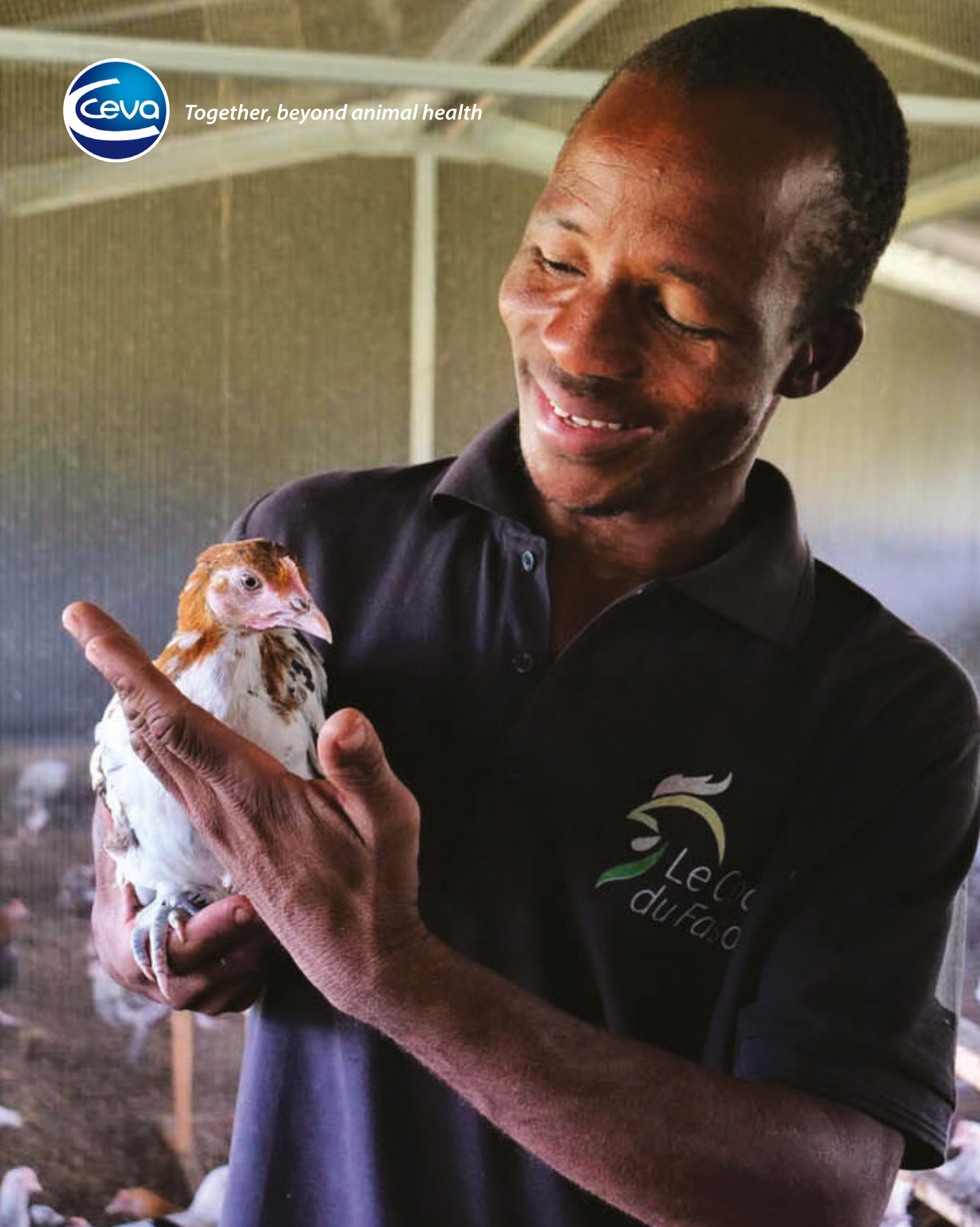




Together, beyond animal health



Le Poulet du Faso, 2016-2021

Improving traditional poultry genetics and health in Burkina Faso



With support from :

BILL & MELINDA
GATES foundation

“ We believe that rural poultry production could have a big impact on household income, household nutrition, and empowerment of small-scale producers and specifically for women in Africa. Unfortunately, given the genetic, animal health, and input constraints, small scale producers realize very little net value from raising poultry. The approach CEVA followed in the Poulet de Faso stands as a clear example of how creative and innovative solutions can resolve such constraints. ”

Obai Khalifa - Senior Program Officer - Livestock group BMGF

“ Development of poultry production is one of the quickest solutions to meet the growing needs for animal protein in developing countries. The Poulet du Faso has achieved this in Burkina Faso through capacity building and creation of a new value chain which is adapted to the local context and generates sustainable incomes and employment. ”

M Prikazsky - CEO Ceva Santé Animale

“ I do not know how to explain the immense joy this project has brought. I like to say that the Poulet du Faso and Coq du Faso projects are the future of poultry production in Burkina Faso. ”

M. Boureima Sawadogo - Pdt COFAB - Association des Eleveurs de Boussé

“ Again and again, people have tried to improve traditional poultry farming in Western Africa. To this end, efforts have mostly focused on introducing improved cockerels in backyard systems, but this solution often led to dead ends for 3 major reasons : 1) Unfavorable environment for the male, 2) Very low productivity of local females (30 eggs/year), 3) Finest specimens cooked for celebrations.

Reversing the principle by selecting a local male and crossing it with a slow-growing productive female (200 eggs/year) has never been tried in the history of traditional poultry farming improvement. Associated with an innovative technology allowing to vaccinate the resulting day-old-chicks, it guarantees the success of what is now much more than a project ! ”

M. Louis Perrault - Senior Advisor - Sasso Hendrix Genetics

“ The Poulet du Faso is a success story built on People, Chickens and Skills. It is also the frontier between technological advances such as hatchery vaccination and genetic selection and organizing and developing local teams and competences to sustain a production chain adapted to local conditions. ”

Dr Pierre Marie Borne - Programme Director Ceva Santé Animale

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Executive summary

At the end of 2015, Ceva received a grant from the Bill & Melinda Gates Foundation (BMGF) to manage a 5-year long initiative to support Burkina Faso's traditional poultry sector. Although the sector achieved very low productivity and was subjected to numerous risks and challenges, it also presented a real opportunity due to strong, growing demand for traditionally-reared chicken meat.

In Burkina Faso, more than 90% of poultry production takes place in extensive traditional systems practicing free-ranging flock management. Local consumers are very proud of their traditional 'poulet bicyclette' that they believe has a better appearance, taste and texture than broilers of western-type genetics. However, compared to improved breeds kept in more intensive systems, hens of local breeds reared in traditional farms produce only a few chicks per year and the growth rate is slow and mortality rate is high. As a result, there is a lack of access to day-old chicks for small-scale farmers.

The objective of the Poulet du Faso initiative was to improve the genetics and the control of the main infectious diseases of local chickens. It aimed to achieve this while also 1) involving traditional and emerging small-scale commercial farms 2) dealing with the lack of day-old chicks 3) limiting losses due to lack of vaccination and health management issues and 4) respecting consumers' preference for 'poulet bicyclette'. To this end, the most appropriate approach was to cross local cocks with exotic hens and to adopt a segmented model for the rearing of the resulting crossbred birds, dubbed Poulet du Faso.

For this, local cockerels and hens are reared in a specially built facility, the Avian Selection Centre (the only one of its kind in Sub-Saharan Africa), where they receive

top quality feed and health management in a fully biosecure environment. Rigorous records are kept to identify the most productive birds and prevent inbreeding. Within each generation, the best performing birds are selected and retained for breeding. After the first generation, the centre has been run as a closed flock to avoid the risk of introducing infections and facilitate the selection work.

The elite cockerels – Coq du Faso – produced at the Selection Centre are then sold to breeding farms and hatcheries where they are crossbred with hens of a breed developed in France for the free-range meat market (SASSO SA51). The day-old chicks produced weekly at the hatcheries are vaccinated against Newcastle disease using Ceva's innovative vaccine. The chicks are then distributed to small-commercial farms able to provide the care and conditions the vulnerable young chicks need, which either rear the birds for the full production cycle or act as 'mother-units', selling the 42-day old 'teen-chicks' to traditional farmers who then rear them until they reach market weight. Poulet du Faso attains a slaughter weight of 1.1 kg in 10-11 weeks, compared to 24 or more weeks for local birds under traditional management.

The resulting chickens retain the appearance and eating qualities of local birds and are marketed under the Poulet du Faso brand, which has rapidly become known, trusted and sought after. The use of wing tags attached to Poulet du Faso teen-chicks and which feature the brand's logo and a unique identifying number certify the origin. The tags are a guarantee to the farmers that the birds are genuine Poulet du Faso and have been effectively vaccinated at the hatchery.

From the outset, care was taken to ensure all stages of the Poulet du Faso's production

was undertaken using sound business principles. Also, steps were taken to ensure that opportunities created by the initiative were open to all local entrepreneurial small-scale farmers by subsidizing the first batch of day-old chicks.

The original objective was to produce one million Poulet du Faso a year by the end of the project. At the end of 2021 (6 months after the project end), the annual production by the pioneering hatchery reached 1.5 million chicks per year and 2.3 million including the 3 newcomer hatcheries. The five hatcheries currently producing Poulet du Faso are anticipated to reach an annual production of 3.5 million birds by 2023.

The Poulet du Faso model has also attracted attention from entrepreneurs in neighbouring countries and similar initiatives are now underway in Togo, Senegal and Mali. These initiatives will source elite cockerels from the avian selection centre in Burkina Faso. Meanwhile, in Burkina Faso, the Poulet du Faso value chain now operates as an interconnected series of profitable businesses, entirely independent of the original program. The delivery team identified four key factors which they believe contributed to the success of the Poulet du Faso initiative. These were to:

- adopt a business approach from the onset of the initiative
- secure the feed supply
- find cooperative business partners with complementary and shared objectives
- adopt an integrated and consistent marketing approach.

The Poulet du Faso initiative is considered by the team to be a good example of what can be done to develop the poultry sector by bridging the gap between large-scale commercial farms and small-scale commercial farmers, while also having a downstream impact on traditional farmers. Transfer of skills, capacity and technology to local stakeholders has ensured sustainability of the model. However, the approach takes a long time to implement and establish: the donor-funded program phase of the Poulet du Faso initiative lasted more than five years. The delivery team consider that the model can be replicated in other countries if they are able to comply with the key factors of success. Finally, adapting this model to the egg-layer industry could help fill the gap between production and consumption of eggs in Sub-Saharan Africa.





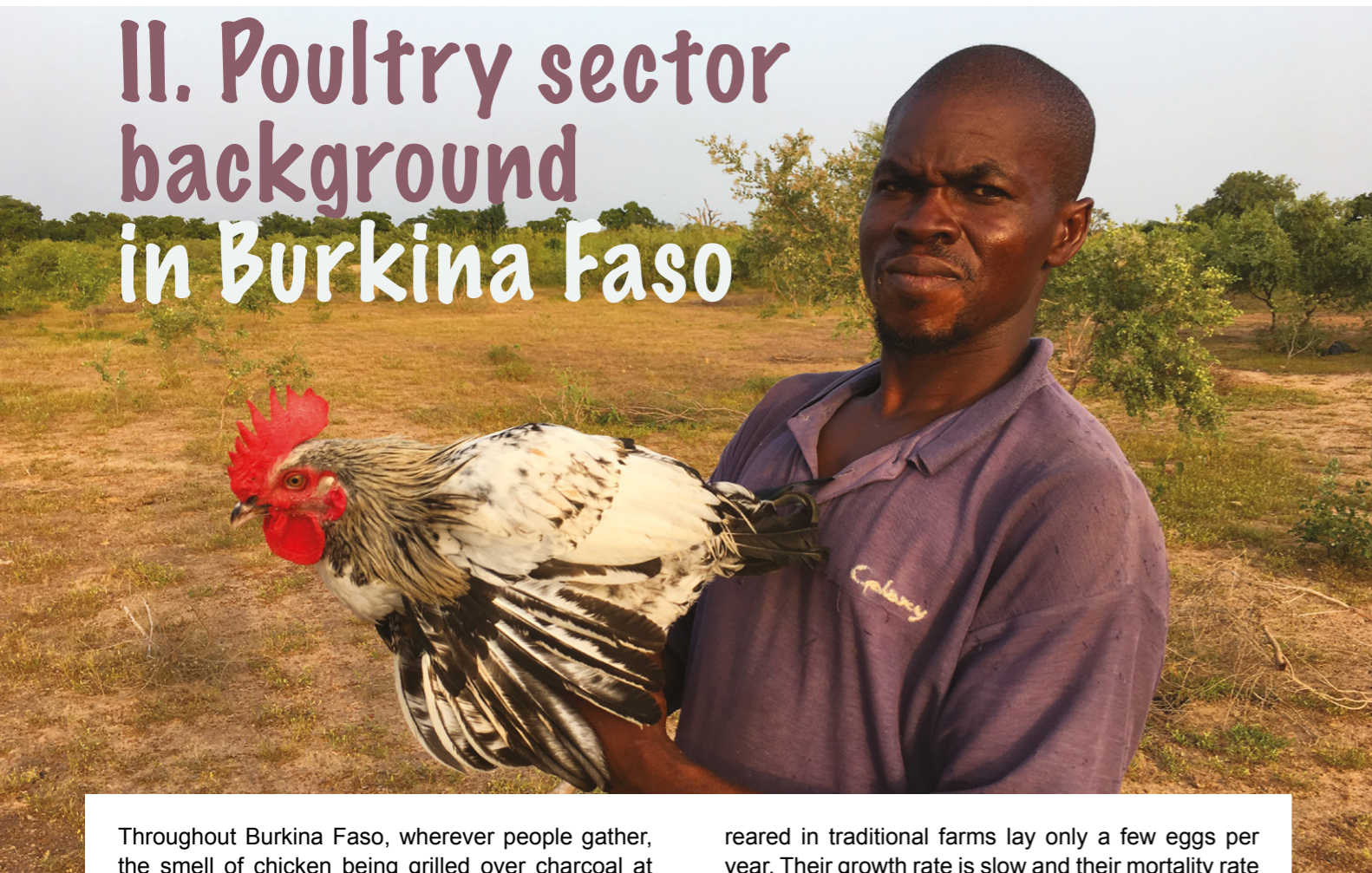
I. Introduction

In 2016, Ceva Santé Animale received a grant from the Bill & Melinda Gates Foundation (BMGF) to manage a 5-year long initiative to support Burkina Faso's traditional poultry sector. Although the sector achieved very low productivity and was subjected to numerous risks and challenges, it also had a real opportunity due to strong, growing demand for traditionally-reared chicken meat.

The objective of the Poulet du Faso initiative was to improve the genetics and the control of the main infectious diseases of local chickens, while maintaining the popular local phenotypes, especially feather color and the taste and texture profile of the meat.

This report provides background information on the sector, describes the various stages of the program and how it was planned and implemented, and highlights its achievements and the key design features and lessons learned.

II. Poultry sector background in Burkina Faso



Throughout Burkina Faso, wherever people gather, the smell of chicken being grilled over charcoal at roadside stalls and local restaurants fills the air. Practicing poultry farming in the country is very common, especially in rural areas where there are almost as many chickens as people. Poultry may be used for home consumption, gifts and insurance, but also represents an important source of income for many households. In 2020, the country produced about 45 thousand tons of poultry meat (2.2 kg per capita) and 1 billion eggs (50 eggs per capita) for its 20 million people (FAOSTAT), which is low compared to the world average consumption of 15.3 kg of poultry meat and 210 eggs per capita per year. Burkina Faso is one of the poorest countries in the world (ranked 144th among 157 countries, with a poverty rate of 40%, according to the World Bank) but also has one of the highest economic and population growth rates. **Demand for chicken and other foodstuffs is therefore expected to continue growing rapidly over the coming decades.**

In Burkina Faso, **more than 90% of poultry production takes place in extensive traditional systems** practicing free-ranging flock management and uncontrolled breeding (Figure 1). Semi-intensive and intensive systems practicing batch rearing, usually located around urban centers, account for less than 10%. Compared to improved breeds kept in more intensive systems, hens of local breeds

reared in traditional farms lay only a few eggs per year. Their growth rate is slow and their mortality rate is high, especially among chicks: for each hen kept, only at most 10 chicks survive and often fewer are reared and sold annually, with each chicken taking 6 months to reach one kilogram in weight. Hence, there is a desperate lack of day-old chicks (DOC) in the country.

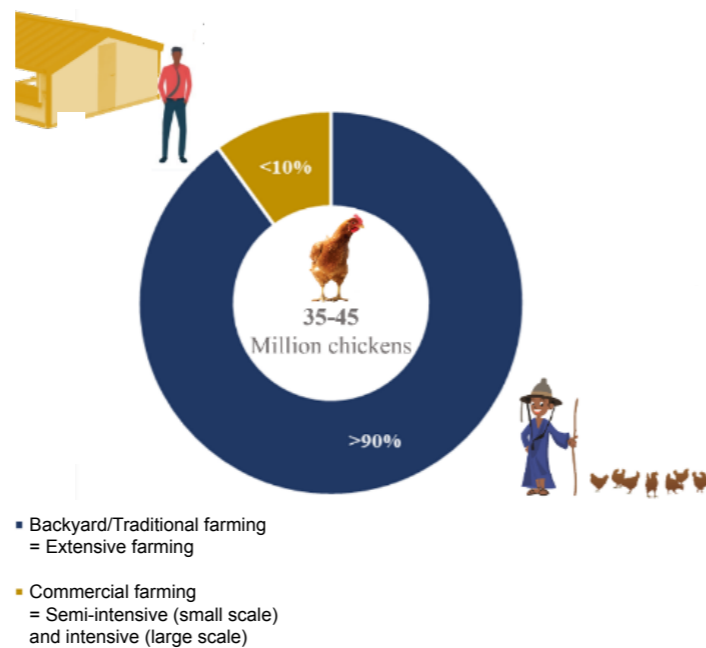


Figure 1: Poultry farming systems in Burkina Faso (FAO, 2019)



The government extension service in Burkina Faso has managed to achieve one of the best vaccination rates against the Newcastle disease (50%) in Sub-Saharan Africa. This is largely due to a network of 'Vaccinateurs Volontaires Villageois' (VVV) who have been trained and equipped to provide basic animal health services to poultry farmers. Despite this, however, **the control of the main avian diseases in the country is still precarious.** This is because of the:

- Limited technical inputs in traditional production,
- Effort needed to vaccinate widely dispersed, free-ranging birds kept in small flocks,
- Difficulties in maintaining the cold chain, necessary to ensure vaccine efficacy, especially in rural areas.

In Burkina Faso, **consumers are also very proud of their local traditional 'poulet bicyclette'** that they believe has a better appearance, taste and texture than the intensively-reared local or imported broilers. They are kept by traditional farmers in villages around towns where they can run around freely, resembling, it is said, people riding bicycles; also, they are usually transported from the farms where they are reared to urban markets by being tied by their legs to bicycles – hence 'poulet bicyclette', which translates as 'bicycle chicken'. The model has existed for a very long time even if in recent times the motorcycle has replaced the bicycle for collection. The brand awareness for the 'poulet bicyclette' among the population of Burkina and the wider region is very high. Figure 2 shows the consumption habits of consumers for chickens in Ouagadougou, the capital of Burkina Faso.



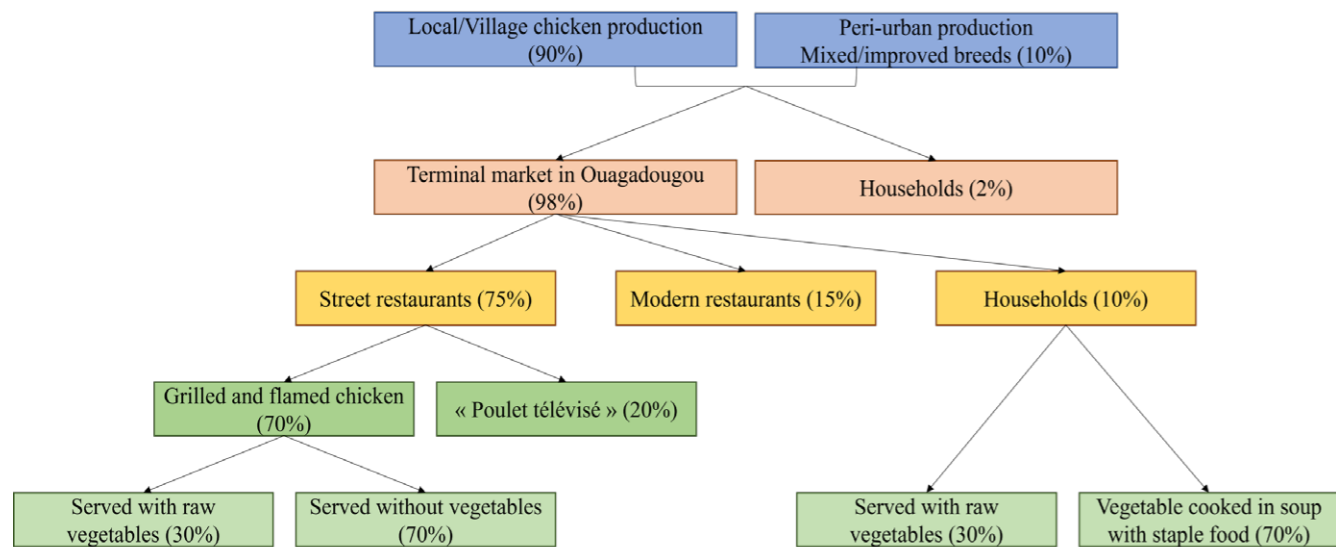


Figure 2: Chicken consumption habits in Ouagadougou, ILRI (2020)

Meeting the foreseeable rapid increase in demand for poultry meat in the coming years will be difficult with the current production model. The question is how to improve poultry production while meeting the socio-technical challenges mentioned above, which are:

- Involving traditional and emerging small-scale commercial farms,
- Dealing with the lack of DOC in the country,
- Limiting losses due to lack of vaccination and health management issues,
- Respecting consumers' preference for 'poulet bicyclette'.

Five solutions are conceivable to intensify poultry meat production:

1. **Develop intensive farming:** This option presents a huge risk for the predominant traditional farmers who may not be able to compete with the emerging commercial sector, unless they are able to intensify their mode of production. They could be pushed out of their livelihoods by commercial farms (Figure 3: option 1).

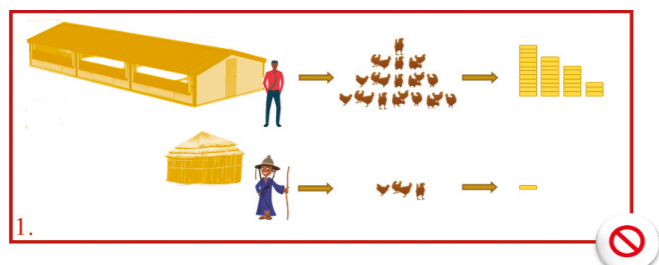


Figure 3: Option 1 to improve poultry production

2. **Select local breeds:** Local chickens could be selectively bred over many generations to produce a new, more productive improved breed. This is the process used in the past to produce distinctive regional chicken breeds all around the world, but the process is slow, taking decades to achieve and would be even slower because of the low laying rate of local hens. This option is not consistent with the rapid growth of the demand for poultry meat and eggs in Burkina Faso (Figure 4: option 2).

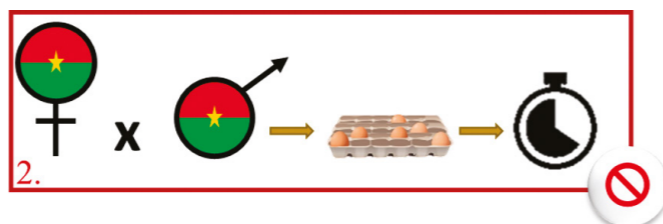


Figure 4: Option 2 to improve poultry production

3. **Import exotic cockerels:** This approach to genetic improvement, whereby cockerels of a suitable breed are imported to produce crossbred chicks with local hens, has been tried many times in Africa in the past. However, it has rarely proved effective in the long run: within a few years of a cockerel exchange initiative finishing, there tends to be little or no evidence of the improved genes in the local chicken population. As local hens only produce a few eggs a year, the production of improved chickens is very slow and progress through this method cannot keep pace with the rapidly increasing demand. Often, the improved males are simply served for dinner rather than being retained for breeding (Figure 5: option 3).

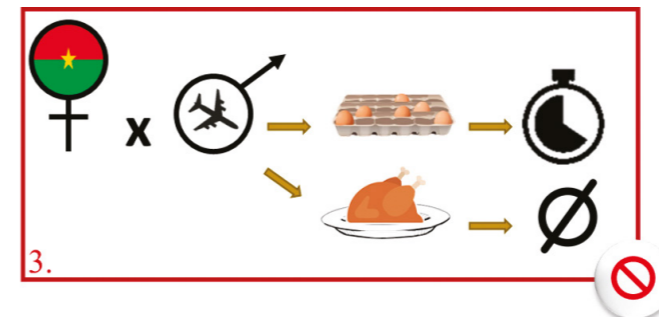


Figure 5: Option 3 to improve poultry production

4. **Import dual purpose breeds:** Another solution could be to import suitable and hardy existing breeds which allow intensification at a large scale under local conditions. This option has been adopted in many African countries but is challenging in Burkina Faso where it does not meet the market needs, since farmers and consumers crave their local traditional chickens. Introducing new breeds which do not look or taste like the local ones would be difficult for local people to accept (Figure 6: option 4).

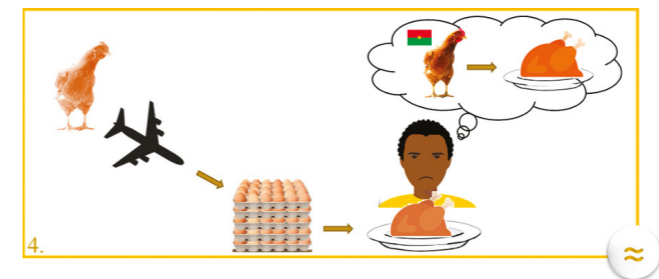


Figure 6: Option 4 to improve poultry production

5. **Import exotic hens:** This consists of crossing local cocks with exotic hens to produce crossbreds that have better performance than local breeds (Figure 7: option 5).

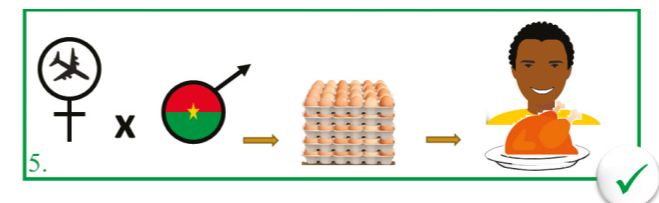


Figure 7: Option 4 to improve poultry production

To overcome the issues and constraints identified in Burkina Faso, Ceva and SASSO, working in partnership with BMGF, local farmers and businesses, decided upon a solution based on this last approach, which seemed the most appropriate.

Did you know?

SASSO is a company belonging to the multispecies breeders Hendrix Genetics. SASSO is fully integrated in the Traditional Poultry Business Unit. Since the early eighties, SASSO has developed a large range of slow growing poultry adapted to different types of market all over the world, and more specifically in Africa where dual purpose chickens are largely developed.



The strategy selected was to **cross selected local cocks**, known as Coq du Faso (CdF), with **dual purpose exotic hens** of the SASSO SA51 breed in order to **produce crossbreds**, which were called Poulets du Faso (PdF) and that benefitted from both their parents' qualities.

This approach enabled the four main challenges previously identified to intensify production to be met:

- **Exotic hens produce five times more eggs than local hens**, thereby meeting farmers' needs for DOC which are currently missing in the country.

- PdF **grow faster** than local breeds allowing more production cycles per year. They are also hardy which make them very well adapted to traditional systems, especially if they are previously vaccinated at the hatchery.

- PdF **keep the phenotypic characteristics of their father** (local breed), meeting consumers' taste for their local 'poulets bicyclette'.

To implement this new model, three key players are necessary:

- **A center for avian selection** responsible for selecting the elite local cockerels.

- **Multiplication farms** to cross the selected local cocks with exotic hens and produce large numbers of PdF DOC of consistent quality.

- **A distribution network** involving both the traditional and small-scale commercial sectors.

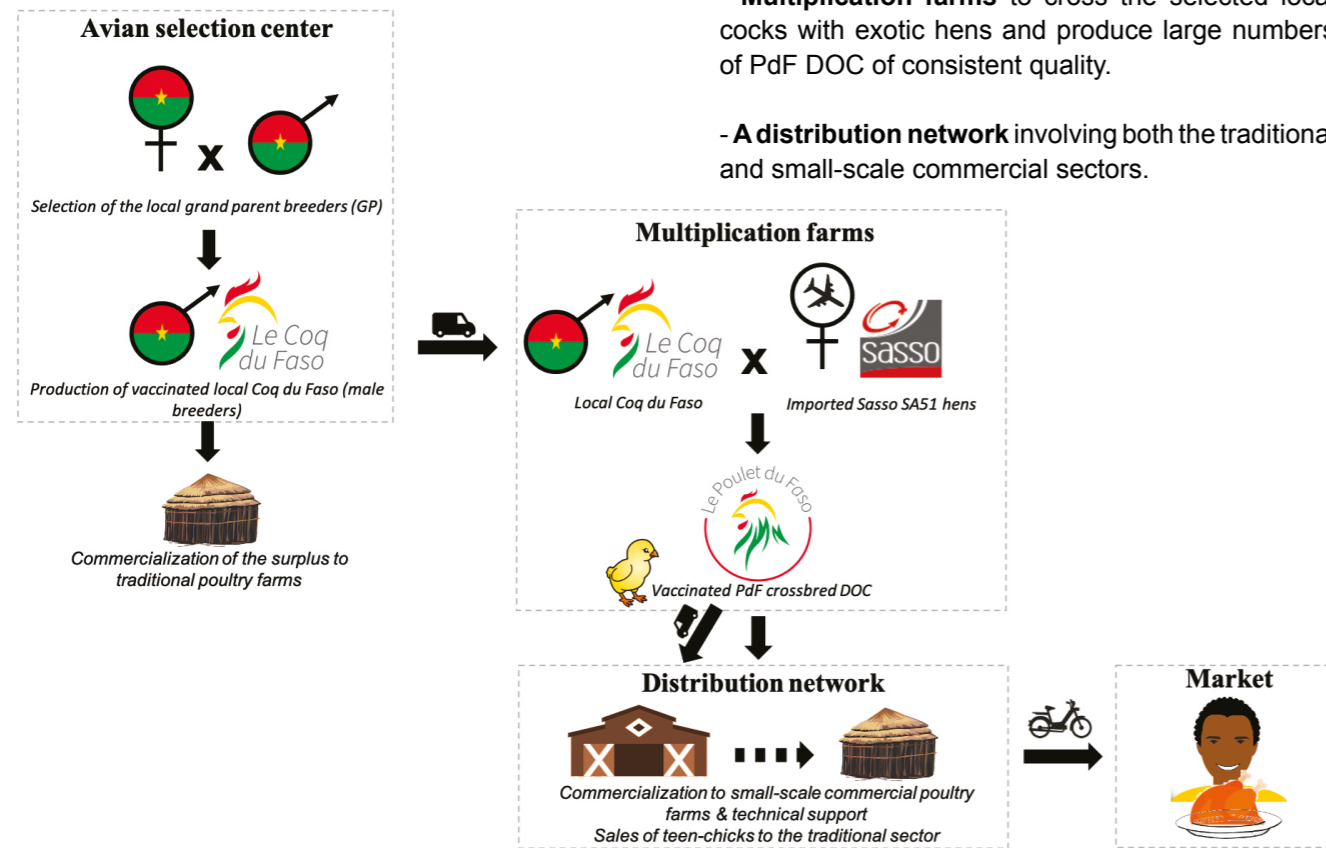


Figure 8: Concept and key players of the Poulet du Faso initiative

To summarize, the objective of the Poulet du Faso initiative was to kick-start large-scale production of vaccinated DOC. These would be reared largely by small to medium-sized enterprises to help meet

the rapidly growing demand for grilled chicken, while creating a web of interconnected employment and business opportunities accessible to small-scale farmers and entrepreneurs.

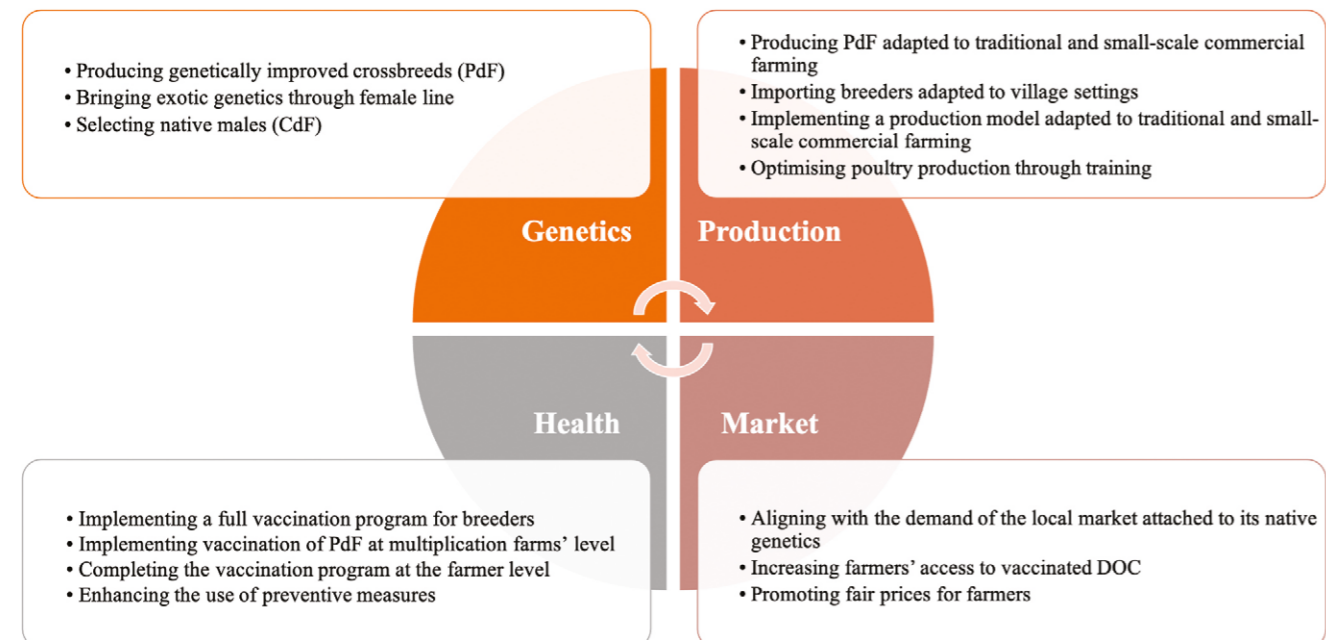


Figure 9: Initiative expected output and outcomes





III. Description of the initiative

1. The avian selection center: The 'Coq du Faso'



The role of the avian selection center is central to the new approach developed within the framework of the initiative. It consists of **producing selected local males** dubbed 'Coq du Faso', which are the **elite cockerels** bred from the **best performance recorded lineages of local Burkinabe chickens**. These local cockerels can then be supplied to multiplication farms (breeding farms and hatcheries) to be crossed with SASSO hens to produce 'Poulets du Faso' DOC.



However, there was **no facility in Burkina Faso** or any neighboring countries **working on the genetic selection of a local breed** when the initiative was launched in 2016. The first step in the implementation of the Poulet du Faso initiative was therefore to **build an avian selection center** from scratch. To this end, Ceva and SASSO have worked with COFAB, an association of local Burkinabe farmers which had been supported since 2002 by the French group Fermiers de Loué (Farmers of Loué). COFAB is located in Bousse, a small town about 50 kilometers northwest of Ouagadougou.

To establish the center and enable it to start operating, the initiative funded the building work, equipped the facilities and covered the initial operating costs. Like all components of the Poulet du Faso initiative, the way the Bousse selection center works has been **carefully designed** with the help of NTD, a French company that specializes in livestock buildings, to ensure that the center can continue to **operate as a viable business** once the time-limited project comes to an end.

The center is designed to provide very **high standards of biosecurity and animal welfare**, as well as a **comfortable and convenient working environment** for the staff. The chicken houses, which are fully meshed to keep out wild birds and vermin, are light, airy and spacious, equipped with perches, plenty of feed and water dispensers, as well as with sand boxes to enable birds to have dust baths. Staff shower before entering the buildings, change into freshly laundered protective clothing and follow strict biosecurity protocols. The site has its **own water supply and solar panels to generate electricity** in addition to a mains supply to provide enough energy for power-hungry appliances such as the hatchery (cf. Figure 10). **Five key people** were recruited to run the center at its opening: a director (veterinary doctor), three technicians and a security guard.



Did you know?



The Bousse avian selection center is a purpose-built complex of smart, steel-framed buildings, all enclosed by a high-security fence. Delivering the large, prefabricated panels to the remote site during the rainy season in 2016 was a logistical challenge as trucks got stuck in the mud: the final leg of the journey had to be completed on foot, with the construction team manhandling the heavy panels.

Providing water and electricity to the facility was also an adventure. The team asked for the help of a water diviner and a shaman to find a water source in this dry and isolated area. Once found, a 115-foot well was hand-dug by villagers. Connecting the selection center to the national grid also required more time and money than expected, since one of the electrical poles was not put in the right place and had to be moved to complete the connection. Furthermore, the frequent electrical surges used to cause recurrent power failures due to the inadequate and poor-quality materials initially used by the electrician when building the complex. It has since been changed and an inverter has been added to limit these power outages.

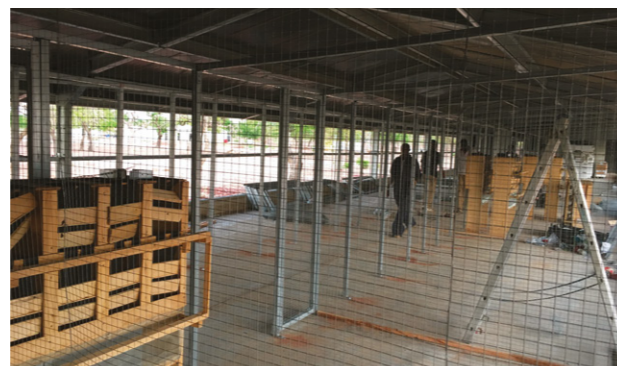
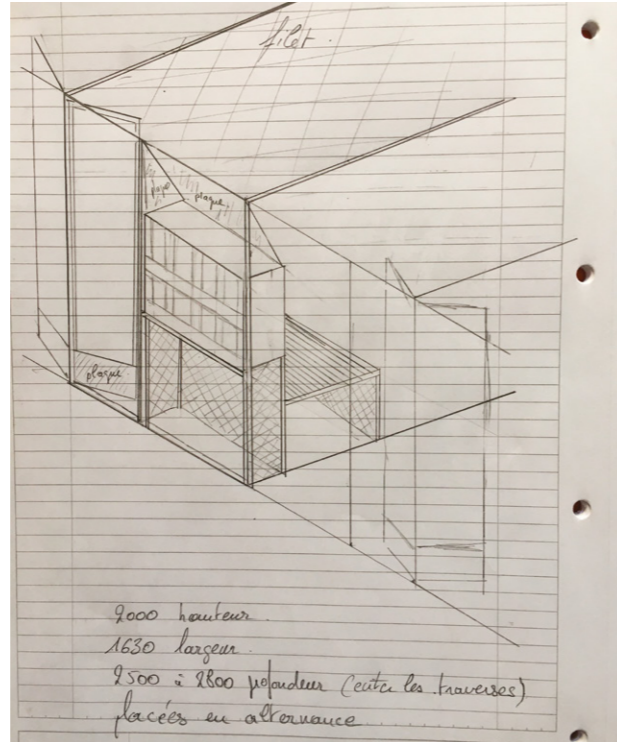
This kind of initiative requires a good sense of anticipation and rigorous organization to prevent problems. It is even more critical to anticipate all the needs, considering that some equipment must be imported from other countries, which means a lengthy timeframe for transport and customs clearance.

To initiate the selection center, **130 male and 400 female chickens**, each approximately 2-months-old, were **bought from various villages around the Boussé area**. Birds were chosen to reflect the diversity of feather coloring found in the population, to ensure a **diversified initial genetic pool**. Each bird was **tagged** with a unique identification number. They were then transferred to the center and housed in the **quarantine** building for three months. During this time, birds were **vaccinated**, given other **preventive health treatments**, and **screened for diseases**, especially avian leucosis, mycoplasma and salmonella.



Quarantine phase for local birds collected around Boussé

At the end of the quarantine period, the by now mature and disease-free birds (80 males and 290 females aged 20-weeks-old) were **transferred to the pedigree building**. After the first batch of local chickens entered the center, **it was run as a closed system** following the process detailed below, with no further birds being introduced from outside to minimize disease risk and facilitate the genetic selection work which is based on birds' background (performance of their parents mostly).



Did you know?

Avian leucosis is a viral disease caused by a tumor-causing retrovirus. It is vertically transferred through the eggs from parents to the chicks. Leucosis tests for females require sampling albumen from two of their eggs and for males collecting samples from their cloaca. These samples are then sent to France for analysis by Bio Chêne Vert, a private veterinary lab. Birds that are identified as being positive for leucosis are removed from the program as there is no treatment against this disease. These leucosis tests are carried out every time a new generation of pedigree birds (grandparent stock) start laying.



However, as the business model of the selection center is based on hens' performance, such as their laying rate or the viability of the eggs they produce, it is also important not to get rid of the leucosis positive birds before their performance has been monitored and their genetics analyzed. This way, negative hens from the same lineage as a positive but high performing one may be selected to be part of the next generation of grandparents (pedigree flock).

The success of the Boussé avian selection center business model relies on maintaining a very high level of health and genetic management to avoid disease outbreaks, and leucosis is just one amongst others. Fortunately, and thanks to the strict biosecurity and preventive measures implemented in the center, no cases of mycoplasma or salmonella have been detected for the latest batches produced.

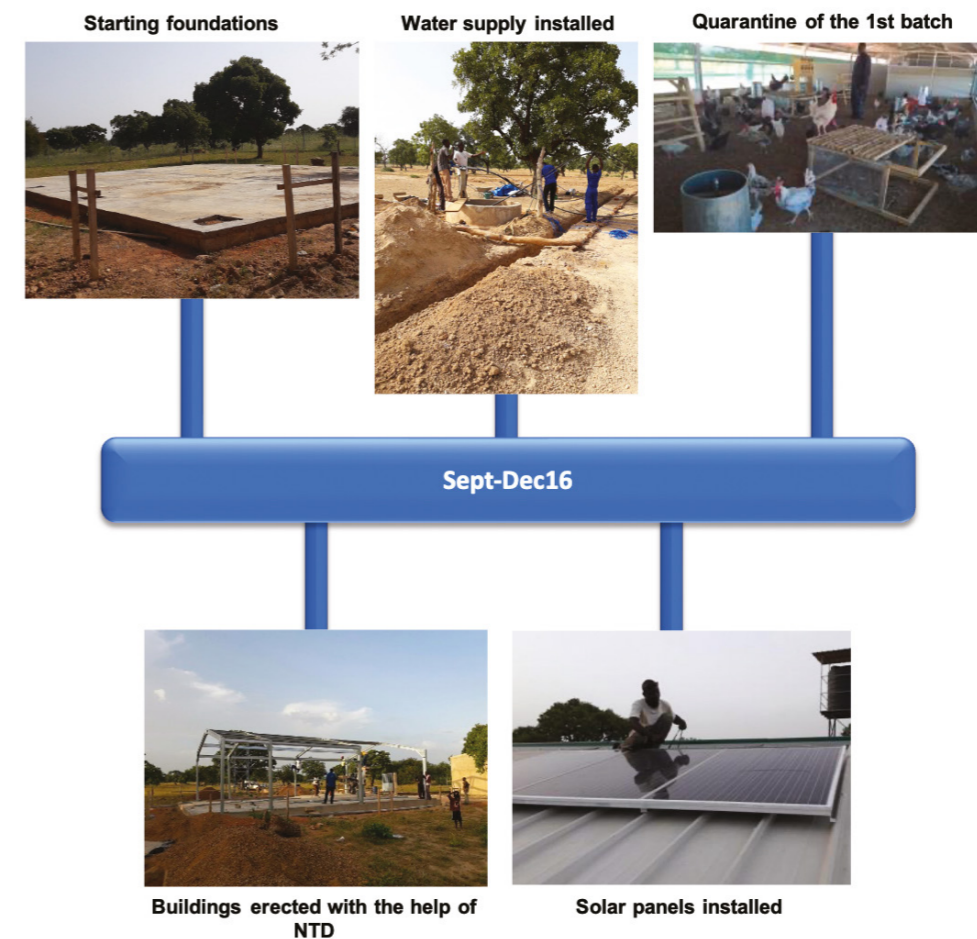
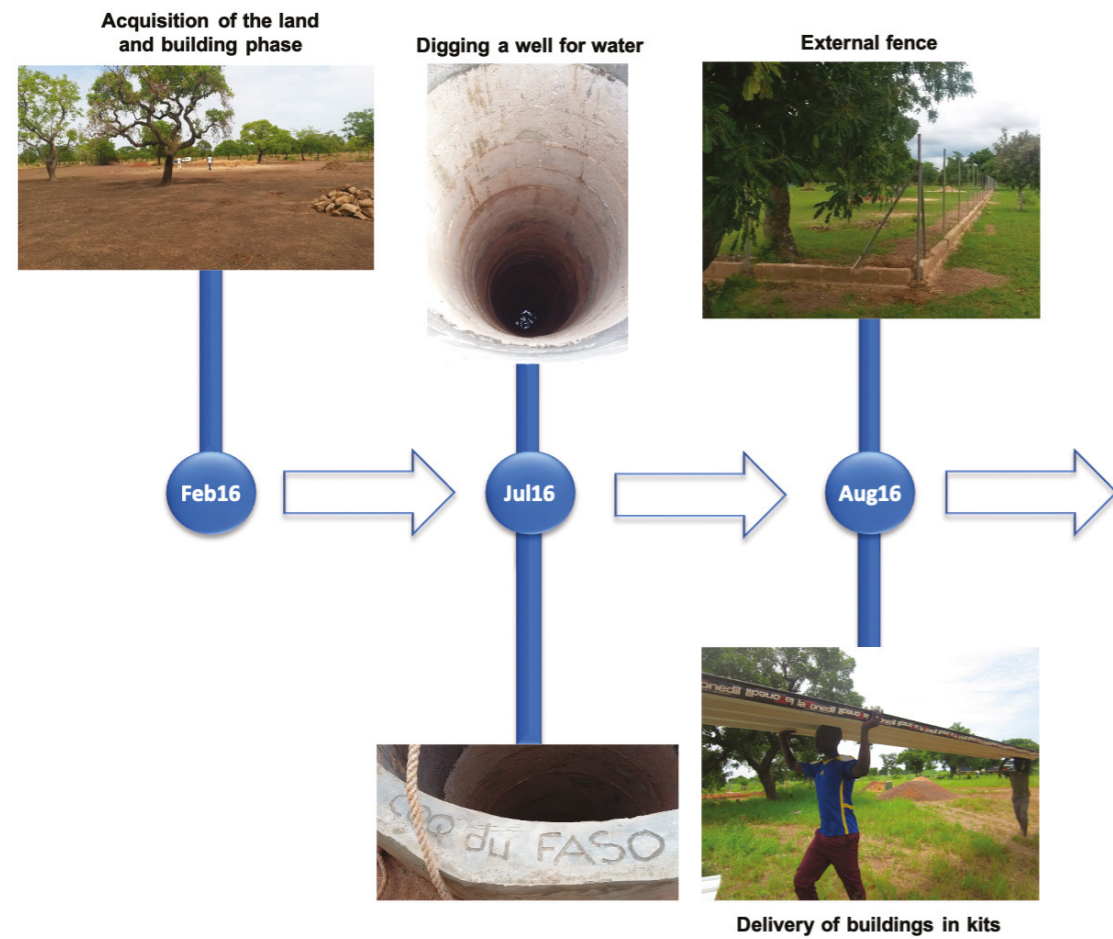
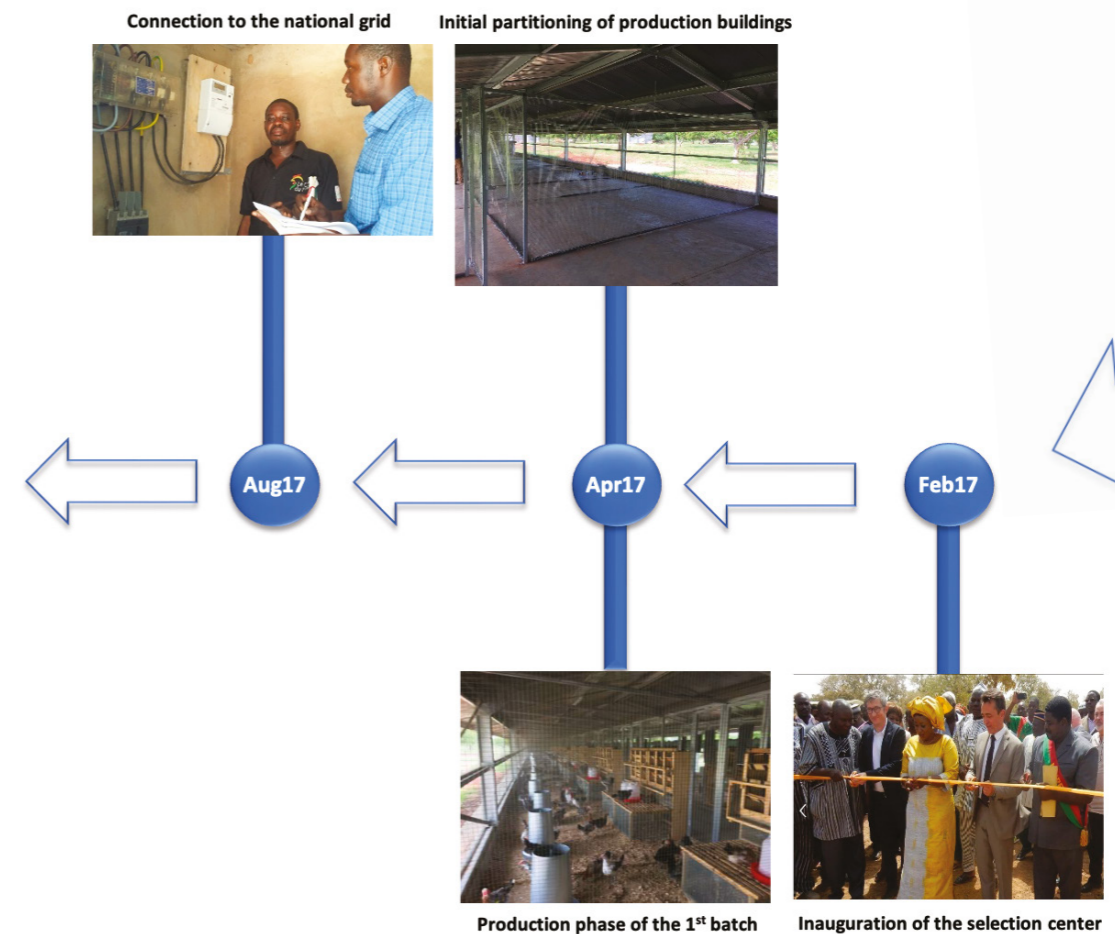
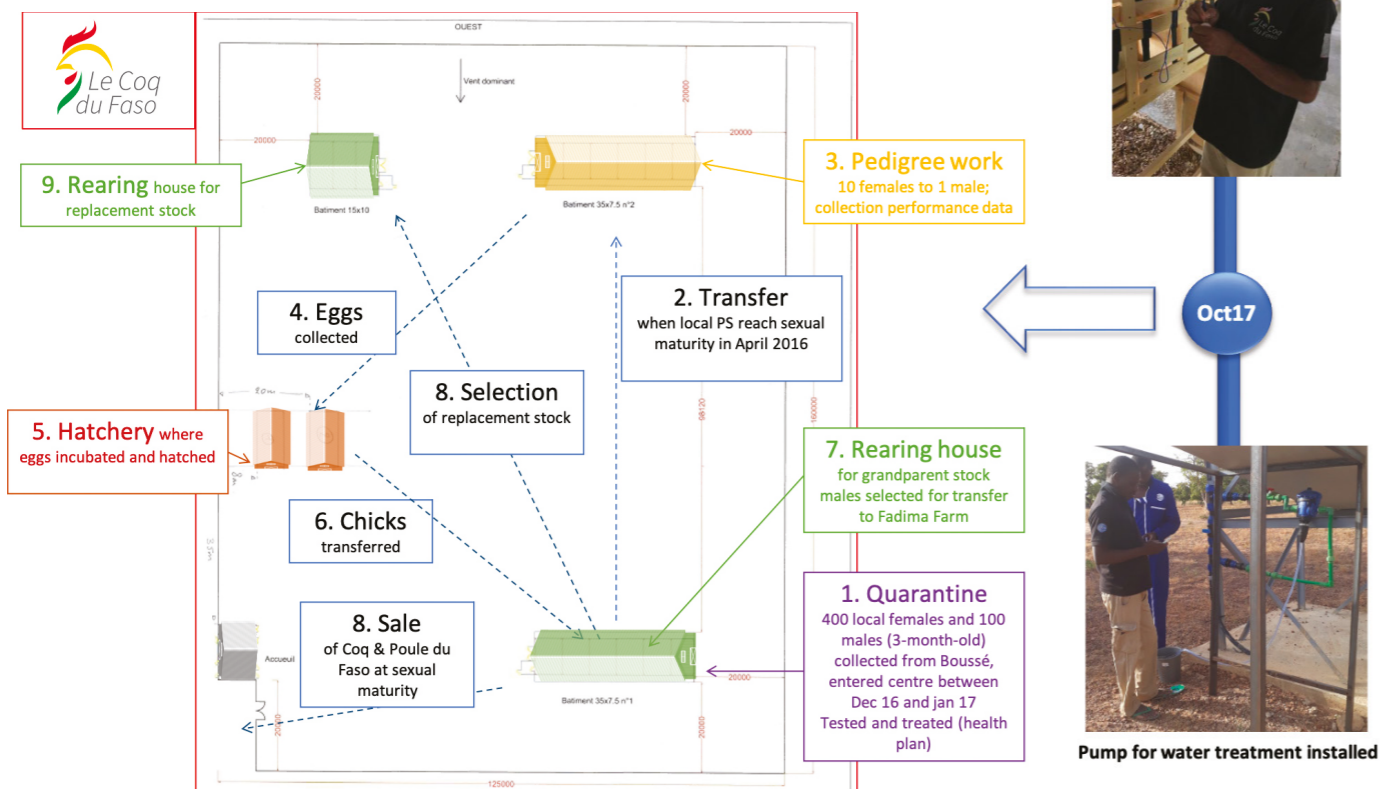


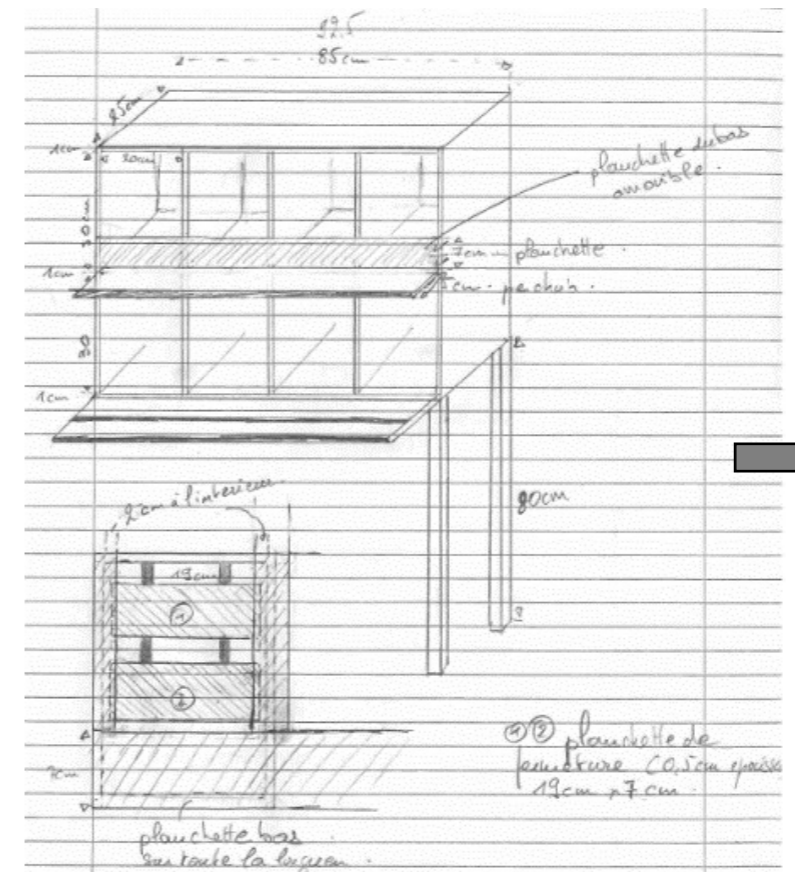
Figure 10: Steps of creation of the Boussé selection center



In the pedigree building, the mature birds are allocated for about 45 weeks (production cycle period) to one of the **40 distinct families**, each consisting of **1 cockerel and 10 to 13 hens** (the number of hens was increased after the first few rounds of selection) of similar ages. For the first batch, family groups were chosen based on the geographical origin of the birds, their phenotype (appearance – mainly feather color) and age (all registered in a database). The main criteria for selecting families is now the **performance of their parents**, especially their laying rate, but special attention is also given to **avoiding inbreeding**. Selecting hens with similar ages is also an important parameter when constituting families to avoid pecking and to facilitate the management and the monitoring of performance, as some parameters are measured based on the flock results and not on each individual.



Each family is housed in a pen equipped with trap nest boxes enabling the identification of the hen producing each egg: eggs are collected daily and labelled with the identity of their parents and the laying date. Careful records of many parameters are kept on a bespoke database created by SASSO at the pedigree building level, such as the date and hour of the egg-laying, the egg production per hen (to calculate the laying rate), the broodiness and any diseases. The rearing parameters are also monitored, such as the quantity of feed and water consumed, and the temperature in the building.



When a hen enters a nest box to lay, it triggers a mechanism which traps it inside. It is then possible to write on each egg the identity of the parents for monitoring and traceability, before releasing the hen.



Trap nest boxes for data recording



After collection, eggs are transferred to a separate building, stored, and then placed every week into an **incubator for 18 days**, after which they are tested by candling: a beam of light is passed through the eggs to enable the removal of the ones with no embryo (fertility indicator). Then, they are transferred to the **hatcher for 3 more days**. Complementary parameters are also followed up at this level, such as the fertility rate, the hatch results or the weight of

the eggs, as well as data from the equipment (temperature of storage or incubation). Batches of eggs from among which the next generation of pedigree birds (see below) will be selected are placed in special baskets in the hatcher with the identity of their mother written on it. This means that after hatching, chicks can be tagged with a unique number to enable genetic follow-up of the pedigree flock.

Afterwards, they are moved to the **production buildings**, which are divided into several separate pens. During this phase, birds continue to receive **preventive treatment** and systematic sampling is done to **screen for diseases**. Their growth rate, homogeneity and mortality are also monitored at regular intervals.

The core of the Bousse avian selection center business model relies on **selling the highest quantity possible of the best performing local cocks as breeders to multiplication farms**. Therefore, its **operational sustainability** relies on being able to internally **renew its pedigree flock**, by selecting, **based on the performance data analysis, the best birds** to become the next generation of grandparent (GP) breeders. This way, the Bousse avian selection center can continue its selection work and **increase the quality of the breeders** it sells to its clients generation on generation. Thus, when pedigree birds reach half of their production cycle (about 40 weeks-old), the offspring of the best performing ones are pre-selected to be reared up to 20-weeks-old, according to a complex genetic analysis carried out by SASSO. This **selection is assessed based on their growth rate** and, most of all, on **their parents' performance in terms of production of viable eggs**: a large variation in performance was observed between individual hens for the first batch, but results standardized with subsequent selection rounds. Candidates for the renewal of the pedigree flock are picked from 6 or 7 consecutive batches to ensure a diversified genetic pool. Thanks to the improved laying rate obtained through selection, the difference of age among individual birds in the new pedigree flocks do not exceed 1.5 months (1 week between each batch), allowing females to start laying within a shorter period of time.



Renewing flock rearing phase in the production building



Figure 11: Storage, incubation and hatch in the Bousse avian selection center

On hatching, **chicks are vaccinated against Newcastle disease and infectious bronchitis** and transferred to the **starting unit** where they stay for **3 weeks**.



Hatching and weighing of DOC in the Bousse avian selection center



For its **financial sustainability**, the center operates as a **grandparent breeding facility** whose **primary product is elite cockerels, 'Coq du Faso'**. These are selected by the genetic experts based on analysis of performance data for transferring to multiplication farms. These CdF are **sold at 12-weeks-old**, by which age they can be reliably sexed, to be reared until sexual maturity when they are mated with SASSO hens to produce crossbred PdF DOC. **This is the bulk of the selection center's business.**



To cover its **fixed costs** and reach financial self-sufficiency, the Boussé avian selection center also **commercializes its by-products**, such as the **pedigree birds** that they sell for consumption at the end of their breeding lives, along with any **surplus eggs**. **Even the soiled litter is sold for fertilizer**. More importantly, their main **secondary product** after the CdF are called **'Select'**: they are the **siblings of the CdF** and are exclusively marketed, either as partly grown chicks or **young breeders (15 weeks-old) to the traditional segment** that practices uncontrolled breeding. Traditional farmers can use these Select birds for meat production, as they **grow faster** than their usual chickens and are **vaccinated** against the main diseases, which allow them to **run more cycles** per year with **lower mortalities**. To really take advantage of the improved performances of the Select birds, farmers can **buy a family of one male and several females**. This way, they can **renew their flocks with more productive local chickens, producing more chicks** than traditional non-selected breeds and at least **doubling their production of meat**, even under free-range system (cf. *chapter III.6.i*). Finally, a small part of the production is **exported** as DOC to the neighboring countries.

Efficiently running a selection center is very difficult, especially in developing countries. It requires: (i) implementation of **strict biosecurity measures and a comprehensive health program** to prevent disease outbreaks, (ii) **careful monitoring of rearing and performance parameters** and recording in a bespoke database for ensuring good genetic management of the flock, (iii) **access to quality inputs** and to provision of optimal rearing conditions for the flock. Yet, despite these challenges, the **commitment of the Boussé avian selection center team** in turning this activity into a successful business, with the help of Ceva and SASSO, paid off. This is illustrated by the significant improvement of the performance results obtained in only 5 generations.



The Boussé avian selection center is **the only facility of its kind in intertropical Sub-Saharan Africa** which is working towards the selection of a local African breed. It was officially registered as a **limited-liability company** under the name 'Coq du Faso SARL' in September 2019, 80% of which is owned by COFAB (the Boussé farmers association) and 20% by local investors. The quality of their work is widely recognized and this has given them new opportunities to continue developing their business.



Did you know?

Since 2019, the SASSO company and the Coq du Faso SARL (limited liability company) also worked together on a new initiative supported by the Bill & Melinda Gates Foundation called **SAPPSA** (Sustainable Access to Poultry Parental Stock to Africa). This initiative aims to **develop breeds tailored for Africa** to secure supply of improved **poultry parent stock to African smallholder farmers**. SASSO has signed an agreement with COFAB and the Coq du Faso SARL for **investment and service provision**, respectively, and **uses two of the buildings** in the Boussé center for its **recurrent tests**. **Three additional people** were recruited by the Coq du Faso

business to work on this initiative. The SASSO company sends its SASSO (SA51) DOC to the Boussé center and finances their rearing costs (feed, health costs, etc.). The Coq du Faso SARL is paid for services, consisting of **rearing these SASSO breeds and monitoring and sending the results of their recurrent tests** (growth, weight, conversion ratio, laying rate, etc.) to the SASSO company, to **measure their productivity in the Burkina context**. At the end of their production cycle, the SASSO breeds are sold and the income generated is deducted from the SASSO company's invoice for the next batch of SASSO birds.



With the development of the selection center business and the launching of the SAPPSSA project, the global overall organization of the center evolved,

and new buildings were constructed, as presented shown in the map below.

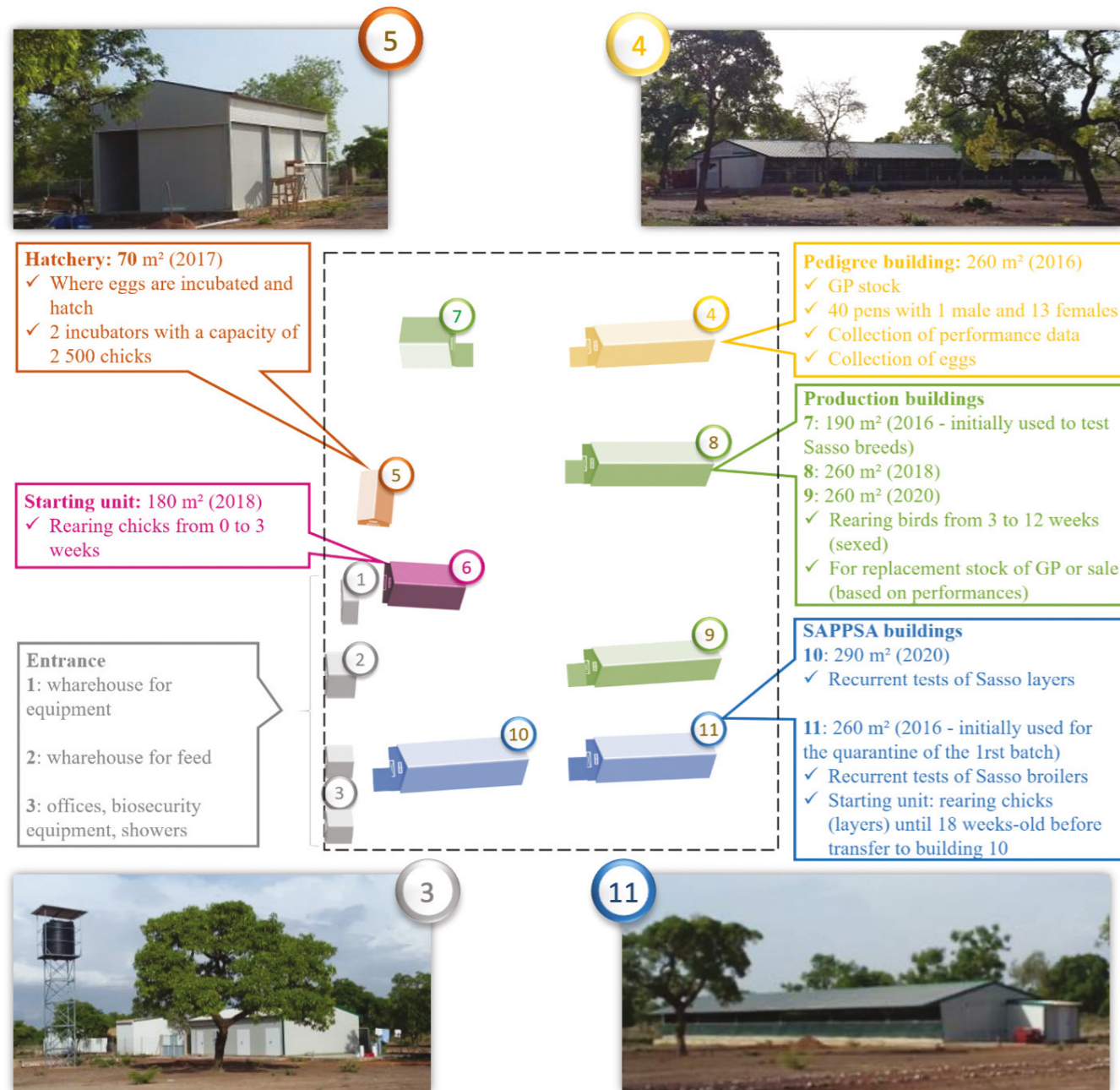


Figure 12: Updated map of the Boussé avian selection center

The Coq du Faso SARL was also approached to launch a new initiative called 'Alliance du Goût du Faso' (Alliance of the Taste of Faso) within the framework of the World Bank's Livestock Sector Development Support Initiative (Projet d'Appui au Développement du secteur de l'Élevage au Burkina-Padel-B) program implemented in Burkina Faso. Thanks to this initiative, a new hatchery (SACO-FAB) and a production building will be built on a nearby but separate site for biosecurity reasons. It will allow local production of PdF at a larger scale thanks to the demand of local farmers.

Finally, to keep focus on its main activities without having to seek new clients for their production, the Coq du Faso SARL signed an agreement with a service provider developed within the framework of the Poulet du Faso initiative, called Anipole Faso, (cf. III.5.iii) to commercialize its CdF and Selects, including those produced through the SAPPSSA initiative.

2. A unique avian selection center achieving promising results

i. Five generations of genetic improvement

Between 2016, when the first batch of indigenous birds were collected in the area of Boussé, and June 2021 when the project ended, 5 generations of pedigree birds (GP) have been selected. Because of the poor egg production of the local breeds, the main focus has been on improving the number of hatching eggs and also leucosis control. To this end, only the offspring of the best performing hens and leucosis negative hens (albumen testing) and males (swab testing) have been selected.

of production (cycle: egg production, brooding, molt), illustrated by bell curves and particularly pronounced for the first batch, have flattened with selection allowing more consistent production. As a consequence, improvements have been noted in the quantity of eggs produced, with a cumulative production of about 100 eggs per hen after 45 weeks of production for the GP4, compared to 50 for the GP1. Results seem to have stagnated between the 3rd and the 4th generations, but this could be explained by a coccidiosis outbreak that happened just around the production peak and which is likely to have impacted hens' laying performances.

ii. Improvement of the production parameters

a. The Laying rate

The graphs below show that the average laying rate of local hens reared under the optimal conditions provided by the selection center have almost doubled between the first (hen-day production of 39 eggs at 55 weeks) and the fourth generations (hen-day production of 79 eggs at 55 weeks) thanks to selection. Furthermore, the natural seasonality

The 5th generation of pedigree birds was selected based both on the egg production of their mother and on growth performances of the individuals. Main priority was still given to the numbers of eggs produced, but only focusing selection on this parameter would lead to a rapid increase of inbreeding because complete families would have been selected. By including additional performance parameters, selection within a family was possible, resulting in a higher number of families and leading to a reduced level of inbreeding.

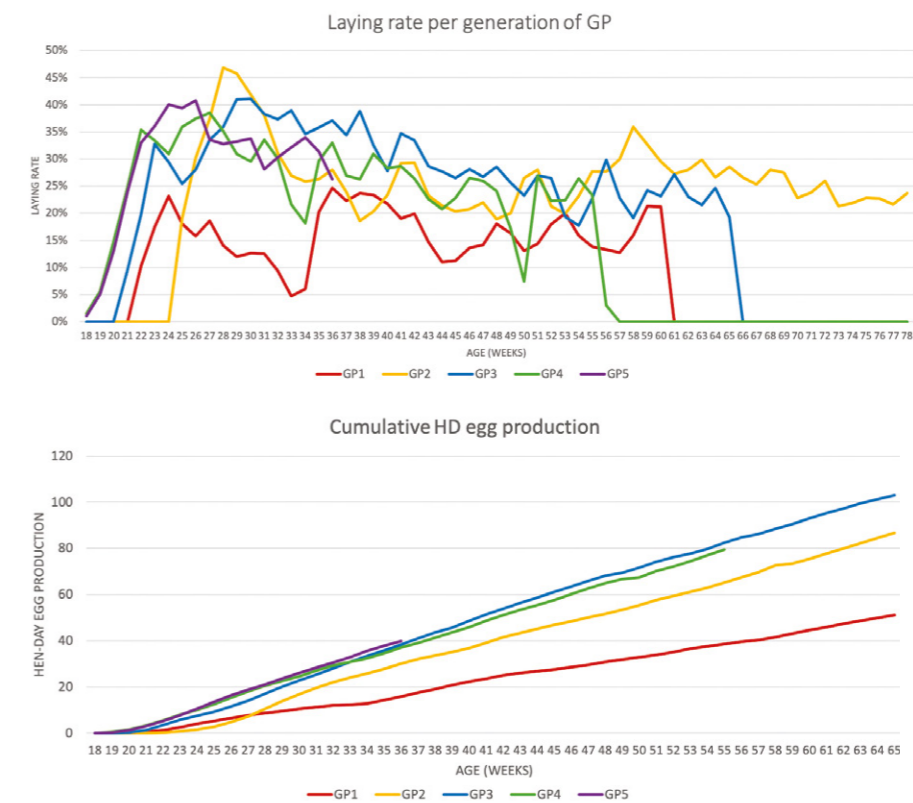


Figure 13: Laying rate and hen-day production by successive generations of pedigree flocks (GP)

* Graph 1 = Hen Housed production: all eggs produced at a given age divided by the number of hens housed in the laying house / * Graph 2 = Hen Day production: cumulation of daily eggs produced divided by the number of hens present that day.

b. Other reproduction parameters

From the data collected throughout all generations, heritability and genetic correlations could be estimated. With this information 'breeding values', which separates the genetic from the environmental contribution to an individual's performance, were calculated

for traits like hatchability, egg weight, fertility and broodiness. With these breeding values, a balanced selection program was performed resulting in phenotypic improvements (see Figure 14).



Figure 14 highlights that all traits show an improving genetic trend:

- **Fertility and hatchability:** indicator of males' performance - rose from an average of 87% and 72%, respectively, for GP1 to 93% and 91% for GP4.
- **Egg weight:** indicator of the vitality of the embryos – is higher in GP4 than for GP2 and GP3.

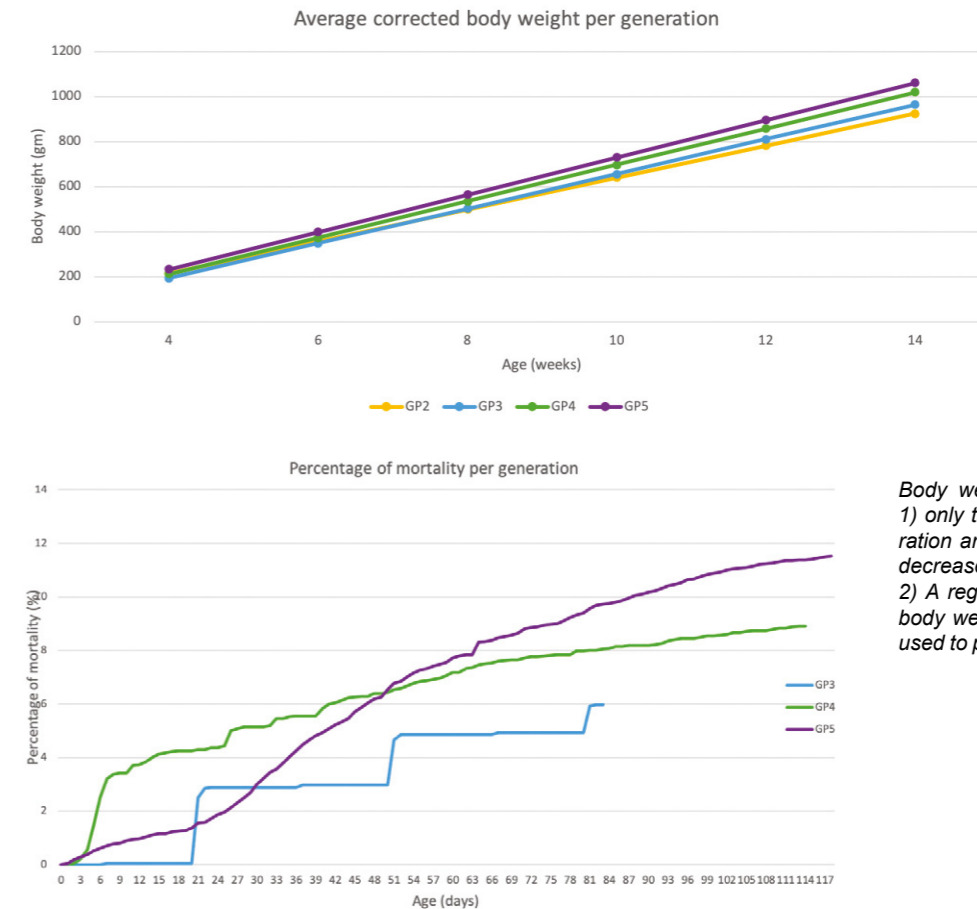
- **Broodiness:** indicator of hens' behavior impacting the reproduction trend – clear improvement of this parameter (reduced broodiness) between the first generation of selected birds and the following ones.

All these parameters seem to have stabilized and are less prone to fluctuations than for the first generation of GP.

Performance parameters	GP1	GP2	GP3	GP4	GP5
Fertility	86.7%	92.3%	92.9%	92.6%	92.3%
Hatchability of fertile eggs	72.0%	79.2%	83.7%	91.3%	-
Mean cumulative hen-housed production (36 weeks)	15.9	29.8	38.2	36.3	38.2

Figure 14: Evolution of the performance parameters per generation

c. Offsprings' performances



Body weight corrections (graph on the top):
 1) only the first 4 batches produced per generation are considered, as growth performance decreases between the first and the last batch
 2) A regression line was calculated based on body weight from 2 to 14 weeks and this was used to predict the bodyweight at a certain age.

Figure 15: Average corrected body weight and mortality per generation

The results show a **clear improvement in birds' growth** with selection: each new generation gained on average an additional 40 to 55 grams by 14 weeks of age compared to the previous generation (about **5% improvement per generation**). The latest generation of birds (GP5) produced within the initiative reached their **slaughter weight of 1.1 kg in 15 weeks, compared to 17 weeks for the GP2**, which will represent significant economic gain and

time saving for traditional farmers purchasing selects and will also impact favorably on PdF growth.

However, the mortality graph shows a **higher mortality rate for the GP5**, especially after the 3rd week, mostly because of pecking. This highlights the **challenges of rearing birds** in semi-open buildings and in multi-age batches, even if very high standards of management and biosecurity are observed.

iii. The Bousse avian selection center production capacity

The main mission of the Bousse avian selection center is to manage the selection of local birds to produce CdF, which is their key product for the production of PdF and to renew their pedigree flock.

However, their production of CdF is limited by:

- The capacity of the pedigree building which cannot house more than 560 breeders at the same time (40 families of 1 male and 13 females) and with a 1-month downtime period between 2 consecutive batches.

- The capacity of the 2 production buildings, which cannot house more than 3,500 mature birds at the same time.

- Batch management: In theory, each production building houses 3 to 4 batches of birds started one week apart from each other. Therefore, the center must wait for the entire destocking of a multi-age flock from a building to practice a 1-month downtime period before introducing new batches. They must also limit the housing capacity of their buildings according to the expected weight of birds at the end of their rearing cycle, which may vary from 12 to 20 weeks, and respecting a maximum density of 8.5 kg live bodyweight/m².

Week	Production building 1				Production building 2			
1	Batch 1							
2	Batch 1	Batch 2						
3	Batch 1	Batch 2	Batch 3					
4	Batch 1	Batch 2	Batch 3	Batch 4				
5	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5			
6	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6		
7	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
8	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
9	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
10	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
11	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
12	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
13		Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
14			Batch 3	Batch 4	Batch 5	Batch 6	Batch 7	
15				Batch 4	Batch 5	Batch 6	Batch 7	
16					Batch 5	Batch 6	Batch 7	
17						Batch 6	Batch 7	
18							Batch 7	
19	Batch 8							
20	Batch 8	Batch 9						
21	Batch 8	Batch 9	Batch 10					
22	Batch 8	Batch 9	Batch 10					
23	Batch 8	Batch 9	Batch 10	Batch 11				
24	Batch 8	Batch 9	Batch 10	Batch 11	Batch 12			
25	Batch 8	Batch 9	Batch 10	Batch 11	Batch 12	Batch 13		
26	Batch 8	Batch 9	Batch 10	Batch 11	Batch 12	Batch 13	Batch 14	
27	Batch 8	Batch 9	Batch 10	Batch 11	Batch 12	Batch 13	Batch 14	
28	Batch 8	Batch 9	Batch 10	Batch 11	Batch 12	Batch 13	Batch 14	
29	Batch 8	Batch 9	Batch 10	Batch 11	Batch 12	Batch 13	Batch 14	
30	Batch 8	Batch 9	Batch 10	Batch 11	Batch 12	Batch 13	Batch 14	
31		Batch 9	Batch 10	Batch 11	Batch 12	Batch 13	Batch 14	
32			Batch 10	Batch 11	Batch 12	Batch 13	Batch 14	
33				Batch 11	Batch 12	Batch 13	Batch 14	
34					Batch 12	Batch 13	Batch 14	
35						Batch 13	Batch 14	
36							Batch 14	
37	Batch 15							
38	Batch 15	Batch 16						
39	Batch 15	Batch 16	Batch 17					
40	Batch 15	Batch 16	Batch 17					
41	Batch 15	Batch 16	Batch 17					
42	Batch 15	Batch 16	Batch 17					
43	Batch 15	Batch 16	Batch 17					
44	Batch 15	Batch 16	Batch 17					
45	Batch 15	Batch 16	Batch 17	Batch 18				
46	Batch 15	Batch 16	Batch 17	Batch 18	Batch 19			
47	Batch 15	Batch 16	Batch 17	Batch 18	Batch 19	Batch 20		
48	Batch 15	Batch 16	Batch 17	Batch 18	Batch 19	Batch 20	Batch 21	
49		Batch 16	Batch 17	Batch 18	Batch 19	Batch 20	Batch 21	
50			Batch 17	Batch 18	Batch 19	Batch 20	Batch 21	
51				Batch 18	Batch 19	Batch 20	Batch 21	
52					Batch 18	Batch 19	Batch 20	Batch 21

Periods during which started birds cannot be transferred to the production buildings

Batches among which the next generation of pedigree birds will be selected

Figure 16: Theoretical batch management model in the Bousse avian selection center

As a consequence, the Bousse avian selection center must sell a major part of its production of chicks as DOC or immature-Select, although selling them after their sexual maturity would be more profitable.

At full potential, the Bousse avian selection center could produce approximately 45,000 DOC per year with more than 4,000 males sold as CdF breeders to multiplication farms 100 males and 600 females (including spare males and females) used to renew the pedigree flock and the remaining production of about 40,000 birds as Select for traditional farmers.

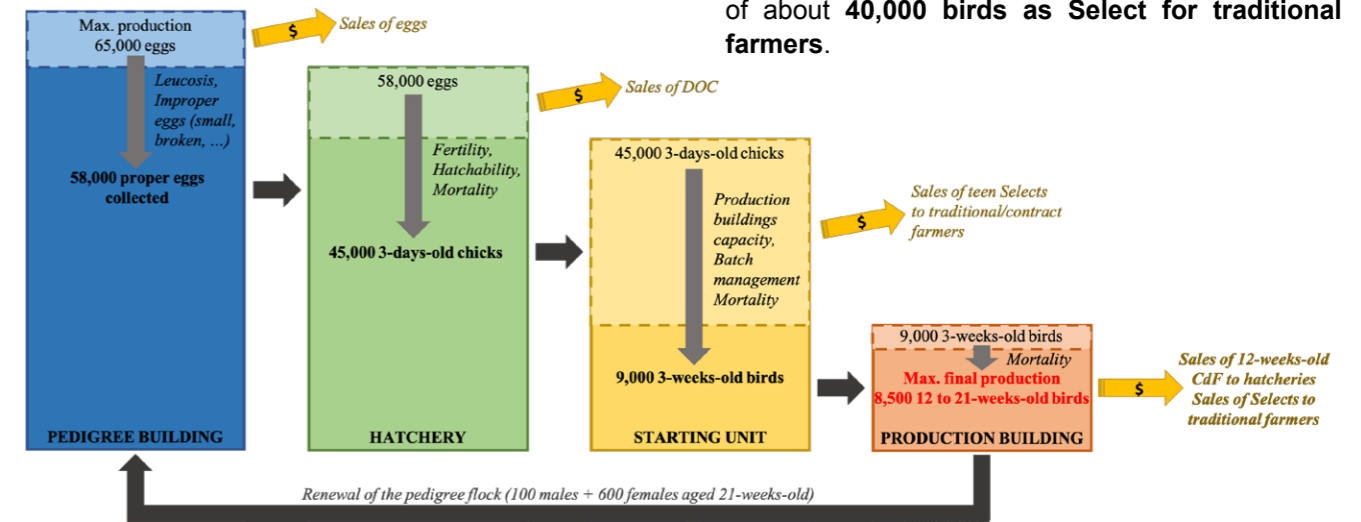


Figure 17: Maximal production of CdF in the Bousse avian selection center

iv. The marketing and economic opportunities

In the coming years in Burkina Faso, it is estimated that the demand from multiplication farms could reach 3,500 CdF per year (cf. III.4.i), which is less than the expected production of CdF by the Bousse avian selection center available for sale, estimated to be 4,150 per year.

To ensure its financial autonomy, it is critical for the Coq du Faso SARL not only to rely on the sales of CdF to multiplication farms for the production of PdF, but also to increase the value of all its 'by-products'. The company could make a major difference by better exploiting Select's improved genetic characteristics through a better marketing approach, especially concerning their immature-Select. Indeed, even if CdF remains their key product, valuing Select is a necessity: they represent their main revenue because of the high number of units sold and constitute a real opportunity for genetic improvement for traditional farmers.

To this end, it is really important to make traditional farmers understand that Select are not common chickens. Even though they are local birds, the selection process they result from have improved their performance, especially their growth rate, as they reach market weight 15% faster than traditional non-selected birds and, most importantly, females' laying rate, which is twice that of traditional birds.



Therefore, buying Select to slaughter them for meat is wasting a part of their value even if their better growth weight would allow to run more cycles per year. Traditional farmers would benefit more from buying a "family" of 1 male and 5 to 6 females, to also take advantage of females' improved laying rate.

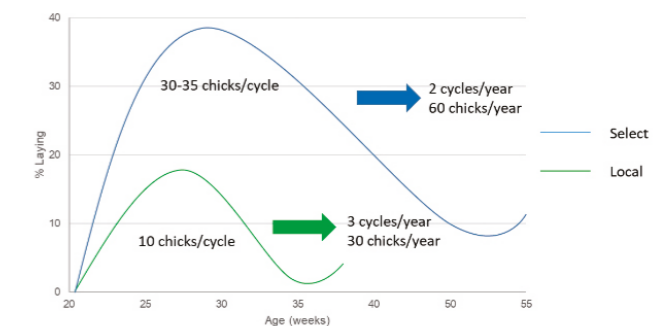


Figure 18: Maximal production of CdF in the Bousse avian selection center

This way, these **families could produce 2 or 3 more generations still expressing improved performances** compared to traditional birds thereby participating in the renewing of the flocks, and **the surplus could be sold as meat**. If the selection center reaches a production of 8,500 adult selected birds per year in the coming years, **more than 600 families of Select could be sold annually to traditional farmers** and positively impact their livelihoods.

3. The multiplication farms (hatcheries and breeding farms)

The second major players in the Poulet du Faso initiative after the selection center are the **hatcheries and breeding farms whose role is to produce large numbers of vaccinated PdF DOC**, by crossing CdF with imported SASSO hens. Once again, only the multiplication farms **able to provide the most optimal rearing conditions to their flock** (including batch management, biosecurity and other preventive measures, sanitary follow-up, egg collection, monitoring), can successfully fulfill this role.

The only option at the beginning of the initiative was to work with Fadima Farm, a privately-owned company created in 2003 with a hatchery funded in 2013 within the framework of an initiative in partnership with the SASSO company. Beyond its **experience in poultry reproduction**, Fadima Farm was also **well located**, in a small town near Koubri, which is in the main area of consumption of poultry meat in the country (27 km southeast of Ouagadougou) and which is about 75 km from the Boussé avian selection center. Fadima Farm has been the **major financial beneficiary** of the initiative, which funded the construction of three production buildings and the extension of its hatchery building.



At Fadima Farm, **CdF from the Boussé selection center are mated with SASSO SA51 hens** imported from France. The SASSO SA51 breed has been developed in France by SASSO to be **hardy, well-suited to free-range production and slower growing than modern broilers** to meet the demand for high-quality, tasty chickens amongst more discer-

ning **consumers who appreciate a more traditional product**. Their **laying performance is also far higher than local breeds** (average laying rate of 75% compared to an estimated 15% for local breeds, where 100% means one egg per hen per day).

Day-old SASSO chicks are imported from France and **reared alone in the starting unit** at Fadima Farm **until their 12th week**. At this time, 12-week-old CdF from the Boussé center are also **introduced** in the starting unit, being **separated from females** only by a fence for two weeks. This quarantine period, necessary to **limit disease outbreaks**, is also important to **reduce birds' stress** by giving them time to get accustomed to each other. Then, the fence is removed and SASSO and CdF spend about **a month familiarizing with each other** before the onset of production.



This starting phase (until sexual maturity) is particularly critical to ensure that the batch will start laying in the most optimal conditions. The whole **health program must be properly implemented** during this period to avoid handling hens during their laying phase and risking impacting their performance. Many rearing parameters must also be monitored, such as **mortality rate and feed conversion ratio**, as well as hens' **growth and weight** which will determine when they start laying. To track progress, the multiplication farms can compare these parameters to the **breed specifications provided by the DOC supplier (SASSO)**. If the flock is homogeneous and follows the standard curves, then the hens will start laying at the same time and express optimal performance.

Around their **20th week**, when hens are ready to start laying, males and females (ratio of 1 cockerel for 8 hens) **are all transferred together in a free-run production building** where females have access to laying nests. During this production phase, the challenge is to **maintain good rearing conditions** to limit sources of stress, for instance by controlling

social interaction between males and females to avoid pecking or fights, by following strict biosecurity measures to avoid disease outbreak, and by applying a good lighting program to ensure optimal productivity. To ensure that the **management practices allow hens to reach their optimal performances**,

or to act quickly if a problem occurs, the team must keep track of many parameters such as the mortality rate, the number of eggs laid per week and per hen, the average egg weight, the number of dirty eggs or eggs laid outside nests, and the temperature inside the building, amongst others.

Did you know?

At the beginning of the initiative, CdF and SASSO hens were reared separately, before being introduced in the production building when hens started laying. However, mortality and sanitary problems were observed, probably because of the high level of stress generated by:

- The beginning of the laying phase, which causes significant physiological and hormonal changes for hens.

- The transfer, from the starting unit to the production building for hens, and from the Boussé

avian selection center to Koubri for cockerels.

- The presence of newcomers in an unknown environment, since hens and cockerels first met just after the transfer in the production building.

- The difference of microbiota between the exotic SASSO, which come from France and are reared in Koubri, and the local CdF, which come from Boussé.

With the new system now in place in Fadima Farm, the mortality rate returned to normal.

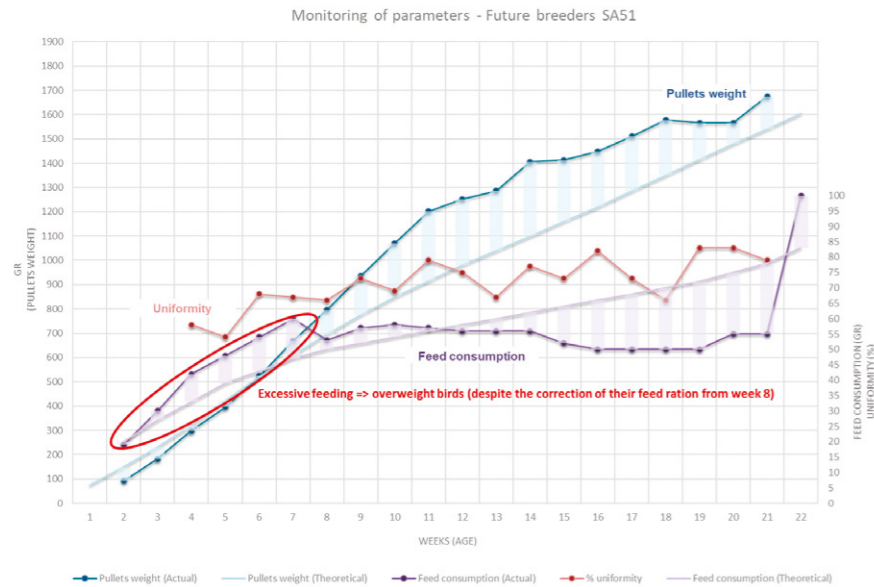
Under local rearing conditions, the SASSO hens' performance reaches an average of **5 eggs each per week** and they continue laying **for 50 weeks**. Eggs are collected twice a day, stored and transferred every week to a temperature-controlled incubator where they stay for 18 days. They are then transferred to the hatcher where they spend 3 more days and where the eggs are tested by candling to remove the non-fertilized ones. At the hatchery, **PdF DOC are vaccinated** with Vectormune® ND to provide **lifelong protection against Newcastle disease** and Cevac® Vitabron 120 L **against infectious bronchitis**.



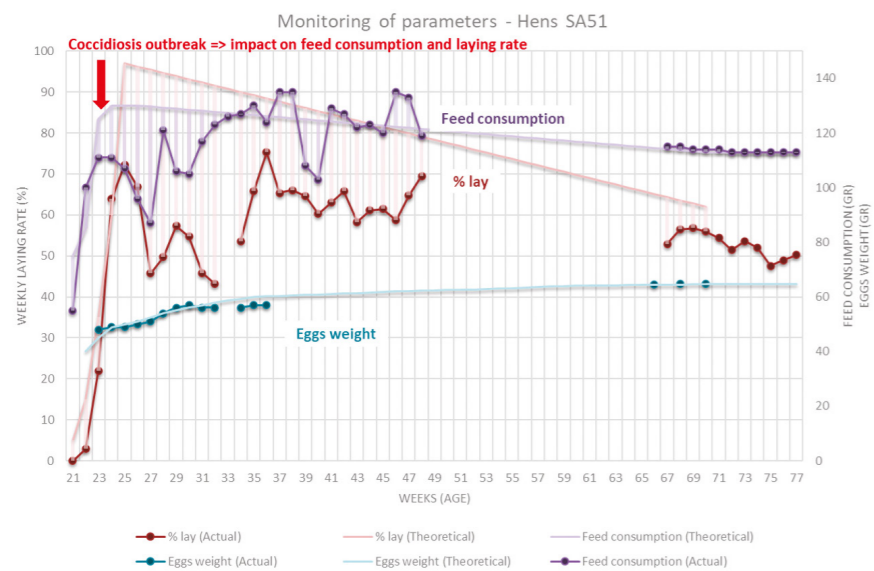
As for the selection center, running a multiplication farm requires a **very high level of technical skill and precision** and the implementation of **strict preventive measures**. The main advantage that multiplication farms have over the selection center is that the optimal performance of SASSO hens is known and detailed in the technical specifications provided by SASSO. Their major goal is therefore **to stay as close as possible to these standards**.

However, reaching and sticking to the production standards is challenging, especially in the context of the initiative, and some fluctuations may be observed, as presented in the figure 19 (no data for the 2nd graph during the 33rd and between the 49th and the 66th week).





In the first graph, hens were provided with too much feed, and despite the reduction of their feed ration from the 8th week, they were still overweight when they start laying, which negatively impacted their performance afterwards. The second graph highlights the consequences of introducing a disease in a breeding farm on hens' performances after they start laying. **There is an inertia which makes it difficult, perhaps impossible, to get back to optimal productivity when such a problem occurs.**



These kinds of variations are **more common for the earlier batches**, as the team needed time to be properly trained and to become fully effective. The **quality of inputs**, especially feed, also plays an important role in hens' performances. Finally, there are also **external factors** that may cause drops in production, such as the frequent power outages in some areas, or the breakdown of the equipment (the incubator for instance) which can take time to fix.

Yet, very encouraging results were obtained in some multiplication farms after a few batches, highlighting that it is **possible to reach optimal rearing conditions with the appropriate support**, as presented in figure 20, where results generally follow standard breed curves.

After hatching, **vaccinated PdF DOC are sold to commercial farmers**, either **directly** if they come to the hatchery, or **through Anipole Faso** which markets them across the country (cf. III.5.iii).

At 70 weeks of age, SASSO hens and CdF cockerels are culled when a new batch of hens and cockerels have been reared and are ready to start breeding.

Figure 19: Fall in production due to management issues

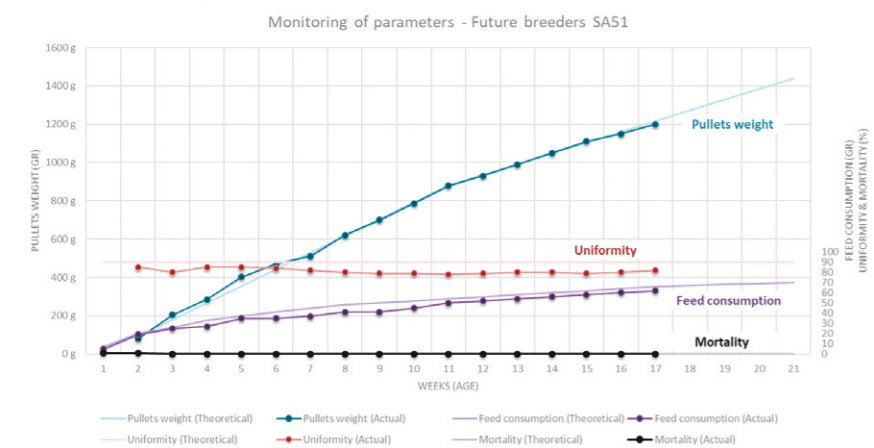


Figure 20: Curves of a batch of SASSO reaching their optimal performances

The **current demand for PdF far outweighs the production** by Fadima Farm, which represents less than 4% of the overall poultry meat production of Burkina Faso, estimated at 35 to 45 million per year. Therefore, the initiative has extended the production of PdF DOC to **five other breeding farms and hatcheries** in Burkina Faso:

- **CAB** based in Bobo Dioulasso, which received a first batch of 1,500 SASSO breeder females in February 2020 and a subsequent batch of 1,500 in November 2020 and started producing PdF DOC in August 2020.
- **SOBUPRA**, which received a batch of 1,500 female breeders in October 2020 and started producing PdF DOC in April 2021.

- **KOUNA** hatchery, which received a batch of 1,500 SASSO hens in February 2021 for a PdF production start in August 2021.

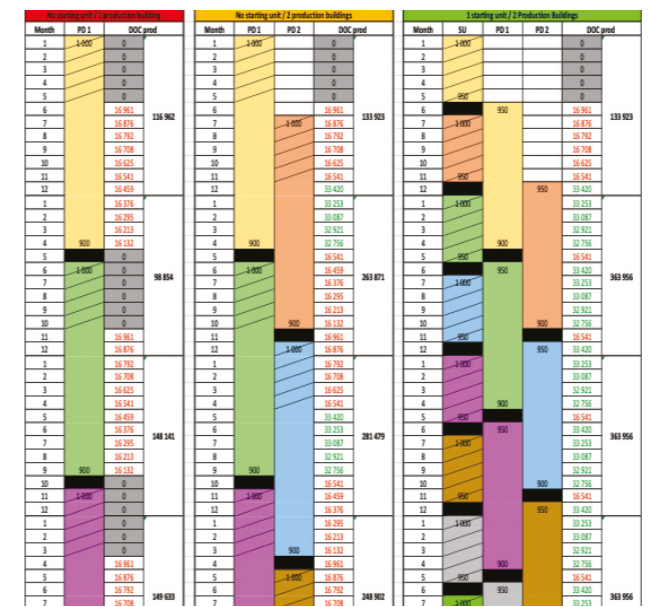
- **TAPSOBA** hatchery, which received a batch of 1,500 SASSO hens in July 2021 for a PdF production start in January 2022.

- **SACOFAB** hatchery, which will be built within the framework of the Alliance Goût du Faso initiative (with the Coq du Faso SARL) and should start producing in 2022.

Did you know?

The difference in production capacity between the multiplication farms is due to the size of the production building and the rearing model:

- A farm with one production building (red model): pullet chicks are introduced into the building and start laying after 20 weeks (5 months). A 1-month downtime period follows the end of production -> No DOC production during 6 months per year.



- A farm with 2 production buildings (orange model): pullet chicks are introduced into the building and start laying after 20 weeks (5 months). A 1-month downtime period follows the end of production. In parallel, the same model is applied in the second building -> At least one batch producing DOC all year long. 2 batches in production for 5 months every 12 months.

- A farm with 2 production buildings and a starting unit (green model): pullet chicks are introduced into the starting unit where they stay for 20 weeks (5 months) before being transferred to the production building when they start laying. A 1-month downtime period of the starting unit follows their transfer, and a new batch of pullet chicks is introduced while the first batch is in production. This new batch will then be transferred to the 2nd production building after 20 weeks. 1 one-month downtime period is applied between 2 consecutive batches in the production buildings -> 2 batches in production all year long, except every 6 months when one of the production buildings is in downtime period (meanwhile, the other one is still producing DOC). The production is continuous and just fluctuates according to the natural performances of the flock.

4. Increasing production of PdF in Burkina Faso

i. PdF production capacity

The graph below shows the progress in the production of PdF DOC since 2018, and projections until 2025. These estimates are based on an average production of 15 to 18 PdF DOC per SASSO hen

per month, which is achievable in the context of the initiative, despite some seasonal fluctuations that might occur.

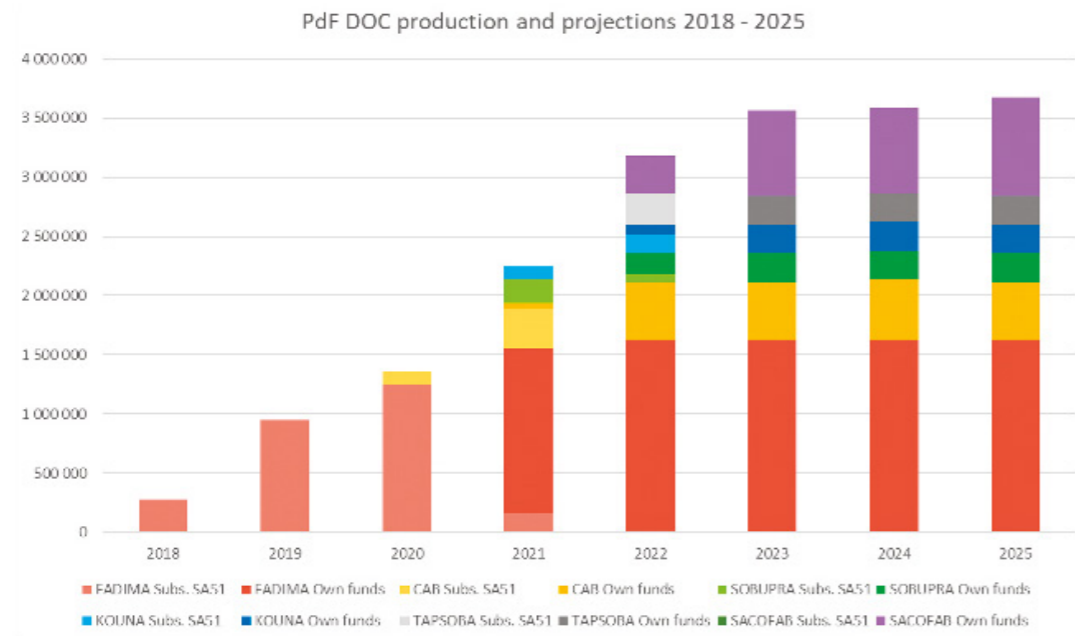


Figure 21: Projected PdF production in Burkina Faso



Initially, Fadima Farm was the only producer of PdF, producing from 250,000 to 1,250,000 PdF a year. It was technically supported by the initiative ('Subs' in the graph), more specifically in terms of genetic and sanitary management, to produce its first batches of PdF. In 2020-2021, four additional multiplication farms were also supported by the initiative to begin their own production of PdF. From the first batch of PdF DOC produced in June 2018 to the end of the initiative in June 2021 (3 years), **more than 3.5 million PdF DOC were produced**. By 2023-2025, the production of PdF **could reach more than 3.5 million PdF per year**, with Fadima farm representing about 45% of the market share if there are no significant changes in the number of breeding farms or hatcheries involved or their housing capacity.

Considering that the total production of poultry meat in Burkina Faso was estimated at 35 to 45 million chickens in 2018 and that the demand for poultry meat is still growing, the **PdF production is not expected to disturb the market** as it should not exceed 10% of the total production, even if each partner reaches the projections. Moreover, half of the PdF produced is sold to **small-scale commercial producers who already use improved breeds**: PdF will not be added to their production but will replace a part of their flock. It will not therefore compete with **traditional farmers' production, which was limited by the lack of DOC** in the country. Finally, there should not be too much competition between the different breeding farms producing PdF in the country, since they have **relatively distinct areas of operation**, as detailed in the map below:

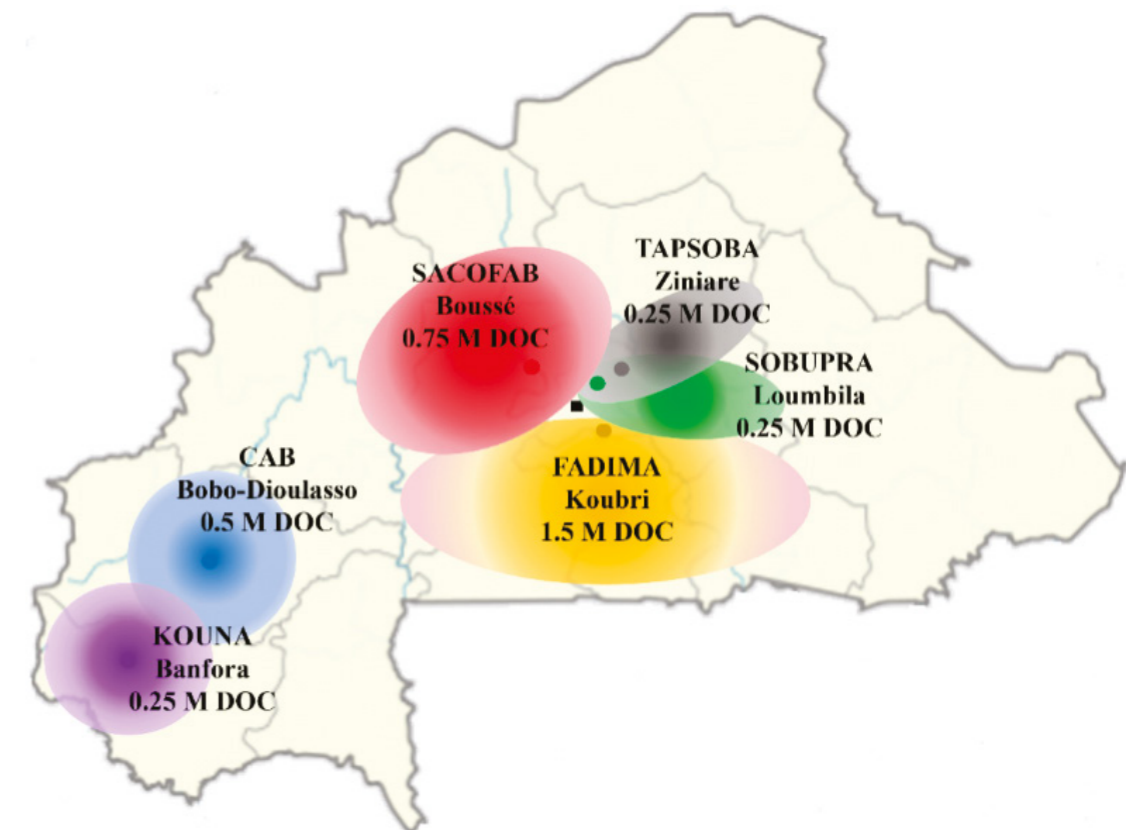


Figure 22: Maximum projected PdF DOC production per hatchery and their areas of operation

ii. The brand “Poulet du Faso”

Crossing Coq du Faso with SASSO hens produces crossbred chicks that look like traditional Burkinabe breeds. This is because feather color is a recessive trait in the SASSO hens: the feather colors seen in the crossbred chicks are due to those inherited from the CdF, which in turn have been bred from local Burkinabe chickens. In selecting the CdF, care has been taken to maintain the diversity of feather colors found in backyard flocks. The PdF chicks, however, grow much faster and more uniformly than the traditional local birds: they reach market size of 1.1 kg

live weight in 75 to 90 days, compared to 135 to 180 days for traditional local birds according to rearing methods.

PdF are for consumption and not for reproduction: they produce meaty carcasses which still have the taste and texture characteristics that local consumers demand in their favorite grilled ‘poulet bicyclette’ dishes. Their hardy genetics make them ideal candidates for low input or small-scale commercial rearing systems.



3-weeks-old PdF

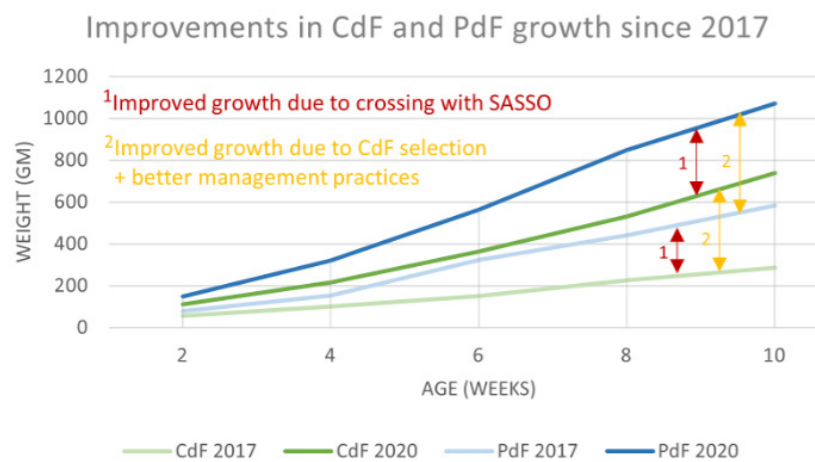


Figure 23: PdF growth compared to CdF

The first batch of PdF were produced at the avian selection center in 2017 and their **growth rate was found to be higher than CdF** (i.e. local males selected in villages) reared under exactly the same conditions, highlighting the **genetic benefit inherited from the SASSO** female with regards to growth performance. The comparison was repeated in 2020 revealing the capacity for PdF to **reach more than 1 kg weight in 10 weeks**. This improvement is attributable to the **selection done on the local male line and improvements in flock management**.

When the first batch of PdF produced at the Bousse selection center became ready for marketing in November 2017, a blind tasting was arranged during Festigrill, an annual festival in Ouagadougou devoted to ‘poulet bicyclette’. The existence of Festigrill is a good indication of how seriously Burkina Faso residents take their grilled chicken: the Ministry of Animal Resources estimate that an average of 30,000 grilled chickens are consumed daily in Ouagadougou alone. In the blind tasting, PdF was compared by tasters to traditional local chicken. **The conclusion was that the taste was similar, but the PdF birds had proportionally more meat to skin and bone.**



Promoting PdF in Burkina Faso

In 2018, a mother-unit owner also received **first prize** for being the best producer of improved local breed at the **national Burkina agricultural show (SABEL)** organized by the Ministry of Livestock.



5. The distribution network

The Poulet du Faso initiative aims to create a network of mutually dependent and interlinked viable and sustainable businesses that will continue to operate long after the initiative comes to an end.

Ceva's experience in the Burkina Faso poultry sector indicated that there is a **low level of technical competences amongst small-scale commercial and traditional farmers** who also have **poor access to veterinary and feed services and inputs**. To reduce the level of risk for farmers wishing to produce PdF, the initiative team developed a **segmented model**. This was based on models successfully implemented at scale in Ethiopia by EthioChicken and in Tanzania by Silverlands, both of which companies sell millions of day-old-chicks a month.



i. Segmented production model: the mother-units (MU) and peri-urban farms (PU)

This model entails PdF chicks being reared from day-old to 42 days of age at 'mother units' before the 'teen-chicks' are sold on to 'finishers' who rear the birds through to slaughter weight.



The idea is that the operators of the **mother-units are carefully selected from entrepreneurial farmers who can achieve a higher level of management** and have **better access to services**, thereby reducing risks of rearing the chicks during

Did you know?

The idea of the initiative came from the Poulet du Faso initiative coordinator whose grandmother practiced traditional poultry farming in France 50 years ago. In the 1970s, the sector was still at an early stage of development and the productivity in traditional farms was low, with high mortality rates and low DOC production. One day, she went to the market and bought some 'teen-chicks'. Afterwards, she decided to stop breeding her own chicks as she realized that she suffered less losses and that she improved her production by buying teen-chicks that were raised in carefully controlled environments for their first 42 days of life.

this critical stage of their lives when they are most vulnerable. Also, during these first 42 days, the vaccinations not already administered at the hatchery are given in addition to other preventive treatments. It means that **the chicks being supplied to the finisher farmers are more robust and immune to the most common infectious diseases**. Because of their hardy genetics, they can then be reared in traditional/scavenging systems. They are a good option for women and traditional farmers who cannot invest in buildings for batch rearing.

To share the benefits of rearing PdF more widely, the plan was for **50% of the DOC to be supplied to mother-units located in villages (MU)**, **40% to small-scale commercial farms in peri-urban areas (PU)** and the remaining 10% to be available for large-scale commercial poultry enterprises or for export to neighboring countries.

	Peri-urban farms (PU)	Mother-units (MU)	Finishers farms (FF)
Farming system	Small-scale commercial	Small-scale commercial	Traditional
Farming model	Batch rearing 500 to 3,000 birds	Batch rearing 500 birds	Free ranging 5 to 100 birds
Location	Peri-urban areas	Rural areas	Rural areas
Financial capacity	High	Medium	Low
Access to services (feed, sanitary, other...)	Good	Good	Low
Segmentation	From DOC to market	From DOC to 42 days-old	From 42 days to market
Vaccination and health treatments required	Yes	Yes	Limited

Figure 24: Main characteristics of the distribution network stakeholders

Did you know?

Mother-units (MU) are run by small independent entrepreneurs located in the 10 regions covered by the initiative (within a 150 km radius of Ouagadougou). They have been selected by the initiative for their poultry farming experience, their willingness to start such production and their financial and infrastructure capacity (existing building, cash for feed purchase). They have limited technical background. The MUs rear batches of 500 birds until 6 weeks of age (after completing vaccination and preventive treatments) and then sell them to traditional farmers.

Small-scale commercial farmers are called Peri-Urban (PU) since they are mostly located around the main cities for easier access to the live bird market. Their average capacity is 1,000 birds although some have up to 3,000. They usually run other businesses and their technical level is limited, but they follow a feeding program for their batches, which allows the optimization of growth performances in order to reach market weight in a limited amount of time.

To be supplied with their first batch of PdF DOC, the operators of the MU were required to sign a contract and agree to a set of conditions including that they must:

- Have a suitable building to rear at least 500 DOC to 4 weeks of age (after that the chicks can venture outside).
- Have 150,000 CFA (USD 260¹) available to cover cost of feed for first batch of chicks.
- Undertake vaccinations and treatments prescribed by initiative.
- Apply biosecurity and follow production guidelines and practices advocated by the initiative.
- Record bodyweight weekly and mortality as required by the initiative.
- Sell the PdF at 42 days of age (6 weeks) at the agreed price of 1,500 CFA (USD 2.60).
- Not retain any PdF for breeding.
- Purchase the special PdF tags (see chapter III.6.ii) and attach these to the wings of all birds sold.

¹ Exchange rate correct as of November 2018



To ensure that MU and PU were not only operated by better-off farmers, the Poulet du Faso initiative provided some subsidies. For the MU, the first batch of 500 chicks was provided free-of-charge and the vaccines were provided for the first and second batches. For PU, the first batch of 1,000-2,000 chicks and the vaccines for the first batch only were provided free-of-charge. The idea was that this would allow relatively resource-poor operators to generate the cash needed to reinvest in subsequent batches without having to access credit, which can be hard to obtain in Burkina Faso.

The MU operators are expected to follow a detailed schedule during the 42-day rearing period; the details are laid out in the formal contract which they are required to sign. This includes having vaccines given by local community-based vaccinators, known as Volunteer Village Vaccinators (VJV), at specified ages, administering preventive treatments (anticoccidials, nutritional supplements, dewormers) as well as changing the disinfectant footbath kept at the entrance to the building on a weekly basis. This package is designed to ensure the PdF are maintained in good health and that effective biosecurity is achieved. In addition, they are required to record the weight of the birds each week and keep records of all expenditure on feed, labor and any treatments, and make these available to the initiative manager. PU are expected to follow the same recommendations extended to the whole production cycle, that is until PdF reach their market weight, which now takes around 75 days if the rearing conditions are good.

After each batch is sold by a PU for slaughter or by a MU to a FF, a thorough cleaning and disinfecting operation, which takes at least 2 weeks, is undergone to avoid contamination of the next batch.

ii. Finisher farms (FF)

When the birds have been reared at the MU, they are then sold as 6-week-old teen-chicks to finisher farms (FF) in small quantities of 5 to 100 birds. Finishers are village-based traditional farmers practicing free-range production, having limited technical background and low access to inputs and services.

This segmented production system is particularly attractive to them as they buy birds which have spent the most critical phase of their cycle, when they are most vulnerable and need the highest level of care, in farms able to provide good sanitary and rearing conditions, which ensure better growth of the chickens at the FF and a lower mortality rate.

Usually, PdF reared in FF reach their market weight of 1.1 kg when they are about 13 weeks-old, after having spent 42 days at the MU and 50 days at the FF. This is an additional 15 days compared to PdF reared in PU, highlighting the impact of the farming system (quality of inputs especially feed, sanitary management, housing conditions) on the expression of the improved genetic characteristics of PdF.



iii. Role of technical-commercial agents (TC)

The technical-commercial agents (TC) are important components of the value chain – indeed they can be regarded as the oil that keeps the chain moving. Selected on the basis of a marketing analysis, they started to operate in eight different zones within Burkina Faso, each of which is located within 150 kilometers of Ouagadougou. For each zone, a TC was recruited and received training to help farmers fulfil their important role.



In 2019, TC shifted from project employees to a business mode when the limited liability company called Anipole Faso was created. To plan their activities, TC rely on a database which correlates data from hatcheries on the availability of DOC with the needs at the farmers' level. Each of the ten TC now working for Anipole Faso as service suppliers is responsible for a specific region of Burkina Faso where they transport and deliver DOC to customers, while providing them with services (vaccination), technical support and selling them inputs. Anipole Faso also opened small shops branded 'Anipole shops', where clients can come and place orders for PdF DOC (from the Fadima Farm and the other multiplication farms), Select males and females (from the Coq du Faso SARL) and buy quality feed and inputs (vaccines, equipment). The business model of TC rely on the commissions they charge on the tags (see chapter III.6.ii), and the products and services they sell to farmers.

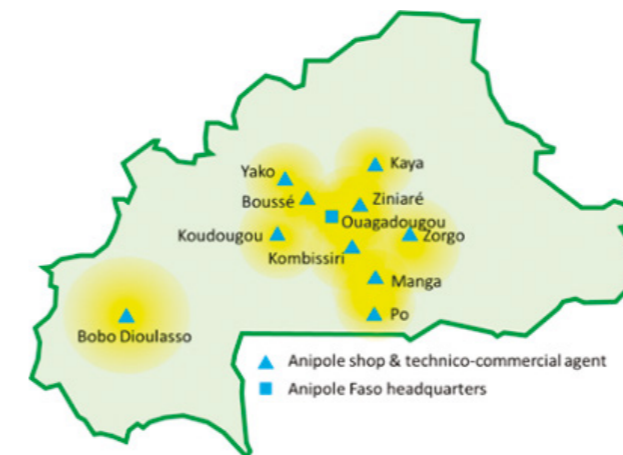


Figure 25: Location of Anipole shops in Burkina Faso



To be able to provide this range of services, TC received training on poultry health and management so they can give advice to farmers on ways to optimize their productivity: management, monitoring of performance, feed, husbandry and disease prevention as part of Anipole's customer service. They also undertook special training to become official vaccinators (VJV) so as to comply with the law in Burkina Faso enabling them to undertake the complementary farm vaccinations for their customers. They also signed agreement with some local suppliers to enable them to have access to quality inputs to offer to the farmers.

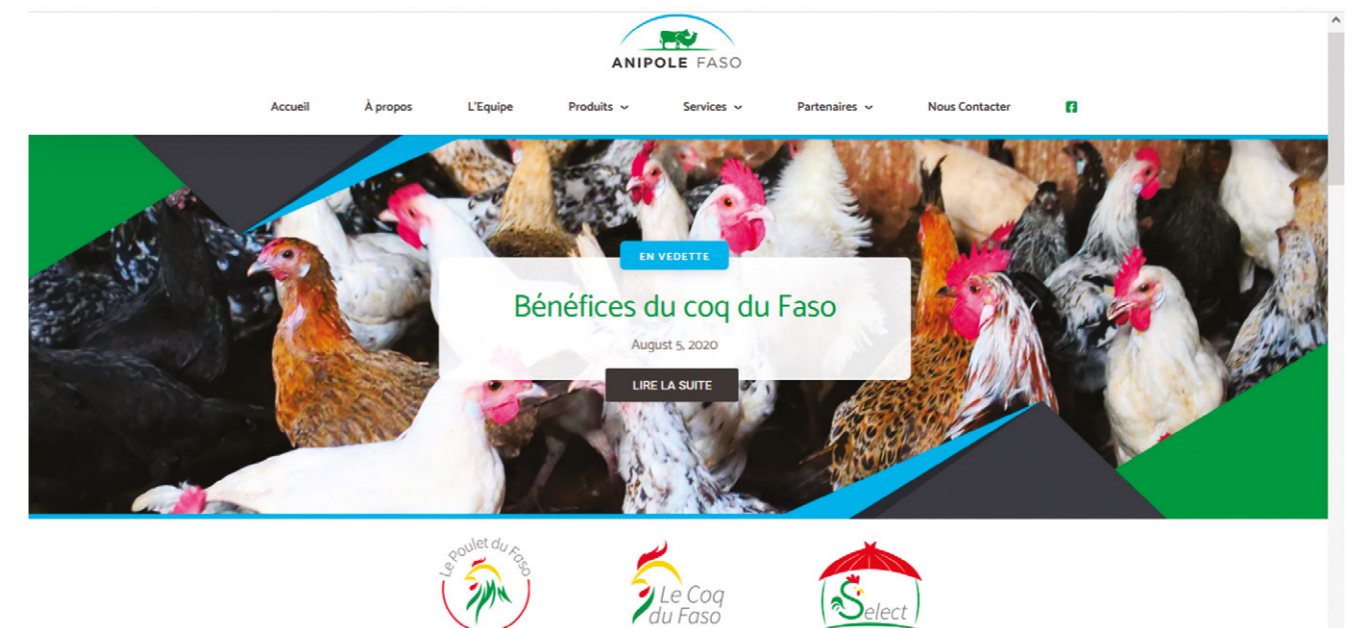


Figure 29: Anipole Faso's website

6. Initiative achievements in developing a sustainable distribution network

i. The impacts of farming systems on PdF performances

At the beginning of the initiative in 2017, a field test was conducted on 29 farms to compare the impacts of the farming systems on bird growth. All birds were cared for by a dedicated and trained team of VVV (vaccinators) and received a comprehensive preventive health program. An average of 30 birds per farm were weighed weekly for a period of 20 weeks. As presented in *Figure 26*, the first generation of PdF showed better growth rates than local traditional birds reared in similar conditions. Furthermore, these performances seemed directly related to the type of farming system as the average weight of PdF recorded in PU was significantly higher than the weight recorded at the same age in traditional farms.

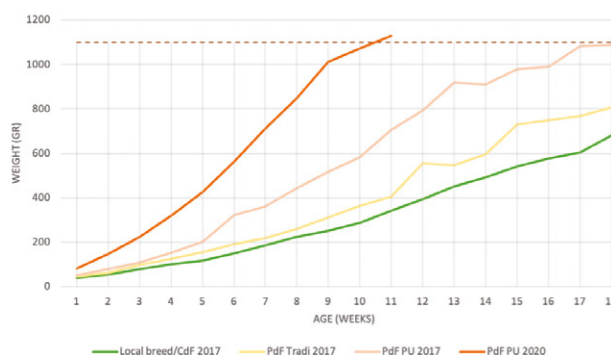


Figure 26: Growth of PdF reared in different farming systems compared to local birds

In 2017, PdF raised in PU farms reached the market size at 18 weeks at which age they weighed only 800 g in the traditional system and did not reach the market size until 25 weeks of age. With CdF selection, PdF now reach market size in their 10th week in PU farms (PdF PU 2020). The graph above underlines that having access to selected breeds is one way to ensure better performance but is not sufficient if farmers cannot provide adequate feeding and management to their flock, especially during DOC's first weeks. To enable crossbreeds to fully express their genetic potential, it is therefore critical to improve also farmers' capacity in poultry management. Creating mother-units is a way to meet this challenge by concentrating efforts during the first weeks of rearing. Another is to develop a network of technical-commercial agents able to support farmers technically and also to provide them with quality inputs.

Similar observations can be made for other parameters such as the feed conversion ratio (FCR), which

estimates the capacity of birds to convert food into meat, and also the mortality rate.

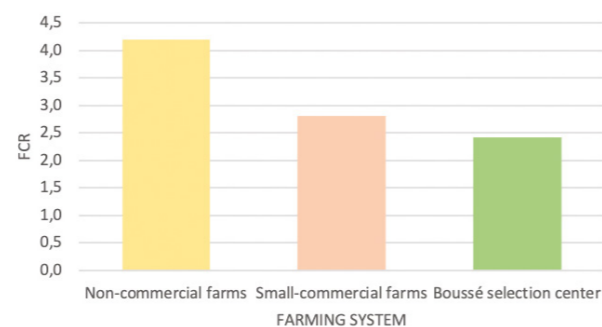


Figure 27 Comparison of the feed conversion ratio (10 weeks) under different farming systems

In ideal rearing conditions, as in the Bousse avian selection center, the CdF FCR is between 2 and 2.5 at 10 weeks; that means for very 1kg of bodyweight gained, the birds have on average consumed 2-2.5 kg feed. For PdF, field results have also shown that at farm level and with good management, birds could reach a FCR of less than 3 at 10 weeks, when they are ready for being sold for slaughter. However, in farms lacking access to good quality feed or where there are management issues, the FCR can be over 4. For those farms, PdF need more food and more time to reach the market weight, representing higher costs for farmers, for whom feed represents the main cost item. This will impact severely on profitability.

PdF are protected for life against the Newcastle disease, thanks to vaccination at the hatchery with Vectormune® ND and are also protected against additional viral diseases if they are purchased from mother-units (see III.5.i). When mortalities are observed at the farm level, it is therefore often due to management issues, such as pecking, that may stress birds or lead to the development of bacterial infections. The average mortality rate was initially around 10% at both the PU and MU/FF level (most of the mortalities occurred during the first days of life of the chicks) and decreased to 7 and 5%, respectively, at the end of the initiative, reflecting the positive impacts of the support provided by TC.

About a third of the PdF produced during the program were sold by Anipole Faso through their network of TC who canvassed new customers. The remaining DOC were sold directly by Fadima Farm to peri-urban farmers with whom they used to work.

ii. The traceability of the PdF along the value chain

Key to the success of the 'Poulet du Faso' brand is its traceability throughout the value chain. The tool that enables this is the unique PdF tag. The same approach has been successfully used in France to distinguish premium, branded free-range chicken - Label Rouge - from other birds. The Label Rouge brand, although twice the price of conventional poultry, now accounts for a third of the French market. It uses wing tags and labels on poultry products to ensure its traceability right back to grandparent flocks, and also uses third party certification organizations to ensure the prescribed set of standards for production, which covers all aspects including rearing, transporting, slaughter and sales, are strictly followed.



Picture of a PdF tagged

The PdF tags are sold by the Coq du Faso SARL through Anipole Faso and represent an important component of the center's income, thereby helping it to ensure its long-term viability. The tags are part of the package delivered to the mother-units and peri-urban farms by Anipole Faso TC who also keep a share of the tag's price. The mother-unit and peri-urban operators attach the metal wing tags, which feature the 'Poulet du Faso' logo and a unique chick identification number, to the flap of skin where the wing attaches to the bird's body. PdF can then be identified all along the value chain. As brand awareness increases, this will give value chain stakeholders the reassurance that they are buying the real thing: for the finishers it is a guarantee that the birds have been vaccinated against the major diseases; for the grillers and their customers, it is a guarantee that the grilled chicken will be tasty and meaty. All PdF sold through Anipole Faso are tagged.

iii. Employments and margins generated along the value chain

The PdF initiative has developed a new value chain that has created some direct employment, especially at the selection center where there are: a director, five specialized workers (2 financed by the SAPPISA initiative) a security guard and an accountant. The creation of Anipole Faso also generated employment: the team is composed of a general manager, a marketing manager, a technical manager, an account manager and 10 technical-commercial agents. More than one tenth of the total budget of the initiative was directly invested in Burkina Faso for financing the human resources dedicated to the initiative activities. Other local service providers also directly or indirectly benefited from the initiative support, such as K&K, a local company which installed solar panels and water supply in the selection center, ECHLO which took care of the masonry, the carpenter who created the trap nest boxes, the inputs providers and others. As an example, if production reaches 3.5 million PdF DOC per year as expected, feed providers could generate an additional profit of USD 150,000 to 200,000 a year.

It is estimated that for every PdF sold in the market, the net margin (profit) generated throughout the whole value chain is around USD 1.50. However, the distribution of this margin is not even among the value chain stakeholders. The ones investing the most in this business are the selection center and the breeding farms and hatcheries, which must maintain high standards of biosecurity and management to ensure their production. They generate the lowest margins per unit sold but, thanks to the high volume of production, in total the breeding farms and hatcheries are amongst the main beneficiaries from the total margin generated throughout the value chain (15-25%). In contrast, however, the selection center only receives around 1% of the total profit: this is partly because they sells relatively few CdF compared to the total production of PdF (about 3,500 CdF and 3.5 million PdF DOC). These two stakeholders are also the most vulnerable to risks: a breach in biosecurity, for example, could heavily impact their results and the return on their sizeable investments.

During the initiative, Fadima Farm and CAB sold about 900,000 PdF DOC through Anipole Faso out of a total production of 3.5 million DOC. The network of technical-commercial agents sold about half of these vaccinated PdF to mother-units in villages (45%), while a little more than half went to peri-urban farmers (55%). The business model of TC working for Anipole Faso relies financially on the commis-

sions they charge on DOC sales, the tags they sell to mother-units and peri-urban farms for traceability, and mostly on the complementary services they offer to farmers, such as providing good-quality feed, selling animal health products or administering vaccines to the birds. They are estimated to benefit from 4% of the total margin generated by sales of Pdf, although they only sell about a third of the total

number of Pdf DOC produced: their share of the margin may increase to 10% if they achieve a higher market share.

Finally, the main beneficiaries of this value chain are farmers, including the mother units, peri-urban units and finishing farms, who together receive 70-80% of the total profit generated along the Pdf value chain.

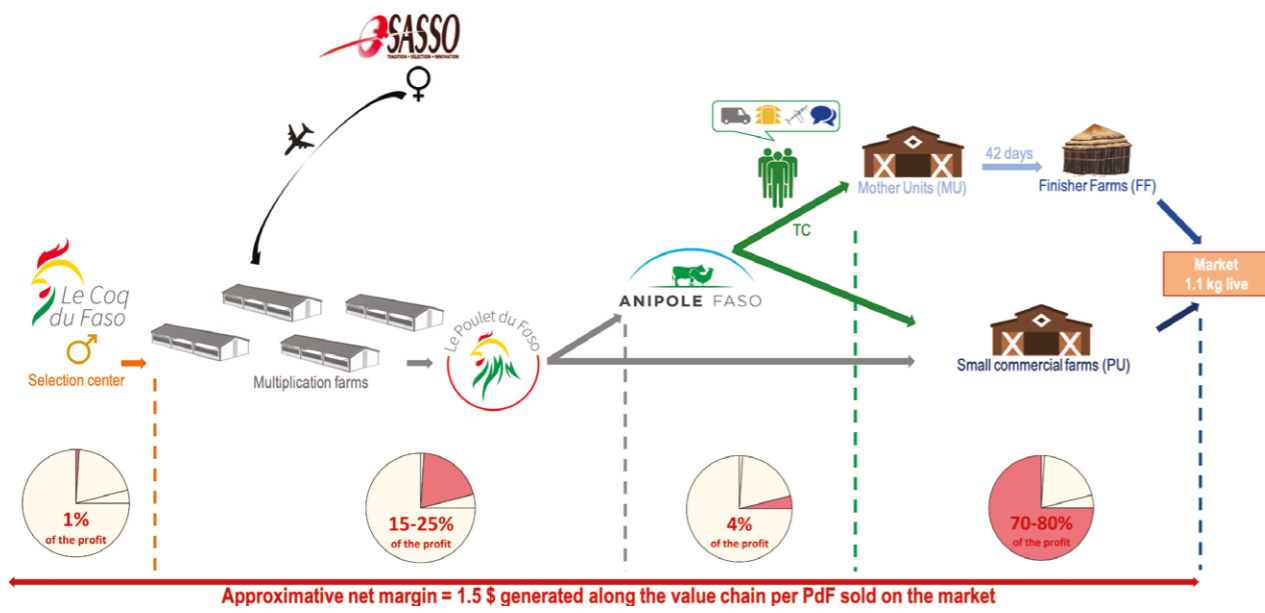
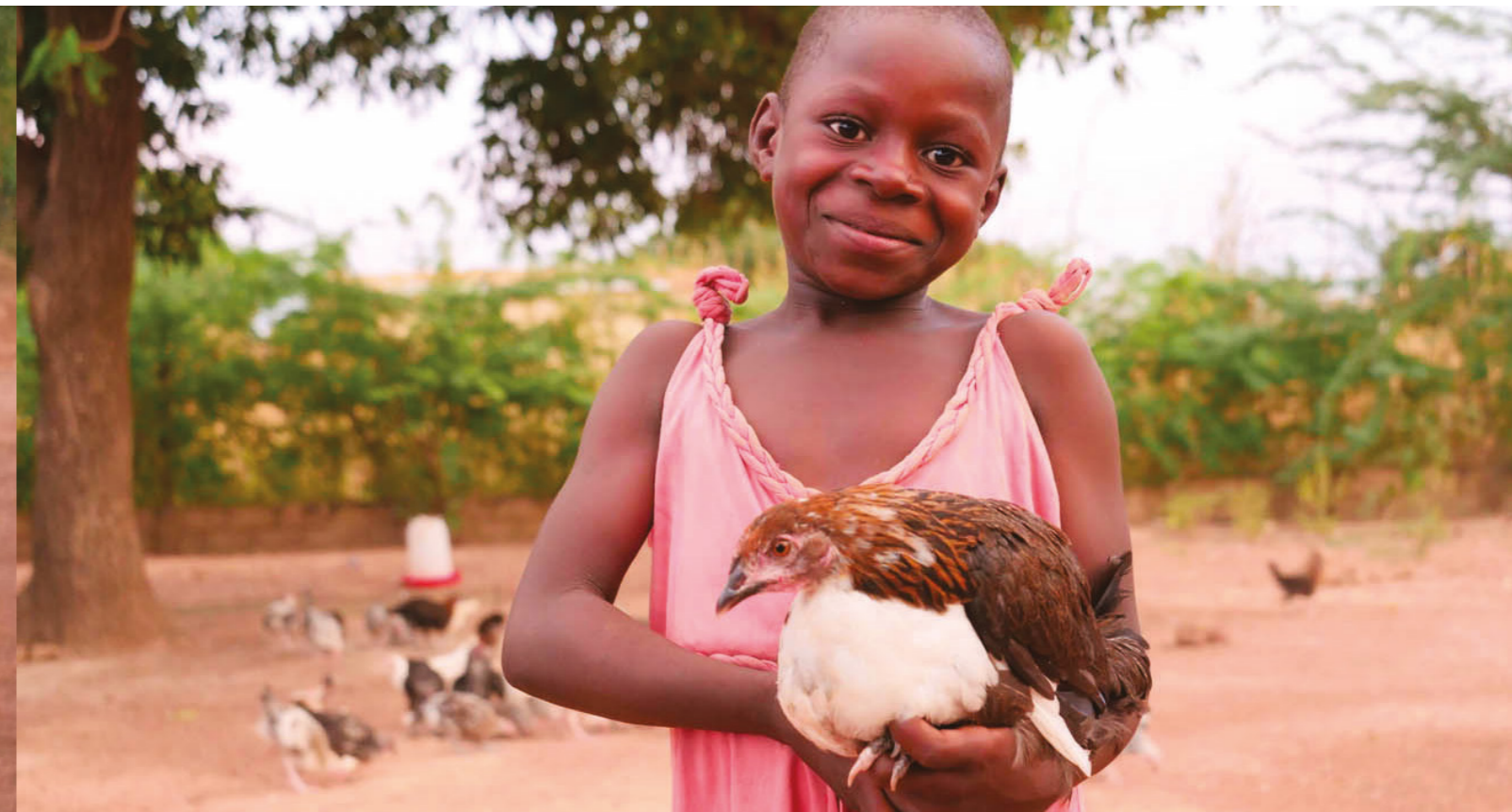


Figure 28: Distribution of the margin along the value chain



IV. Key success factors



The initiative's delivery team identified four key factors which they believe contributed to the success of the initiative. These were:

1. Adopt a business approach from the onset of the initiative

One of the most important lessons learnt during the Poulet du Faso initiative is that such a program **should be considered from the outset as a start-up company**, with a business-model aiming to reach financial autonomy as soon as possible to ensure its sustainability.

The first step to being in this business mindset is to use, from the beginning of the initiative, **the appropriate wording**: there are no funders, there are investors; there is no initiative to implement, there is a business to run; there are no ambassadors, there are technical-commercial agents.

Investing in an innovative business is highly risky in many developing countries, as entrepreneurs often have limited access to costly credit and often do not benefit from external financial support to mitigate those risks. Moreover, some strategies which could de-risk a new business, such as being able to make forecasts to anticipate orders or having clients who pay in advance, is not always possible or a locally accepted practice. This **risky environment encour-**

rages some entrepreneurs to adopt a 'passive' approach, waiting for what appears to be a low-risk/high-return opportunity in which to invest and then taking the profit and moving on.

This approach is not well suited to the Poulet du Faso initiative, where new products are being developed through a new value chain, based on 'just in time' production. For this kind of businesses to be successful, **entrepreneurs must adopt a dynamic and proactive approach**: invest in a comprehensive range of products/services, communicate the benefits of their offer, secure access to reliable partners, suppliers and clients, and optimize their costs.

Funders should act more like investors than donors in this process, de-risking the initial major investments that must be made but asking for results in return. In this way, entrepreneurs are encouraged to adopt a proactive mindset to reach their objectives and develop a sustainable business-model.

It is also important that entrepreneurs make sure that **their team is in the correct frame of mind**. Understanding the importance of making money for the sustainability of the business is not sufficient. **People should be convinced that for their business to be successful, there is no other option than generating profit by taking action.** This process is often neglected when starting a new business as it is

complex to deal with: it requires **effectively supporting people in shifting the paradigm**, from having an opportunistic approach to adopting a more proactive one, especially in a context where people are not accustomed to such an approach. Mentoring them in economic management can help them understand this concept, although success depends mostly on the quality and attitude of the people involved.

Finally, it is also crucial to implement a **consistent marketing strategy** to reach the business plan targets, and for the **team to be technically and commercially fully operational** to be convincing and effective in the field.

2. Secure the feed supply

In poultry farming, production costs are generally allocated as follows: 65% for feed, 20% for genetics (DOC), 5% for **sanitary control** and 10% for other expenses, such as human resources, heating, water and lighting. As the markets related to these three main items of expenditure are often **fluctuating and of uncertain quality**, it is therefore highly recommended to integrate them in the business-model from the start, by **establishing privileged partnerships with strategic providers**.

On this topic, finding feed of sufficient quality in sufficient quantity is particularly difficult in many de-

veloping countries. Yet, without adequate feed, the genetic potential of the breeds improved through selection or crossing cannot be fully expressed, impacting both the laying and growth capacity of the birds (*cf. Figure 26*) and having significant consequences all along the value chain.

Therefore, sourcing feed providers (or other critical suppliers) and signing agreements with them to **secure the supply is vital** to ensure the success of poultry enterprises. This applies to every stakeholder of the Poulet du Faso value chain. It may also help get preferential prices, enabling cost **optimization and reducing vulnerability to product shortages**, and benefitting from **better-quality products and services**. On this last point, it is possible, for example, to assist feed suppliers in the formulation of their product to ensure it corresponds to what is needed, even in case of shortages of some components.

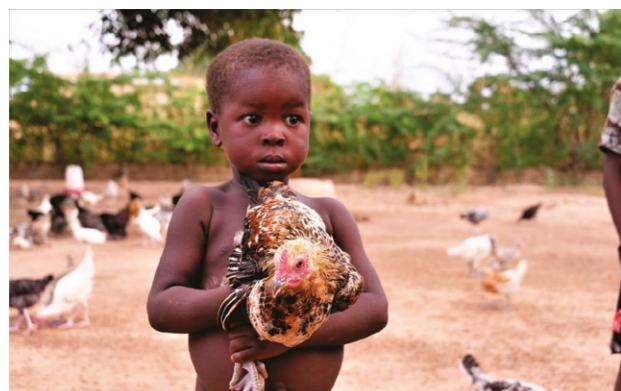
3. Find cooperative business partners with complementary and shared objectives

As for any initiative, **being able to count on reliable partners** is a critical, especially for business initiatives which can entirely collapse if one party fails. However, establishing successful partnerships is very complex since it involves the human factor.

To mitigate risks, the first step is to comprehensively explain the business model and its objectives to each partner. They should all understand the strategy and be satisfied with their reward, i.e. the share of the overall margin, to contribute towards achieving the defined goals and agree on their specific roles. For a fruitful collaboration, it is fundamental that partners commit to communicate regularly, to plan and anticipate their activities and to rapidly ask for assistance when needed. These rules are vital for effective partnership working as it allows solutions to be found as soon as a problem occurs. All the requirements and targets that partners should comply with should be formalized in an exhaustive contract.

For the Poulet du Faso initiative, four complementary partners were involved: (i) Ceva, which managed the initiative and provided technical support, especially in sanitary management, (ii) SASSO, which provided technical support, especially in breeding and genetic management, (iii) COFAB, which was in charge of the operational implementation of the avian selection center (CdF), and (iv) Fadima farm, which was the initial and largest producer of Pdf.

COFAB is a good example of a successful partnership: at the beginning of the initiative, the association was a highly motivated cooperative of smallholder farmers, facing production issues with high mortality rates of their chicks due to a lack of biosecurity measures and sanitary management. They now own an operational avian selection center delivering high-quality technical services, and still have their own poultry farms where they can now rear their flock in batches with improved productivity. As Pierre Marie Borne, the initiative coordinator says, “they succeeded in managing their weaknesses: they did not know how to do at first, but they anticipated and planned their activities, they discussed and interact with the other stakeholders anytime they had questions and they got fully involved to meet the expected goals. They now run their business with success and even have new initiatives to go further than initially planned (e.g. the Alliance du Goût initiative).”



Collaboration with Fadima Farm was based on a formal business and technical interaction. They have clearly demonstrated their interest in producing Pdf on their own, as a local entrepreneur for the development of the poultry production in Burkina Faso. Ceva Santé Animale and SASSO will carry on their support to them.

The success of a business relies on developing a whole chain of skills. Therefore, the main partners should be chosen according to their complementary expertise to provide adequate support to the different stakeholders of the value chain. This is particularly critical for initiatives, such as Poulet du Faso, which require a very high level of technical expertise, especially in genetic and sanitary management.

It is also important to work with local partners or with partners familiar with the local context to identify stakeholders that can bring their own expertise to fill the remaining gaps in the chain of skills.

Experts on sanitary management from Réseau Cristal and Bio Chêne Vert have, for instance, helped to design the initial sanitary plan, to monitor the sanitary status and to manage the lab tests. They have brought their inputs and expertise in the field by training the local stakeholders.

NTD has also played a major role through the contribution of Gabriel Stigliani, who went over and beyond the supervision of the design and construction of the poultry houses by providing unrelenting support to Fadima Farm and the Coq du Faso SARL. He was also key in proposing highly competent human resources for local activities and identified opportunities for the regional extension of Pdf production. The program was incredibly lucky to benefit from his personal commitment, which created a very positive dynamic and encouraged stakeholders to continually progress.

4. Adopt an integrated and consistent marketing approach

The concept of the Poulet du Faso initiative was based on some opportunities and challenges identified in Burkina Faso. These were (i) poultry meat consumption is going to increase rapidly in the next few years, (ii) there is a lack of DOC in the country, (iii) poultry production is based on traditional and small-scale farming systems, and (iv) consumers are very attached to their ‘poulets bicyclette’. **These challenges are interconnected and it is therefore necessary to adopt a holistic and integrated approach, based on a marketing analysis of the sector, to identify a viable and sustainable solution.**

The first step was to **imagine a solution which could meet the identified needs.** The production of Pdf though the female route seemed to be the best option in the Burkina context, since: (i) it is the fastest solution to intensify poultry production while meeting consumers’ taste for their local chickens, (ii) it allows increased production of DOC that are vaccinated against the main avian diseases, (iii) its production is financially and technically affordable with the support of the right partners, (iv) it generates sufficient added value all along the production and distribution chains to be sustainable, (v) it involves small-scale commercial (MU and PU) and also the traditional poultry farmers (FF) who are predominant in the country.

Secondly, it was important to **find the best strategy to implement this solution without disturbing the existing market.** This involved segmenting the market to identify the targets and the potential partners to develop a whole value chain around the flagship product (Pdf DOC) and ensure the sustainability of its production and distribution. Then, there is a logistic phase to give structure to the value chain and define each stakeholders’ role, areas of action and interactions. During this phase, all the production and sales targets were forecast, even for the secondary products, to be sure that each

stakeholder would generate sufficient profit to be financially viable, while setting attractive prices for their customers and without destabilizing the existing market.

Thirdly, it was important to **take action and invest in the market to make Poulet du Faso known** by its potential consumers. However, it is not always sufficient to make a business sustainable, and **valuing by-products is also very strategic.** This was highlighted in the Poulet du Faso initiative, where Select birds generate important revenue since they are sold in high quantities. For these secondary products, it is important to set the right price, valuing the efforts made for their production, to promote their quality and advantages to potential buyers, and to ensure their accessibility or distribution, being careful not to impact the production of the flagship product.

Finally, adopting a marketing approach facilitates identification of the strengths and weaknesses of all the players along the value chain, enabling adaptation of the strategy accordingly while implementing the initiative (communication, training, planning). It also helps to boost sales by making a convincing argument to promote the products according to each segment’s profile.





V. Requirements for replication of the model elsewhere

The objective of the Poulet du Faso initiative was twofold: **1) improve the productivity of the local breed and 2) develop the PdF value chain at the level of small-scale commercial farmers.** In Burkina Faso local conditions justified the subsequent investments made with regards to funds, time, and training of a skilled workforce to **meet the specific needs** of the market.

As a single selection center has the capacity to supply breeders to a wide geographical area and local genetics are relatively homogeneous across the same region, it is not necessary to set up selection centers in neighboring countries to Burkina Faso. There could be an interest, however, in **replicating this model in East Africa** to preserve and improve the local genetic pool, thereby safeguarding biodiversity.

Poultry will play a major role in the future as a source of animal protein. The sector has recently experienced rapid growth in Sub-Saharan Africa, where the bulk of the production is currently undertaken by a large number of small and medium-sized commercial farmers.

To foster the development of an 'inclusive' poultry industry it is urgent and crucial to forge and strengthen the links between large commercial entities and small-scale farmers and find a way to ensure they will not be forced out of their livelihoods.

This can be done through the development of a mother-unit system, as in the Poulet du Faso initiative, or by **providing small-scale farmers with productive and hardy breeds**, such as the dual-purpose SASSO, or with **chicks vaccinated at the hatchery**, such as in the PREVENT initiative.



VI. Conclusion

The Poulet du Faso initiative is a prime example of what can be done to develop the poultry sector by **bridging the gap between large-scale commercial farms** (hatcheries and breeder farms) and small-scale commercial farmers, while also **having a downstream impact on traditional farmers.**

The transfer of skills, capacity and technology to local stakeholders has ensured sustainability of the model. The model (which is similar to that of Ethio-chicken in Ethiopia and Silverland in Tanzania) has ensured better productivity and higher meat production in a way that also addresses local attachment to and demand for **'poulet bicyclette'**.

This kind of initiative **cannot be implemented overnight**: the Poulet du Faso program lasted five years and was extended by 6 months due to the impact of Covid-19.

This model could be replicated in other countries if they are able to comply with the key factors of success.

Adapting this model to the egg-layer industry could contribute to filling the between production and consumption of eggs in Sub-

Saharan Africa. This would require time and technical expertise, and the identification of a hardy breed capable of withstanding the local rearing conditions. To achieve this the mother-unit business model also needs to be designed to meet the specificities and demands of the market structure in the country of interest.

A simple template, based on the key factors of success, has been developed by the implementation team for anyone considering implementing a similar initiative. By scoring answers to a series of four key questions, the tool helps to identify potential areas of concern that could impact on the success of an initiative.

Each of the four central questions on the next page is given a mark from 1 (low/no to 5 (high/yes), according to how the proposed initiative meets those goals. Less than 3 points for a central question indicates that there are some issues that needs to be addressed before going any further, or that this model may not be suited to the objectives. More than 3 points for a central question means that, while the potential weaknesses of the initiative will not significantly affect the expected impacts, they should, however, be considered.

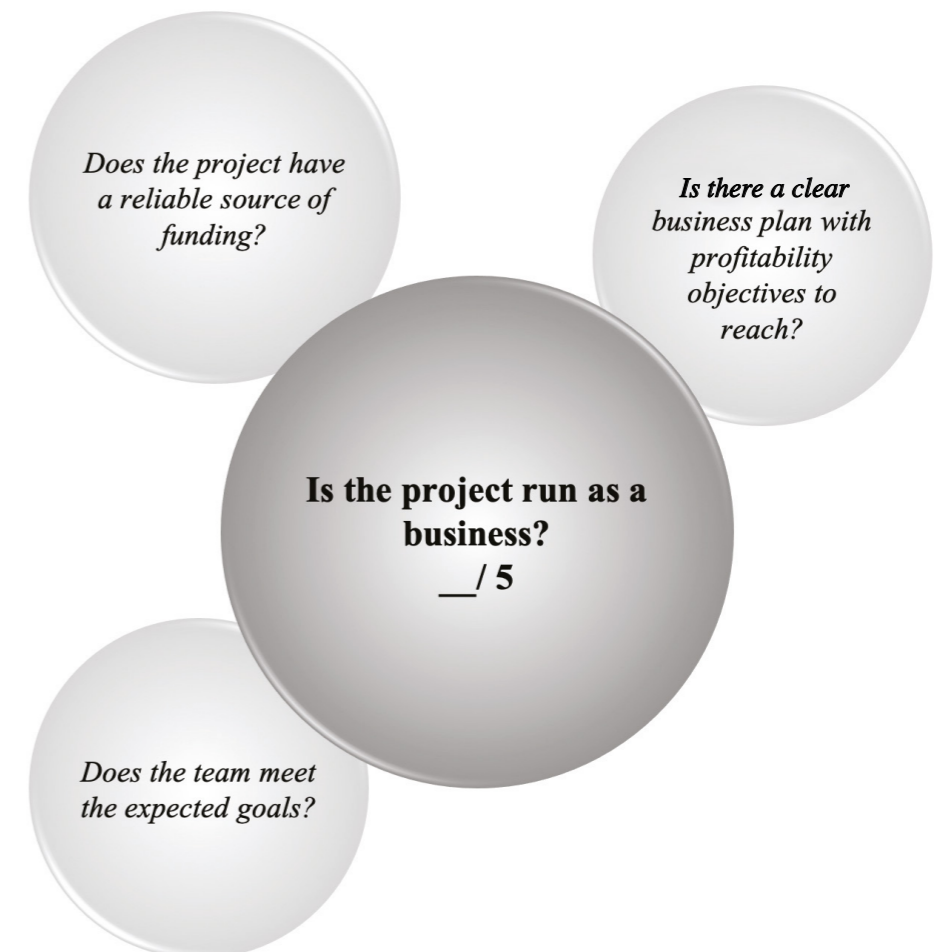
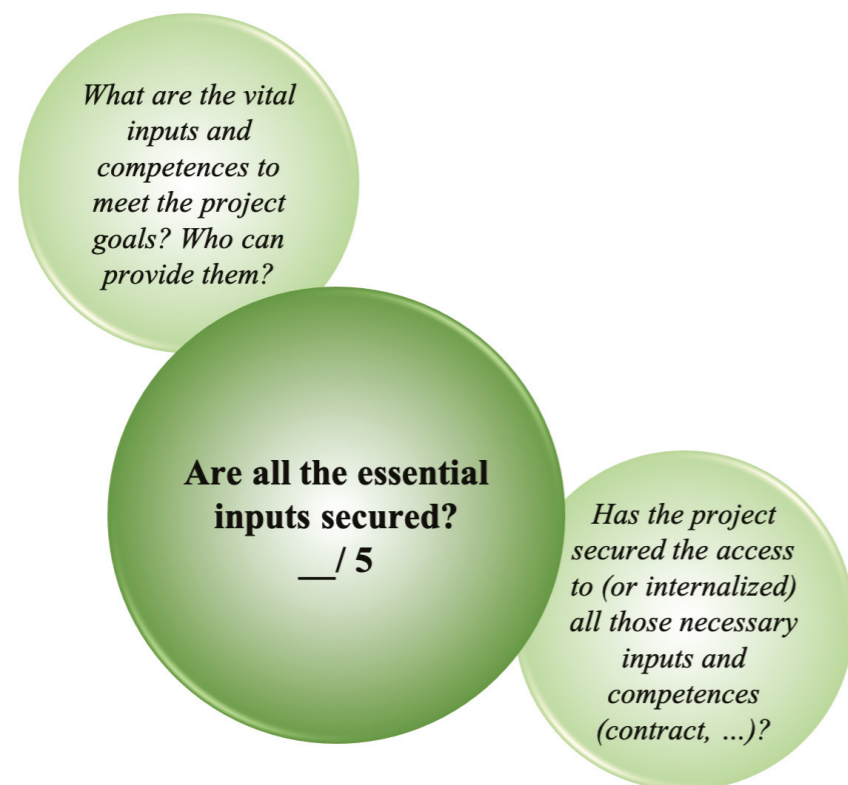
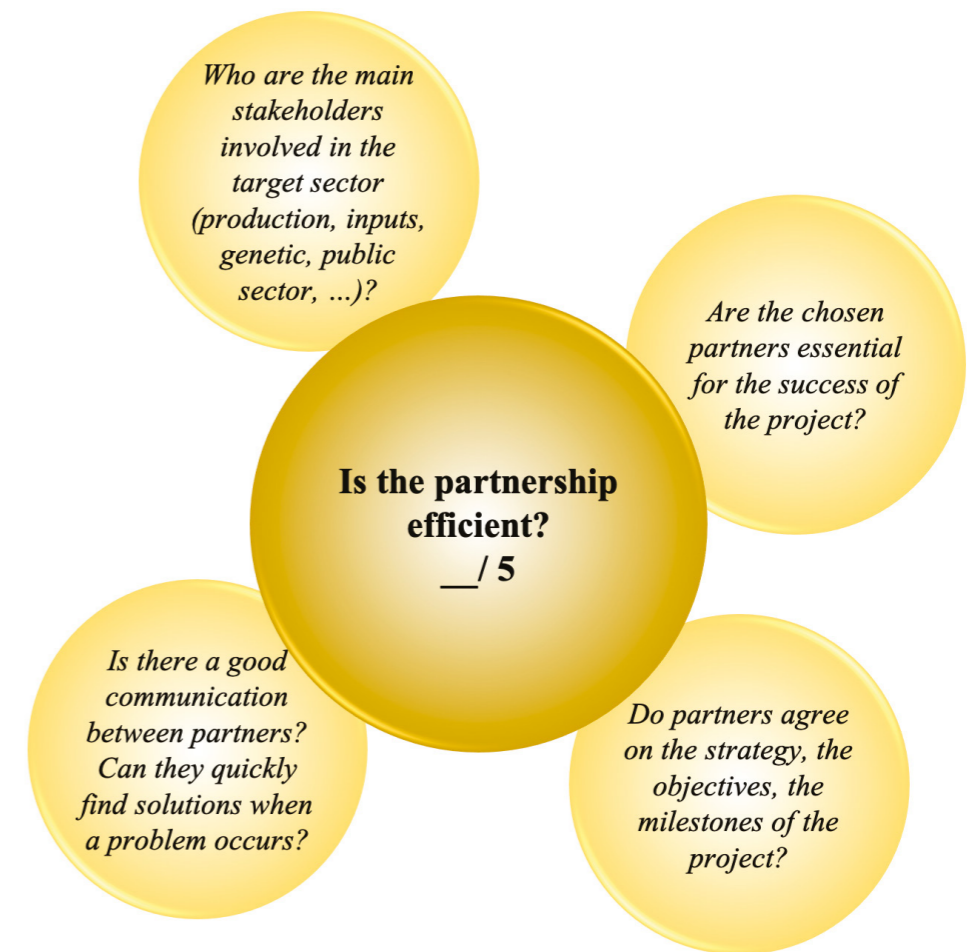
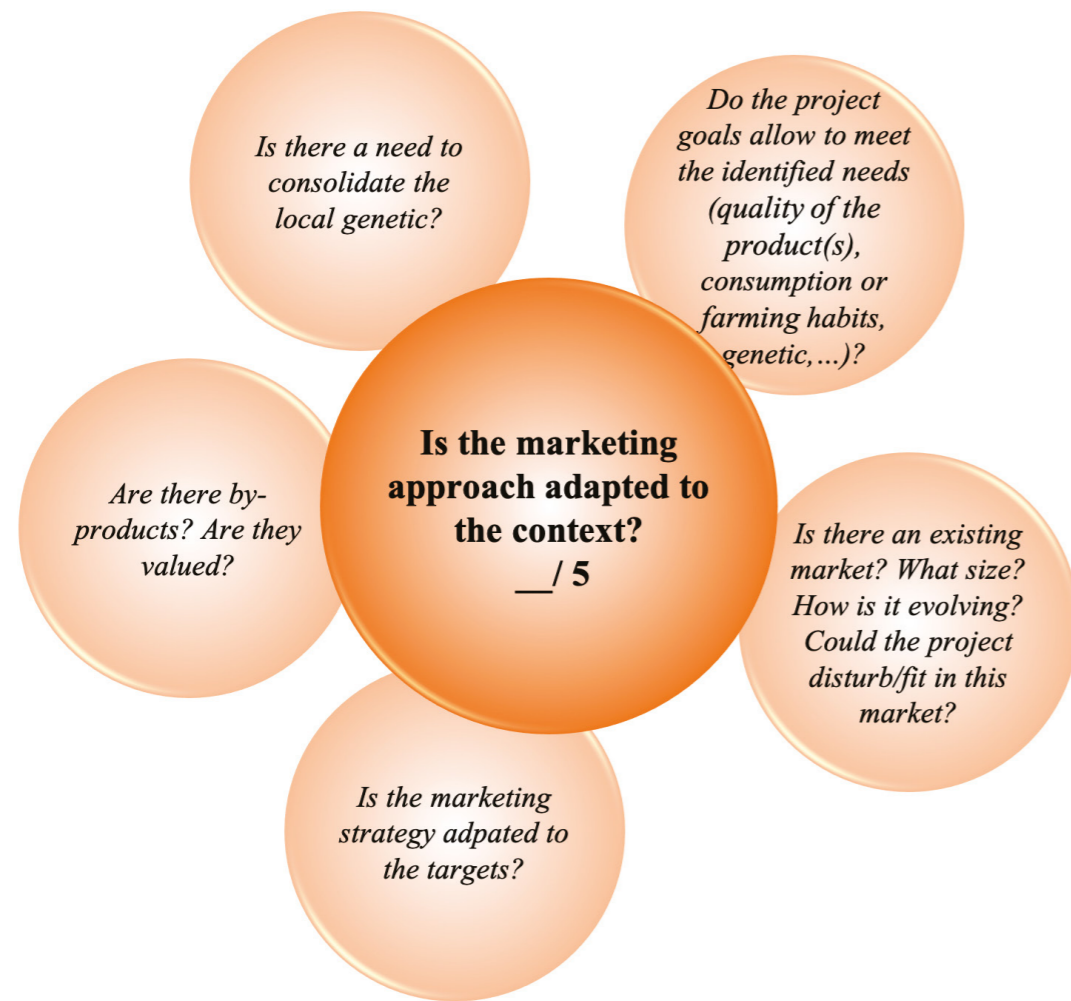


Figure 29: Key success factors for implementing a similar project

Coq du Faso SARL

Mr. Boureima Sawadogo - President of farmer's association, Boussé - Coq du Faso Project Manager during building phase and facilitator

Dr. Raoul Atikpakpe - General manager - Coq du Faso Project Manager

Mr. Michel Ouedraogo - Selection center accountant - Accounting

Mr. Raogo Sawadogo (Seni) - Selection center worker - In charge of poultry in pedigree building

Mr. Boureima Ouedraogo (Ibra) - Selection center worker - In charge of poultry in production building

Mr. Norago Iboudou (Adama) - Selection center worker - In charge of poultry in production building

Anipole Faso

M. Yaya Ba - Poulet du Faso Local Project Management - Founder and general manager / Local initiative manager

Mrs. Naimatou Sereme - Marketing manager - Marketing

Mrs. Sandrine Ouyia - Technical manager - Technical

M. Ismaël Nana - Accounting manager - Accounting

Hatcheries and breeding farms

Mr. Harouna Sawadogo - Fadima - General manager - Historical partner for multiplication of PdF in Burkina Faso

Mr. Martin Lurling - Mme Ludvine Lurling - CAB - General manager - More recent partner for multiplication of PdF in Burkina Faso

Mr. Moussa Kone - Kouna - General manager - More recent partner for multiplication of PdF in Burkina Faso

Mr. Amadou Bougoum - Ferme de l'espoir - General manager - More recent partner for multiplication of PdF in Burkina Faso

Mr. Sylvain Gotta - Sobupra - General manager - More recent partner for multiplication of PdF in Burkina Faso

Mr. Boureima Tapsoba - Tapsoba - General Manager - More recent partner for multiplication of PdF in Burkina Faso

Mr. Ibrahima Sall - AVIVET - General manager - More recent partner for multiplication of PdF in Senegal

Mr. Thierno Sidibe - Espace avicole Mali - General manager - More recent partner for multiplication of PdF in Mali

Operational partners

Mr. Gabriel Stigliani - NTD France - Founder & export manager - Building of the selection center and technical support (production)

Dr. Edmond Yeye - Capa - Local veterinary doctor - Veterinary support to Ferme Fadima and Coq du Faso at beginning of the project

Dr. Dominique Balloy - Crystal Group - Co-administrator at Resalab - Technical support (labs)

Mr. Jean-Louis Pinsard - Bio Chêne Vert - General Manager - Technical support (labs), analysis and sanitary follow-up

Mr. Eddi Mascia - FIEM - Export manager - Supplier of hatchery equipment for Coq du Faso

Mr. Jean Zoungrana - Echlo - General manager - Building of the selection center

Mr. Joachim Kinda - K&K - General manager - Installation of solar panels and water supply

Mr. Hans-Heinrich Thiele - GMX - Poultry breeding & genetics expert - Technical support for genetic selection process at Coq du Faso

Dr. Naomi Duijvesteijn - Hendrix Genetics - Director of R&D SASSO / Project manager

Mr. Addie Vereijken - Hendrix Genetics - Research Geneticist - Technical support for genetic selection process at Coq du Faso

Mr. Wim Lemmens - Hendrix Genetics - Corporate Projects & Insurance Manager

Mr. Marcel Ouedraogo - Siatol - General manager - Feed supply

Dr. Ali Ouedraogo - Fasovet - General manager - Importation of sanitary products

Mr. Charles Aurora - CAEA - Poultry consultant hatchery specialist - Troubleshooting for technical issues at partner hatcheries

Dr. Inoussa Sidibe - Ceva Burkina representative
Mr. Ibrahima Mohamadou - Ceva / Chick Program - VSES - Vaccination Support for hatcheries involved in PdF

Mrs. Marie-Jeanne Sotty - Ingénierie de formation - Blended Learning - Marketing support towards communication plan

Mr. Azize Sana - Cabinet Al Barka - Local legal advisor - Legal advice for the creation of legal entities

Mr. Colin Dames - Digineering - Media and digital agency

Mr. Keith Sones - Journalist

Project management

Dr. Pierre-Marie Borne - Ceva - Director Public Affairs Africa and Middle East - Project director

Mr. Louis Perrault - Hendrix Genetics - President of SASSO - Poulet du Faso project partner

Dr. Marie Ducrotoy - Ceva - Senior manager Dev. Initiatives & partnerships - Project manager

Mrs. Marie-Hélène Duffaud - Mr. Diego Raffo - Mr. Younes Nabih - Ceva - Financial controller - Financial control

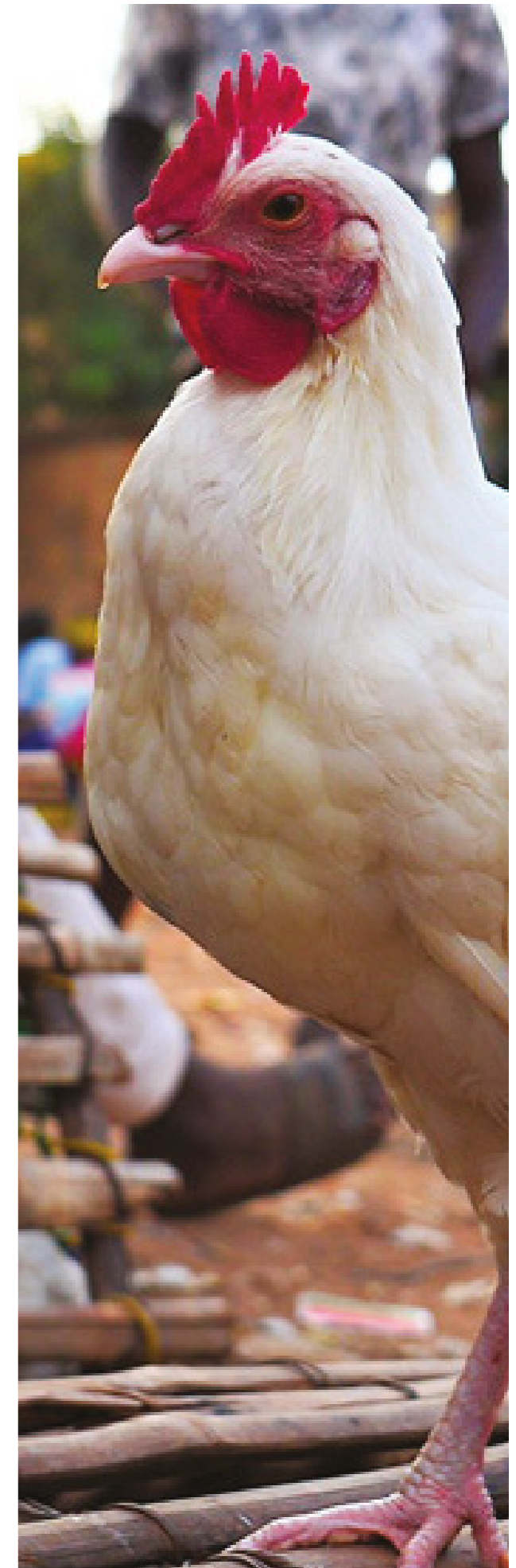
Mrs. Marie-Elodie Le Guen - Rapporteur

Volunteers (Avian Selection Centre)

Dr. Philippe Laravoire

Mr. Jules Borne

In memory of Mr. Martin Lurling and Dr Bilel Diffala



A people story





Poulet du Faso Video



Together, beyond animal health

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