use Uniform Agri's software.	<i>Sustainability post project was not feasible and the farmers opted out.</i>
Increase in milk production at demonstration farms by 20%	<i>Not measurable:</i> There is no baseline and no reporting, which makes it impossible to measure the extent to which there is an increase of 20%. First it was stated that there would be an increase of 100%.	
5 direct jobs created for people who can work for the IC partners and >10 indirect jobs created related to the IC activities	<i>Achieved:</i> A total of 6 employees have been hired by the IC partners. There has been no reporting on indirect job creation.	<i>Sustainability post project could not be ascertained.</i>

As the IC started without a clear plan the indicators above were set retrospectively. There were other achievements namely:

- Aeres gave 10-weeks training for 26 participants in 2 colleges (Bukalasha and Adraa), 1 university (Makerere), the Dairy Training School, UVB, UBTEB and MOES.
- Business partnerships were established between Bles Dairies and Rubyerwa Dairies with an MoU however, as RDI could not achieve targeted volumes the agreement was cancelled.
- Awareness raising and visibility - Koudijs has recorded instructional videos with her Feed Academy "Farm Up, With Koudijs". This has also been on national TV as part of the Best Farmers. The 3 videos consisted of 1) calf feeding, 2) feed in, milk out, 3) how to mix feed.

The key findings from the Impact Clusters' evaluation report written by RVO and the evaluator's findings on the ground show inadequate evidence to illustrate the application of Impact Clusters interventions on the ground. Farmer open days and demonstration videos as interventions could not lead to high levels of results. The activities themselves did not invest enough time to change behaviors and practices. However, based on the objectives of this Impact Cluster that was not the goal. Therefore, while good practices can be seen on the ground, they are largely due to TIDE.

3. Other findings

3.1 Sustainability of case results

TABLE 4 SUSTAINED AND NOT SUSTAINED RESULTS

Sustained case results:	Not sustained case results:
<ul style="list-style-type: none"> • Networks formed by the demonstration farms continued and consultations and support on the ground -even though not structured- persists. • Ante BV has continued to provide equipment for farmers in the region partly due to their long-term presence in the region. • Genetic material procured during the short agreement with RDI continues to be supplied to farmers in the region. 	<ul style="list-style-type: none"> • Market access for the Dutch partners outside Ante BV has not been as visible mostly because they need scale which they cannot get with the farmers as it stands. • Uniform AGRI is too advanced for the current state of the market, therefore these services could not be sustained. • Knowledge exchange and capacity building, while some activities were undertaken by Aeres and exploration of partnerships to develop content for knowledge exchange and capacity building, we did not find evidence on the ground that these initiatives persisted.

3.2 Additionality of IC support

The additionality of this Impact Cluster was limited, as its market-oriented interventions did not generate outcomes beyond those already achieved through the prior SNV/TIDE program. The most observable changes were attributable to pre-existing capacity, relationships, and investments rather than to the IC's support.

3.3 Conclusions

Overall, the dairy Impact Cluster did not achieve its intended change due to weaknesses in design and contextual alignment rather than a lack of activity or effort. As one of the first ICs implemented, it underestimated the impact of strong local companies with a central role in the impact cluster, which limited effects on local firms, constrained engagement beyond bilateral collaboration, and prevented any broader spill-over effects. The presence of prior donor support

FIGURE 2 UGANDAN DAIRY FARM IN MBARA WITH IMPROVED GENETICS



(SNV/TIDE) created a technically capable farming base, but the IC's assumption that this would translate smoothly into market uptake proved unfounded in the absence of a clear market study, realistic targets established beforehand, and locally embedded partners.

Businesses with an established local footprint, such as Ante BV, were able to sustain some commercial engagement, but more technologically advanced or scale-dependent services struggled. Consequently, the observed results were weakly sustained, and the additionality of IC support remained limited, with most durable outcomes reflecting the pre-existing capacities instead of IC-driven change. Future intervention logic should therefore be more explicitly grounded in market reality, with better use of existing knowledge on sector and farmer capacity, and full partnerships with strong local firms to ensure sustainability and additionality.

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