Diversifying revenue in rural Africa through circular, sustainable and replicable biobased solutions and business models

Research and Innovation Action (RIA)
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D6.4: Achievements and impact of the Bio4africa Accelerator - initial version

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CO	Confidential, only for members of the consortium (including the EC)	

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1. EXECUTIVE SUMMARY

This report presents the training part and first results of the accelerator program of BIO4AFRICA H2020 project (Contract no. 101000762) corresponding to D6.4 Achievements and impact of the BIO4AFRICA Accelerator (M36,) led by BPE.

This report presents the cohort of the 20 companies selected in the accelerator program, 5 companies per country (Côte d'Ivoire, Ghana, Senegal and Uganda). The 20 selected companies show all the value chain, from small and individual farmers selling products with low value in a very local market to farmers being part of a big cooperative selling value-added products in the international market.

This report describes the execution of the training program, that includes 4 bootcamps, one per country, mentoring program focus on circular economy through the technologies developed in BIO4Africa and customized interviews, one per company, during the visits one to one on the field.

This report presents, as well, the first results after the training part thanks to design a road map, one per company, describing a list of actions to execute during the 2024 to improve every company under the triple perspective: management, circular economy and social impact.

The objective of the training part identifies key aspects, optimal scenarios and different business models to scale up and deploy the bio-based technological solutions in Africa in the agrobusiness sector.

It is during the Management Support program, from January to December 2024, when the focus will go to the execution, trying to impact as much as possible to the 20 companies selected.

The conclusions present first actions and results providing from the execution plan under the Management Support Program customized per every company.

2. RATIONALE

Africa will need to feed 1.2 billion people by 2030 and over 2 billion by 2050 and, almost 20% of Africa's population is affected by undernourishment. Additionally, 60% of sub-Saharan African land is used for grazing animals, and many people combine crop farming with livestock production, which is crucial for livelihoods across the continent. Livestock is a valuable asset for rural communities, pulling power for ploughs and transport, creating income diversification via nutrient-rich animal products, as well as being key to reclaiming degraded land and conserving soil integrity and water.

BIO4Africa will contribute to Africa's food and nutritional security by combatting poverty, while driving inclusive and sustainable rural development. Furthermore, BIO4Africa will support the deployment of the bioeconomy in rural Africa via the development of bio-based solutions and value chains with a circular approach to drive the cascading use of local resources and diversify the income of farmers.

The ultimate focus is on transferring simple, small-scale, and robust bio-based techs adapted to local biomass, needs and contexts, including green biorefinery, pyrolysis, hydrothermal carbonisation, briquetting, pelletising, bio-composites, and bioplastics production.

In doing so BIO4Africa aims to empower farmers to sustainably produce a variety of higher value bio-based products and energy, including: animal feed, biochar, bio composites, bioplastics that can be used as fertilisers, pollutant absorbents, construction materials, packaging, solid fuel for cooking, and ingredients for biogas production. These uses significantly improve the environmental, economic and social performance of their forage agri-food systems. BIO4Africa has set up four pilot cases with different testing sites in Uganda, Ghana, Senegal and Cote d'Ivoire, offering more than 300 farmers and farmer groups, including small dairies and lower-income farmers, women farmer groups and transhumant pastoralists, the opportunity to test them in real productive conditions.

Under this overall context, BIO4Africa aims to provide rural communities with diverse options for taking up the bio-based solutions into their agri-food systems using bio-based business models that are sustainable. It will do so, by employing analytical and design tools well-fit for sustainability-oriented business models and deploying participatory activities to co-design, test and validate these models alongside rural community stakeholders (farmers, bio-based experts, extension services, development partners, local authorities, policy makers, etc.).

3. SCOPE OF THE BIO4AFRICA TASK 6.2

The activities of this task aim at designing and deploying an acceleration programme to foster bio-based business amongst farmers and rural communities in Africa, enabling them to explore and seize bio-based business opportunities, leveraging the technologies developed by BIO4AFRICA.

The programme will include a series of business development support services to candidates interested in replicating and / or scaling our business models:

(i) Business training: Local bootcamps (1 per country) will engage candidates into rigorous bio-based business training on key entrepreneurship aspects (strategy definition, business model identification, financial planning, marketing, business planning and benchmarking and disruptive vision development) delivered by BPE as well as on digital transformation and agricultural production aspects delivered by AATF;

(ii) Mentoring: Selected experts from BPE and AATF will coach and offer tailored CEO management support to selected candidates with a focus on building their capacity for decision making and management, both of which are crucial contributing factors for safeguarding the survivability and ultimately the success of a company.

(iii) Access to finance support: BPE and AATF will mobilise their international network and facilitate access to finance support, loans and investments, supporting companies to find suitable modes of finance in Africa and EU.

4. ONE COHORT OF TWENTY COMPANIES IN FOUR COUNTRIES

The project defines five organisations per country and so it has been done. We have selected twenty companies from Côte d'Ivoire, Ghana, Senegal and Uganda, for the accelerator program under three different perspectives:

1. Value proposition

   Twelve of them are farms selected on the basis of the raw materials studied and tested in WP4. Seven are processing/manufacturing companies, and one organic materials recycling company in Uganda. The broadening of the range of businesses is intended to allow on-the-ground assessment of different ways to promote and implement the different technologies of the programme and drawing conclusions applicable on a larger scale.

2. Size and link to market

   Micro and medium/large size organisations have been selected. The objective is to assess the growth capacity of the small ones and the capacity of the larger ones to increase the positive impact and disseminate the technologies tested in the project.

   In our cohort fourteen companies are micro, linked basically in local and national market, and six are medium or large. All of them cooperatives linked with the national and international market.

3. Social impact

   We have identified smaller organisations with a capacity for growth and other larger organisations with a great capacity for positive impact. In this sense, we have sought to combine the impact metrics of growing organisations with the impact of established and larger organisations.

4.1 Objectives

The objective is to design and deploy an acceleration programme to foster bio-based business amongst farmers and rural communities in Africa, enabling them to explore and seize bio-based business opportunities, leveraging the technologies developed by BIO4AFRICA.

The objective of the acceleration programme is threefold:

1. To consolidate smaller organisations and make them both economically and environmentally sustainable.

2. To incorporate the circular economy of agricultural waste processing in every aspect of the participants' activities.

3. To incorporate the business culture of combining financial profit with a positive impact in all organisations.

The incorporation of larger consolidated business organisations aims to scale objectives 2 and 3, and to have real metrics to evaluate alternative ways to spread and expand bio-based solutions in rural environments, promote the circular economy and create the greatest positive impact.

The incorporation not only of farms but also product processing organisations also aims at the same objective, that is, evaluating different strategies for expanding the circular economy throughout the value chain of the agricultural sector.

4.2 Methodology

The design of the business growth programme of BIO4AFRICA has been shaped by the long experience of Barcelona Business Platform (BPE) in such programmes, both in Europe and South America, together with the methods in business acceleration shared through the international network Fledge (The conscious company accelerator https://www.fledge.co/locations/), of which BPE is a partner and responsible for the implementation of the programme in Barcelona http://fledge-barcelona.org/en/.

The programme design is the result of applying our method considering the realities of the different cohorts selected in each country and the characteristics of the BIO4AFRICA project.

With respect to our method, we have made the following adjustments:

- Selection process

  Without using the FS6 platform https://www.f6s.com/, and with the support of local partners to filter candidates. We decide not to use FS6 as we done usually because the complexity of the process (four countries with three focus farmers, transformation and recycling companies). On the other hand, we would like to reenforce the collaboration of the local partners taking advantage of their contacts and knowledge of the environment.

- Training

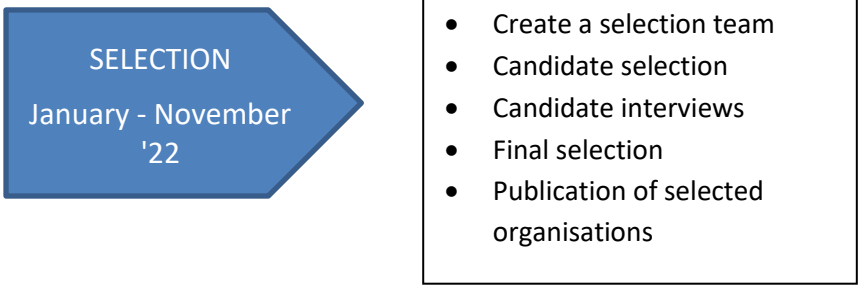
  We have replaced an 8-week programme in Barcelona with four programmes, one in each country, in a very intense one-week boot camp. In order to achieve the same results, we have designed a field visit by the BPE consultant to each and every one of the participants to review and agree concepts and learnings about business strategy and control.

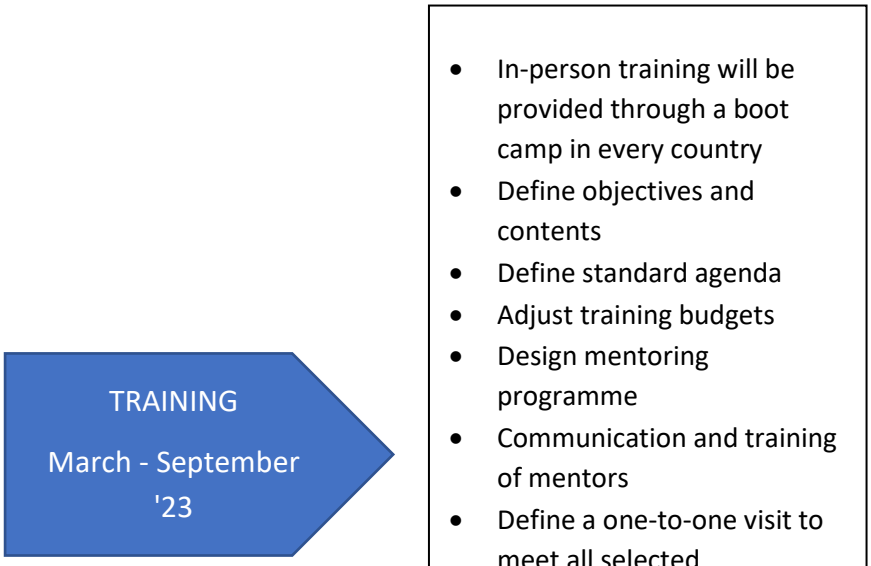
The rest of the programme follows the standard method, where monitoring and business support are the key to success, as participants are accompanied to implement the advice and learnings from the training.

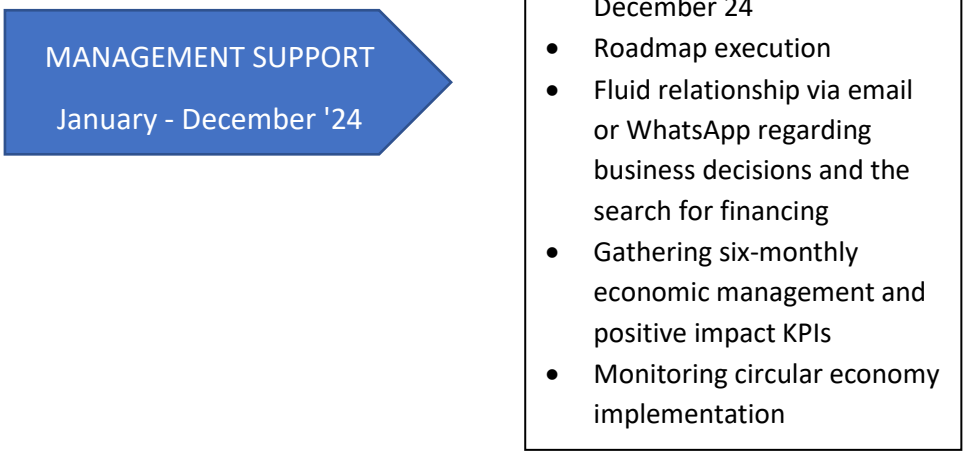
It is also in this phase of the programme that access is facilitated to the financing required to grow and consolidate the companies.

The key processes that determine the design of the programme are:

1. Selection of candidates
2. Training (Bootcamps, one to one visits and mentoring program)
3. Monitoring and business support







4.3 Portfolio

The portfolio selected aims to achieve the objectives of the project:

- ✓ Transfer simple, small-scale and robust bio-based techs adapted to local biomass, needs and contexts
- ✓ Empower farmers to sustainably produce a variety of higher value bio-based products and energy
- ✓ Offer to farmers and farmer groups the opportunity to test them in real productive conditions

The portfolio starts from these different perspectives and potentialities:

Typology

- Small farmer. One agro-business production running alone.
- Cooperative**.** One organization managing a big group of farmers.

Value proposition

- Raw material. Products without transformation, not add value. Example, vegetables.
- Add value product. There is a first transformation to add value. Example, dry cacao ready to be used in the chocolate factories.
- Final product. Product ready to be consumed by the clients. Example, vinegar of mango.

Volume

- SME's. Small and medium companies with difficulties to growth, basically in terms of financials and value proposition.
- Big Cooperatives. Organizations whit capacity to invest and growth. Good market fit and volume.

The bio-based solutions related with the portfolio:

Value proposition

- Raw material. No possibility to monetize and extra income providing from the production.
- Add product. Possibility to monetize and extra income or reduce the cost of energy.
- Final product. Possibility to monetize and extra income or reduce the cost of energy.

Volume

- SME's. Identify the viability about investment and return introducing new products, reduce the cost of energy, or both.
- Big Cooperatives. Identify the viability about investment and return introducing new products, reduce the cost of energy, or both.

Thanks to the portfolio selected we will have the opportunity to study on the field, with real examples, how is the positive impact and the viability to introduce bio-based solutions in the agro-business economy.

5. BOOTCAMPS

The accelerator program started with an intensive training running a Bootcamp, one per country.

All the participants have been trained under the same methodology and objectives but in different level, taking in account the differences of management background, volume of sales, raw material or transformed product, local, national or international market position. That means we have selected individual farmers without management background and people form the boards of big cooperatives used to use management tools and data.

The way to manage that situation was to select similar companies per country and maintain the range of perspectives in terms of cohort:

- **Senegal:** Similar management background, only one company have a professional board. Similar volume of sales, only one is much bigger. All of them produce end products (vinegar, juices, marmalades, dry mango, dry cashew, etc.). One company is in the international market, the rest has the potentiality. Actually, they are selling in local and national market.
- **Uganda:** Similar management background. Similar volume of sales. They have several differences in terms of value (products and services). All of them are based in the local and national market.
- **Ghana:** Similar management background. Similar volume of sales. Not additional value, all of them sell in raw. Local market.
- **Côte d'Ivoire:** Similar management background, 4 over 5 have a professional board. We have the biggest companies of the cohort. Big cooperatives positioned in the international market. Basically, in cacao market.

AATF trainers run the bootcamps in Uganda and Ghana, and selected and trained the French teachers for Senegal and Côte d'Ivoire. BPE was supporting AATF and the French teachers during the bootcamps, and worked directly with all the participants by online meetings. The four bootcamps was made in a hybrid mode, physically and remote.

Every participant finished the bootcamp with their own:

- Business model canvas
- Profit & loses, actual and forecast
- SDGs analysis

The bootcamps was executed from March to April 2023.

Table 1: Bootcamp programs calendar

	COUNTRY
6th-10th March, 2023	Senegal
13th-17th March, 2023	Uganda
17th-21st April, 2023	Ghana
24th-28th April 2023	Côte d'Ivoire

BPE and AATF designed a standard agenda to work in the three perspectives: Management, circular economy and social impact. Depending of the participants the teachers has putt the focus more in one perspective than other, always searching how to give more value.

The main objective of the training is to facilitate every participant to apply the knowledge in their reality, under the philosophy "hands on".

Table 2: Bootcamp program standard agenda first day

TIME	**ACTIVITY DESCRIPTION**	**FACILITATOR/S**
8.00-8.30 am	Arrival and registration of participants. Signing of consent forms by participants	
8.30-9.00 am	Introduction of the participants	LOCAL PARTNER
9.00-9.15 am	Introduction of Bio4Africa project.	LOCAL PARTNER

	Objectives of the session	
9.15-9.30 am	Overview of Work package 6-Task lead	BPE (*Online)*
9.30-10.30 am	Business Model Canvas discussion Focus on Value proposition and market analysis clients and products or services	Teachers
10.30-11.00 am	Health break	
11.00-1.00 pm	Business Model Canvas discussion Focus on Value proposition and market analysis, clients and products or services	Teachers
1.00-2.00 pm	Health break	
2.00-3.00 pm	Business Model Canvas discussion Focus on Value proposition and market analysis clients and products or services	Teachers
3.00–4.00 pm	Investor Pitch "Problem, costumer, wrong solution, solution and details of the solution"	Teachers
4.00 -4.30 pm	Q and A	BPE(*Online)*/ teachers/LOCAL PARTNER
4.30 pm	End of day	LOCAL PARTNER
4.30-5.00 pm	Feedback session	BPE(*Online)*/ teachers/LOCAL PARTNER
Goal per session	Have a systemic overview (Business Model) with special attention to "value proposition and market position "	
Deliverable/s	Business Model	

Table 3: Bootcamp program standard agenda second day

TIME	ACTIVITY DESCRIPTION	FACILITATOR/S
9.00-10.00 am	Profit and loss account discussion	Teachers
10.00-10.30 am	Health break	
10.30-12.30 noon	Profit and loss account discussion	Teachers
12.30-2.00 pm	Health break	
2.00-3.00 pm	Business plan development, special focus on commercial strategy	Teachers
3.00– 4.00 pm	Investor Pitch "The traction and financials"	Teachers
4.00-4.30 pm	Way forward from Bio4Africa team	BPE(*Online)*/ teachers/LOCAL PARTNER
4.30 pm	End of day	BPE(*Online)*/ teachers/LOCAL PARTNER
4.30-5.00 pm	Feedback session	BPE(*Online)*/ teachers/LOCAL PARTNER
Goal per session	Learn how to do a P&L to control the business and understand margins, costs, unit prices and needs of treasury, investments	
Deliverable/s	P&L (annual 2023 and per Quarters Q1 Q2 Q3 and Q4) and commercial strategy	

Table 4: Bootcamp program standard agenda third day

9.00am -10.30 am	Investor Pitch "Team, competence, and investment needs"	Teachers
10.30-11.00 am	Health break	
11.00-12.30 PM	Business Digital transformation discussions in agriculture production	Teachers
12.30-2.00 pm	Health break	
2.00-3.00 pm	Discussion on SDGs	Teachers
3.00-4.00 pm	Development and alignment of business goal to SDG	BPE(*Online)*/ teachers/LOCAL PARTNER
4.00 pm	End of day	BPE(*Online)*/ teachers/LOCAL PARTNER
4.00-4.30 PM	Feedback session	BPE(*Online)*/ teachers/LOCAL PARTNER
Goal per session	Why SDGs are so important (market position, vision and mission) and digital transformation (scalability and competitiveness	
Deliverable/s	Identify at least three SDGs aligned	

Table 5: Bootcamp program standard agenda fourth day

9.00 -10.00 am	Introduction to KP1-align with SDG	Teachers
10.00-10.30 am	Health break	
10.30-12.00 noon	Development of Economic and social KPIs for each business Economic must include also commercial ones	AATF / LOCAL PARTNER
12.00-12.30 noon	Presentation of each business KPIs, timelines	Teachers

12.30-2.00 pm	Health break	
2.00-3.00 pm	Presentation of each business KPIs	Teachers
3.00-4.00 pm	Investor Pitch "Recapitulation all document"	Teachers
4.00 – 4.30	Q and A	BPE(*Online*)/ teachers/LOCAL PARTNER
3.30 pm	End of day	BPE(*Online*)/ teachers/LOCAL PARTNER
3.30-4.00 PM	Feedback session	BPE(*Online*)/ teachers/LOCAL PARTNER
Goal per session	KPI's the best tool to control and manage the company	
Deliverable/s	Economic and impact KPI's tool to follow the evolution during the program	

Table 6: Bootcamp program standard agenda fifth day

9.00am -10.00 am	Recap of the session	LOCAL PARTNER
10.00-10.30 am	Health break	
10.30-12.30noon	Development of timelines for the proposed activities/reporting per business.	LOCAL PARTNER
12.30-2.00 pm	Health break	
2.00-3.00 pm	Investor Pitch "Recapitulation all presentation and include SDG's"	Teachers
3.00-4.00 pm	Way forward from Bio4Africa team	BPE(*Online*)/ teachers/LOCAL PARTNER

4.00 pm	End of day	BPE(*Online*)/ teachers/LOCAL PARTNER
4.00-5.00 PM	Feedback session	BPE(*Online*)/ teachers/LOCAL PARTNER
Goal per session	Recapitulation the basic concepts if they need and talk about the importance of the next 18th months to manage and control the company all together as a team.	
Deliverable/s	Investor Pitch	

5.1 Senegal

Place

Incubator Assane Seck University of Ziguinchor

Date

From 6 to 10 of March 2023

Teachers

Dr Blaise Waly Basse (Trainer) and Mme Adja Mariata Rella Tall (Assistant)

Participants

Staff from BIO4Africa consortium

- Mr Belarmino Rodríguez from BPE (on line)
- Mme Sedi Millicent from AATF (on line)
- Dr Lat Ndaye from USAZ

Companies

- Mr Moise Bassene CEO from Ethicajou Cooperative
- Mr Sébastien Sadio CEO from GIE Balantacounda
- Mme Noelle Niouky President from GIE Demiir
- Mme Aissatou Diallo President from GIE Waare
- Mme Codou Cisse president from GIE Agropastoral

Final report by Dr Waly Basse

Introduction

In Senegal, 60% of small and medium-sized enterprises (SMEs) fail before the end of the year in which they are created (ANSD, 2022). Most of them do not have a business plan, nor do they conduct a market study. Thus, within the framework of the BIO4AFRICA project, 5 companies from the Ziguinchor region that have previously undergone a selection program conducted by BPE (partner of the BIO4AFRICA project) and that are active in the field of agri-food processing underwent a training workshop on the various management tools during one week in the Innov'Zig Incubator of the Assane Seck University of Ziguinchor.

Objectives and Expected Results

The objective of this training is to enable companies to define a business strategy that will allow them to create value.

The specific objectives of the workshop were:

- Develop a BMC;
- Develop a profit and loss account;
- Develop a business plan;
- Pitch their products/services;

Expected results

The expected outcomes of the workshop were that:

- Participants understand the value propositions of their products or services;
- Participants understand customer expectations;
- Participants prepare an income statement, depreciation schedule, and balance sheet for their business;
- Participants understand margins, costs, prices, cash flow requirements;
- Participants can do a market and competitive analysis, a marketing plan, a management plan, a development plan;
- Participants can make a pitch to investors;
- Participants understand the importance of aligning with the SDGs such as gender equality and poverty alleviation;
- Participants identify the role of digital in the performance of their companies.

Methodology

This boot camp adopted a participatory approach in order to guide the participants to elaborate the different tools necessary for value creation (BMC, Profit and Loss Account, Business Plan). First of all, a knowledge test was used at each step to define the reference situation of the companies and the difficulties they are facing. At the end of this test session, the trainer was able to clarify the concept in question, define its usefulness and also how it should be developed. Then case studies allowed each company to elaborate at the end, its BMC, its Profit Account and its Business Plan. Filling-in sessions were favoured throughout the training in order to better explain the different concepts to the participants.

Course of training

The coordinator of the BIO4AFRICA project in Senegal, Prof. Lat Grand NDIAYE, introduced the workshop by welcoming the participants and summarizing the terms of reference. The interventions of Millicent SEDI from AATF and Belarmino RODRIGUEZ CURTO from BPE also marked the opening of the workshop. Then a round table discussion allowed to identify the different companies involved and their fields of activity.

Presentation of the BIO4AFRICA project

BIO4AFRICA project supports the deployment of the bioeconomy in rural areas of Africa through the development of bio-based solutions and value chains with a circular approach to promote the cascading use of local resources and diversify farmers' incomes. It focuses on the transfer of simple, small-scale and robust biobased technologies adapted to local biomass, needs and contexts (green biorefinery, pyrolysis, hydrothermal carbonization, briquetting, pelletization, bio composites and bioplastics production). The principle is to empower farmers to sustainably produce a variety of higher-value biobased products and energy (feed, fertilizers, pollutant absorbents, building materials, packaging, solid fuels for cooking, and catalysts for biogas production), thereby significantly improving the environmental, economic, and social performance of their forage agri-food systems. To this end, we have set up 4 pilot cases with over 8 test sites in Uganda, Ghana, Senegal and Côte d'Ivoire, offering over 300 farmers and farmer groups of all sizes (including smallholder dairy and low-income farmers, women's farmer groups and transhumant herders, among others) the opportunity to test them under real production conditions.

Module 1: SWOT and PESTEL analysis

In this module, the participants were given the tools to identify and learn how to develop a business strategy. First, we presented the 4 blocks of the SWOT matrix. The principle is to allow participants to identify the different elements to be put in each block.

Blocks 1 and 2 concern the factors endogenous to the company.

Block 1: area in which the company is better than its competitors (Strengths)

Block 2: area in which the company is less good (Weaknesses)

Blocks 3 and 4 should contain factors that are exogenous to the company.

Block 3: external elements that can generate a positive influence on the company's performance.

Block 4: external constraints that can have a negative influence on the company's performance.

Then the PESTEL analysis approach was explained in order to better understand the political, economic, socio-cultural, ecological and legal environment of the company.

Module 2: Business Model Canvas (BMC)

The business strategy of the company being identified from the SWOT and PESTEL tools, it is a question of bringing the participants to establish a BMC. Indeed, we discussed the importance of the CMB as a basis for teamwork with the presentation in detail of the 9 blocks, namely customer segments, value proposition, communication and distribution channels, customer relationships, key resources, key partners, key activities, cost structure and revenue sources (Osterwalder and Pigneur, 2010). In addition, benefits and social costs were also discussed.

At the end of the presentation, the participants were able to fill in the BMC template that was proposed to them through fill-in-the-blanks sessions. However, we found that women's businesses do not have a good knowledge of their competitors, which explains some of the missing information in the BMC.

Profit and Loss Account (PLA)

On the basis of the information collected at the BMC, participants practiced drawing up the profit and loss account of their company. The aim was to enable participants to differentiate between short-term and long-term capital, to draw up the depreciation table, the balance sheet and the income statement. They also discussed the difference between earnings before interest, depreciation and taxes and net income.

The following point was the subject of a fruitful exchange between the participants.

Question: What is the purpose of depreciating certain assets (equipment, buildings, machinery, etc.).

Answer: The aim was to get the participants to adopt a sustainability approach. In this case, the goods used in the production process have a lifespan and their renewal alone will ensure the continuity of the company's activities. Thus, this amount set aside allows not only an optimization of the tax system but also a distribution of the cost of the goods over time.

Module 4: Developing a Business Plan (BP)

The same exercise continued with the information obtained to develop a business plan. Participants were coached to complete the business plan which will allow them to identify market segments, value propositions, a sales plan and a development plan.

Module 5: How to make a pitch

This module focused on how to make a pitch to investors. The exchanges focused on how to identify the problem that we are trying to solve but also on the importance of the team and their respective skills. At the end of this presentation, the representatives of each company were given the floor for 5 minutes to make a pitch.

Module 5: Digital transformation in agricultural production

For a better penetration of the market segments identified in the business plan, it is a question of bringing the participants to make better use of digital technology. Beyond climate information, the discussions focused on visibility and traceability. Participants also recognized the importance of digital in the collection of price information and the need to get rid of intermediaries who pollute the market and prevent direct contact with customers. In addition, they noted that digital marketing is an important tool to achieve more sales and increase their visibility.

Module 6: The Sustainable Development Goals (SDGs)

This module emphasized the health, economic, social and environmental challenges that humanity will face. These challenges have prompted a change of behaviour on the part of States that have set a number of goals in order to live in a more humane world. The 17 SDGs were discussed with the participants and it was a question of making them understand that it is up to companies to act. Thus, each company was asked to choose two of them, placing first the one of gender equality (gender).

Module 7: Alignment with the SDGs

This module was about exchanging with the participants on the economic interest of the SDGs. Thus, companies aligning themselves with the SDGs can allow them to create value but also to attract investors.

Question: Who must cover the cost of alignment to certain SDGs.

Answer: We have used corporate accountability to the community and economic interest to address this issue. This alignment can allow them to stabilize markets, strengthen relationships with stakeholders and anticipate policies to introduce taxes in relation to non-compliance with the SDGs.

Module 8: Performance Indicator

The exchanges focused on the importance of measuring the performance achieved by the company. The participants discussed the need to have indicators in order to be able to appreciate the performance achieved. We insisted on the way to build indicators that must be simple, measurable, achievable, achievable in time (SMART).

Module 9: Presentation of key indicators for each company

We used the logic model (causal chain) to enable participants to identify indicators. This model starts from the acquisition of materials to the end of the product's life cycle, passing through suppliers, production, distribution and use of the product.

Module 10: Development of a calendar for the activities of each company

Participants were discussed on the need to establish a monitoring schedule for regular information collection. We used the Performance Measurement Framework (PMF) which will allow us to track (with a frequency of 3 months) the performance achieved by companies in terms of alignment to the SDGs.

Conclusion

This Boot camp aims to familiarize the participants with the management tools of their company. The preparation of these modules was inspired by the training calendar that was proposed by BPE and AATF. These different modules met the expectations of the participants who recognized the importance of training in the management of their company.

Despite the simplicity of the documents such as the BMC, the participants took a long time to fill them out, probably because most of them were not familiar with them.

5.2 Uganda

Place
Arch Hotel in Kampala
Date
From 14 to 16 of March 2023
Teachers
Ms. Sedi Millicent & Mr. George Marechera

Participants

Staff from BIO4Africa consortium

- Mr Belarmino Rodríguez from BPE (on line)
- Ms. Sedi Millicent from AATF
- Mr. Morris Egesa AFAAS

Companies

- Mr Denis Odyang Chairman of Agali farmers' cooperative
- Ms. Norah Ebwakalin General secretary from Pkwi
- Mr. John Muhenda General secretary from Harugongo cooperative
- Mr. Jonh Bolingo Executive director from HOWC
- Ms. Aidah Tumuheirwe Managing director from UIDC

Final Report by Ms. Sedi Millicent

Objective of the training

To conduct business acceleration training to five local businesses in Uganda.

Outcome from the training

The training started by a brief introduction of the participants and the agenda. The session started by AFAAS taking the team through the Bio4Africa project. It was noted that Uganda was keen on implementing the green biorefinery and hydrothermal carbonisation biobased technologies.

The participants were then able to discuss the business model canvass and the profit and loss account as described below.

Business Model Canvas (BMC) discussion

This session was moderated by AATF team. The session began with market system analysis that focused on. What are the market system constraints being addressed by your business? Or what is the core problem we are addressing with this investment?

How does this investment help catalyse the market system in Uganda? OR how will this business contribute to systemic change OR how will this business affect the system?

It was indicated that the businesses were promoting food security and generating employment.

How does this investment increase inclusiveness of poor individuals, households, and communities?

It was discovered that the businesses incorporate gender at all levels in the value chain.

How does this investment help facilitate the diversification of livelihoods?

The farmers indicated that they could practice livestock production, maize farming etc as diversified sources of incomes.

How does this investment if any generate employment opportunities for women and youth

It was noted that the businesses do create employment at various chains i.e., at input level, transport, storage, aggregation, and processing hence encompasses both women, men, and youth across the value chain.

The team also discussed various strengths, opportunities, weaknesses, and threats across the businesses value chain. A deeper analysis of PESTEL-Political, economic, sociological, technological, environmental, and legal factors surrounding the businesses was also discussed.

The farmers were taken through profit and loss account.

The session began by discussion with the farmers on importance of book-keeping that stated.

-For profit and loss calculation.

-For decision making.

-To access finance

-To tax computation.

On not keeping records, the following were quoted by the farmers.

- They see no importance.
- Lack of technical know-how on record keeping.
- The businesses were not keen on agribusiness.

The following factors were noted as key elements to be considered before pricing.

Market availability. What is the productivity, do I have capital to do optimum production?

On costing, the farmers were encouraged to embrace.

- Cost based pricing that captures all the costs involved in production.
- Market pricing-to set their prices considering what the market offers. Discussions on Sustainable ways of pricing were discussed for each business.

The participants were taken through the 17 sustainable development goals. Each business was then tasked with picking 3 SDG as seen in the discussions below.

Pkwi FFC

The business processes soya and sunflower. The business has a farmers data base of 3,000 farmers but currently gets supply from 200 farmers. The business plans to increase the number of raw materials suppliers as the years go by. The business currently has 5 agroecology sites. The business has 10 women in leadership positions and plans to increase the number as the years go by as seen in table 2 below.

Table 7: PKWI SDGs

SDG	Year- 2023	2024	2025	2026	2027
Goal 5: Gender Equality; **women in leadership**	10	15	20	30	35
Goal 12: Responsible Consumption **Raw material suppliers Production**	200	300	400	500	600

Harugongo farmers' Cooperative Society

The business trades in bananas, pigs and soap making business. Currently the business has 9 males and 1 female represented at the board.

The business sells subsidized piglets to livestock farmers around.

Table 8: SDGs for Harugongo farmers 'Coop Society

SDG	Year- 2023	2024	2025	2026	2027
Households consuming	30	45	60	100	150
Goal 5: Gender Equality; **women in leadership**	1	3	4	4	4

United innovations development centre Ltd

Female run enterprise. Currently the business manufactures briquettes, recycles waste materials, and fabricates briquetting machine. Table 4 below shows the SDGs for the business.

Table 9: SDG United innovations development centre Ltd

SDG	Year- 2023	2024	2025	2026	2027
Goal 5: Gender Equality; **women employed**	F-5 M-4	F-10 M-9	F-15 M-13	F-20 M-18	F-25 M-23
GOAL 7: Affordable and Clean Energy **Households, HHs utilizing briquettes**	50 100 HHs	100 150 HHs	150 300 HHs	200 600 HHs	250 1200 HHs

Agali farmers' cooperative

Currently the producer cooperative has 2,000 members. It trades in maize, soya, and sunflower cake.

Table 10: SDG for Agali farmers

SDG	Year- 2023	2024	2025	2026	2027
GOAL 1: No Poverty **Increase membership** Goal 5: Gender Equality; **women employed**	2700 Members M-1620 F-1190	3050 Members M-1700 F-1350	34540Members M-1748 F-1402	-	-

Hope of children and women's victims of violence

On developing the SDG, the organisation noted that the main focus and goal is promote gender equality, offer quality education and protection of environment.

Specific numbers were not provided.

Challenges quoted by the businesses and recommendations.

- Limited capital for expansion-Formal credit, informal credits were recommended to the businesses, venture capitalists etc to ensure access to capital.

- Fluctuating market prices due to supply and demand variations. Need for businesses to have contracts for enough supply of raw materials, have MOUs with buyers and ensure no stock outs are witnessed.
- No insurance as risk mitigation-Other risk mitigation strategies put on board. Insurance mechanisms to be explored.
- Low uptake of digital technology for trade-There is need for continuous sensitization of the actors on the same.
- Limited record keeping affecting pricing mechanism- The businesses agreed to keep records and use cost-based pricing while pricing for the same.
- Presence of substitutes competing with their products-Need to ensure customers are not experiencing stock outs, competitive pricing to be adopted.

Way forward

The participants were informed of the follow up to be done by BPE in 2 weeks' time.

It was agreed that the businesses will share the BMC and P/L accounts for individual businesses to AATF BY 31ST March 2023.

AATF, AFAAS and BPE will then offer continuous mentoring for the next 18 months to the businesses.

Conclusion

The training was successful as the business owners appreciated the technical training that will see the business become more sustainable.

5.3 Ghana

Place
Catholic Guest House, Tamale
Date
From 18 to 21 of April 2023
Teachers
Ms. Sedi Millicent
Participants
Staff from BIO4Africa consortium

- Mr Belarmino Rodríguez from BPE (on line)
- Ms. Sedi Millicent from AATF

- Mr. Mahama Smith from i-Hub
- Mr- Moses Tia Ngwani from SAVANET

Companies

- Mr. Yakubu Tijamil, Chairman from Tizarbora Cooperative
- Mr. Yussif Salifu Ibrahim, Secretary from Tizarbora Cooperative
- Mr. Timothy Nasigiri, owner from Nasigiri farms
- Mr. Yakubu Tanko Sandow from Kobu Bamsim
- Mr. Yakubu Adam from Kobu Bamsim
- Ms. Amidu Zulia from Kobu Bamsim
- Mr. Mutala Issifu from La'am Gum Kati Chang
- Ms. Mahama Sabratu from La'am Gum Kati Chang
- Mr. Laminu Issaka from Romilla farms

Final Report by Ms. Sedi Millicent

Objectives

- ✓ To conduct business acceleration training to five local businesses in Ghana.
- ✓ Provide sufficient basic knowledge to the managers of the selected companies to enable them to define a business plan based on a value proposition in line with the needs of their customers.
- ✓ Encourage participants to integrate the SDGs into their companies' performance indicators.
- ✓ Assist learners in the development of 5-year action plan/P/L.

Outcome

The training started by a brief introduction of the participants and the agenda. The session started by SAVANET taking the team through the Bio4Africa project. It was noted that Ghana was keen on implementing the green biorefinery, pyrolysis and pelletization biobased technologies.

The participants then introduced their businesses as discussed below:

i. Kobu Bamsim

The business deals in soya beans, maize, beans, ground nuts and rice. The investment employs 10 women and 20 youths.

ii. La'am gum kati chang Jooni Co-perative Farmers and marketing society Limited

The business trades in soya bean, maize, groundnuts, rice, millet and compost manure. Currently it has employed 7males and 5 females' youths and 2 males and 50 females non youths.

iii. Nasigiri farms

The farm trades in pigs, goats, maize, soya bean and rice. The business has employed 2 men permanently and engages 6 casuals on need basis.

iv. Romilla farms

The farm trades in livestock feeds and fish-table fish and fingerlings ad also offers capacity development to fish farmers in the region. Currently, 2 women and 4 men are employed permanently, indirect employment created to women fish mongers.

v. Tizarbora Cooperative

The business engages in sell of maize, rice, soya bean and livestock rearing.

The business creates employment to 12 females 18-35 years (7), over 35 (5), 20 males, 18-35 years (12,) over 35 years (8) and Casual employees 18-35 years-26.

The participants were then able to discuss the business model canvass and the profit and loss account as described below.

Business Model canvas discussion

This session was moderated by AATF team. The session began with market system analysis that focused on. What are the market system constraints being addressed by your business? Or what is the core problem we are addressing with this investment?

How does this investment help catalyse the market system in Ghana? OR how will this business contribute to systemic change OR how will this business affect the system?

It was indicated that the businesses were promoting food security and generating employment. How does this investment increase inclusiveness of poor individuals, households, and communities? *It was discovered that the businesses incorporate gender at all levels in the value chain.* How does this investment help facilitate the diversification of livelihoods?

The farmers indicated that they could practice livestock production, maize farming etc as diversified sources of incomes.

How does this investment if any generate employment opportunities for women and youth. It was noted that the businesses do create employment at various chains i.e., at input level, transport, storage, aggregation, and processing hence encompasses both women, men, and youth across the value chain.

The team also discussed various strengths, opportunities, weaknesses, and threats across the businesses value chain. A deeper analysis of PESTEL-Political, economic, sociological, technological, environmental, and legal factors surrounding the businesses was also discussed.

The farmers were taken through profit and loss account.

The session began by discussion with the farmers on importance of book-keeping that stated.

- ✓ For profit and loss calculation.
- ✓ For decision making.
- ✓ To access finance
- ✓ For tax computation.

The following factors were noted as key elements to be considered before pricing.

- ✓ Market availability.
- ✓ What is the productivity, do I have capital to do optimum production?

On costing, the farmers were encouraged to embrace.

- ✓ Cost based pricing that captures all the costs involved in production.
- ✓ Market pricing-to set their prices considering what the market offers. Discussions on Sustainable ways of pricing were discussed for each business.

Challenges quoted by the businesses and recommendations.

- ✓ Low uptake of digital technology for trade-There is need for continuous sensitization of the actors on the same.
- ✓ Limited capital for expansion-Formal credit, informal credits were recommended to the businesses, venture capitalists etc to ensure access to capital.
- ✓ Fluctuating market prices due to supply and demand variations. Need for businesses to have contracts for enough supply of raw materials, have MOUs with buyers and ensure no stock outs are witnessed.
- ✓ No insurance as risk mitigation-Other risk mitigation strategies put on board. Insurance mechanisms to be explored.
- ✓ Most of the business indicated mixing of business records and personal finance. After the training, the businesses agreed to separate the records and use cost-based pricing while pricing for the same.
- ✓ Most business indicated to be more of price takers than price givers. This was due to market price fluctuations that was highly dictated by the middlemen. It was agreed that.

Way forward.

- ✓ The Government officials present appreciated the Bio4Africa collaboration and promised to hand hold the businesses to ensure there is sustainability.
- ✓ The participants were informed of the follow up to be done by BPE.
- ✓ The businesses did share the Business model Canvass, BMC for individual businesses with AATF. AATF will then have it in soft copy and share with individual business. P/L accounts to be worked co-jointly with business owners.
- ✓ Each business will be mentored by a coach identified from the Bio4Africa team. AATF, SAVANET and BPE will then offer continuous mentoring and linkage to finance for the next 18 months to the businesses.

CONCLUSSION

The training was successful as the business owners appreciated the technical training that will see the business become more sustainable.

5.4 Côte d'Ivoire

Place

INP-HB University, Yamoussoukro

Date

From 24 to 28 of April 2023

Teachers

Professor Noufou Coulibaly and Mrs. ONIANO

Participants

Staff from BIO4Africa consortium

- Mr Belarmino Rodríguez from BPE (on line)
- Mme Sedi Millicent from AATF (on line)
- Professor YAO Benjamin from INP-HB
- Professor BROU Casimir from INP-HB

Companies

- Mr Feteh Kouassi CEO from Socaze Cooperative
- Mr Aimé Amoikon CEO from Procanso
- Mr. Jean Yao coordinator from Ecookim
- Mr. Barthelemy Koaukou CEO from Kapatchiva
- Mr. Jacob Nandjui owner from Agrim

Final Report by Professor Noufou Coulibaly

Objectives

- Provide sufficient basic knowledge to the managers of the selected companies to enable them to define a business plan based on a value proposition in line with the needs of their customers.
- Encourage cooperative enterprises participating in the valorization of agricultural by-products as both an opportunity for additional income, and a contribution to sustainable development.
- Encourage participants to integrate the SDGs into their companies' performance indicators.
- Assist learners in the development of an action plan to be implemented within the framework of the BIO4AFRICA project.

Expected results

- Participants can articulate a clear value proposition.
- The technologies concerned by the project are known to the participants.
- An action plan is produced.

Presentation of the training

- For this training, seven (7) modules were completed during bootcamp by the consultants.
- They are:
- The value proposition.
- Market analysis.
- The profit and loss account.
- Business strategy.
- The Sustainable Development Goals.
- The digitalization of agriculture.
- Corporate Social Responsibility (CSR) indicators and indicators.
- On the fourth day, a program of business actions was produced by the participants and the consultants in a participatory way, based on four (4) variables:
    - Problems (Identification of business problems)
    - Causes of problems
    - Actions to solve identified problems)
    - and Response Instances.

On the fifth day, the working session began with a reminder the seven (7) modules and the action plan, followed by the provisional timetable for the implementation of the action plan, and finally, the development of a draft budget.

This report will be structured around five (5) sections.

PROGRAM DAY 1: Value Testing and Market Analysis

The Value Proposition

A value proposition refers to the value a company promises to offer customers if they choose to buy its product or service. It is a kind of commercial or marketing statement that can convince potential customers that a company's offer perfectly meets their needs or problems. It should be noted that a customer who is 75% satisfied plays the role of ambassador, prescriber, advisor and even actor in the distribution chain.

After this theoretical definition of the value proposition, a practical case of the development of a BIOCHAR value proposition was proposed to the participants.

It should be noted that BIOCHAR is not a fertilizer, it is an amendment product that increases aeration, microbial activity, and the water retention capacity of the soil, thus reducing production costs. The participants, following the CANVAS model, listed the aspects related to the company and the customer.

Value proposition case study: BIOCHAR

The exercise has been summarized in the following table. It was a question of filling in the table below.

Table 11: SWOT analysis in Côte d'Ivoire

THE COMPANY	THE CUSTOMER
❖ **Products and services:** - Physical characteristics (powder, solid or liquid, colour...), operation and instructions for use - The price: retail, semi-wholesale, wholesale, method, and method of payment - Distribution: network, logistics, packaging	❖ **Expectations:** - Efficiency. - Profitability. - Accessibility in relation to price. - Accessibility in relation to distribution;
❖ **Use gains:** - Saves money in the use of fertilizers. - Contributes to the emotional well-being of the customer. - Achieves better returns in the medium and long term	❖ **Issues to be resolved:** - Soil hardening. - Poor soil. - Poor performance. - Low nutrient retention.
❖ **Problem to be resolved.** - PH regulator. - Improved availability of phosphorus. - Aeration of the soil structure. - Improved water and nutrient retention capacity.	❖ **Role:** - Ambassador. - Promoter.

After listing these aspects, the adequacy of the product's values and the customer's aspirations were highlighted. Several suitability criteria were discussed, namely:

- Adequacy between the problem and the solution.

- Market product suitability (customer satisfaction).

- Suitability of the business model. To close this module, each participant, inspired by the instructions given by Professor COULIBALY and his assistant, developed a value proposition specific to his sector.

We can retain:

➢ **Rubber sector:**

Rubber with high shelf life and BRI (for manufacturers).

Adapted social services for producers (for producers).

➢ **Cashew sector**:

From nuts to pure almonds.

Nuts with a high KOR (Kernel Output Ratio)

➢ **Cocoa sector:**

Cocoa beans with a natural taste.

➢ **Rice sector:**

A clean and secure factory.

Fragrant and pure long-grain rice.

Market analysis

Market analysis focuses on the temporal analysis of a specific market. The purpose of marketing market analysis is to identify the most important characteristics of a market and determine the structure of the market at a given time.
This analysis will:

- Flesh out a business idea with figures, data and facts and thus convince with a business plan.
- Quickly recognize the potential of the market and avoid making the wrong decisions.
- Identify gaps and fill them in time.

Market analysis shows which competing products are on the market to identify the barrier to market entry. It is different from market research, which is much more thorough and aims to reduce the risk of failure by allowing appropriate measures to be taken.

Practical case of market analysis:
Each beneficiary of the training presented the specificities of his company with the participation of the others as follows:

➢ AGRIM (Presented by Nandjui Jacob)

- Activities: Debarking and blanching of rice.
- Location: Yamoussoukro.
- Brief history: factory created based on a network of rice producers who constitute the 1st source of supply. Built on a site with an area of 1,800 m² of which 600 m² are built.
- Capacity: estimated production of 600 tons of paddy/year.
- Difficulties: unavailability of the raw material during certain periods of the year.
- Market knowledge: no market research prior to the installation of the plant.
- Perspectives: 1,000 tons of paddy/year by 2025.

➢ SOCAZE (Presented by Kouassi Feteh)

- Activities: Cashew nut and cashew nut production.
- Brief history: SOCAZE is a cooperative that started its activities with cocoa production, it then diversified into cashew nuts to help some of its members who also produce this speculation. No walking study carried out at start-up.
- Capacities: Production estimated at 375 tons of raw nuts / year, 600 members including 300 certified and 174 cashew producers.
- Difficulties: (i) non-compliance with good agricultural practices by producers, hence the poor quality of products. Plus 25 tons of unsold production due to poor product quality; (ii) bad practices by certain machining manufacturers; (iii) lack of funding; (iv) competition from cooperatives and trackers. 13
- Perspectives: processing project with almond production which would make it possible to obtain better prices (raw walnut 305 frs/kg, pure almond 3,000 to 4,000 frs/kg).

➢ COOP-CA PROCANSO (Presented by Mr. Amoikon Aimé)

- Activities: Natural rubber production
- Brief history: Cooperative created after feasibility study in 2007 with 150 producers at the start-up. Thanks to the commercial and social services offered, membership has grown to more than 2,000 members. Winner of the 2017 national award of excellence, it sees its development stagnate because of the difficulties to which the rubber sector in Côte d'Ivoire is subject.
- Capacities: more than 3,000 tons of rubber / year. - Difficulties: difficulties of access to factories due to national overproduction.
- Perspectives: project to install a rubber processing unit into TSR (Technically Specified Rubber) or surgical gloves.

➢ ECOKIM / KAPATCHIVA (Presented by MM. Kouassi Kouassi and Kra Yao)

- Activities: Production of cocoa, compost, and cashew nuts
- Brief history: ECOKIM is an inter-regional union of 32 cooperatives. KAPATCHIVA is a cooperative member of ECOKIM. It has 2901 members and produces 3,500 tons/year. No market analysis was made at the creation of these cooperatives.
- Difficulties: poor sales of mid-season poco due to the small size of the grain. - Perspectives: project to create a cocoa bean processing plant.

PROGRAM DAY 2: Profit and Loss Account and Business Strategy

The profit and loss account

The profit and loss account includes all the income and expenses incurred by a company during an accounting year. It presents a summary table of its result and makes it possible to determine the amount of its possible profits or losses. In order to better illustrate these concepts, and not being able to have the real accounts of companies, for reasons of commercial strategies and non-authorization of the boards of directors of companies to the dissemination of accounts, the representatives of the companies listed the items of expenses and income used in their activities. And to inform us of the most sensitive and difficult items to the success of a good agricultural season.

Case study of profit and loss

The cooperatives did not want to give they profit and loss accounts, for reasons of authorization and commercial strategy. The following table shows the items of expenditure and income making up the profit and loss account adopted by these cooperatives in the management of their economic activities.

In the cost analysis, the item "Input of goods" appears to be the highest item in value and percentage. It represents in most cases 80% of the expenses of the 5 companies. It is incompressible and is linked to the volume purchased and the method of payment of the producers. To control it, it is necessary to carry out actions on the method of cash payment, pre-financing, and control of the break-even point.

Business Strategy

The commercial strategy includes all the coordinated marketing and sales resources used by the company to achieve the commercial objectives set. It must consider the strengths and weaknesses of the company and its external environment (market/competitors).

This strategy is normally developed in the medium to long term. It does not consist of carrying out one-off marketing actions.

A good business strategy makes it possible to offer a product at the right price and with the right characteristics. This condition is essential for the product or service to be legitimate vis-à-vis customers, and therefore for the company to achieve its objectives.

These goals typically have SMART (Specific, Measurable, Achievable, Realistic, and Timebound) characteristics. To develop a good business strategy, follow these steps:

- Identify the target and create personas.
- Clarify the customer promise and value creation.
- Strengthen brand image.
- Optimize the sales funnel and conversion rates.
- Choose the most appropriate marketing strategy.
- Better exploit existing customer base.
- Focus on digital communication techniques: inbound marketing and content marketing.
- Define product life cycles.

It is important to note that none of the companies present have a formal business strategy. A simple exercise allowed consultants to identify their targets upstream and downstream to create the different personas:

➢ Upstream of cooperatives, it is the producers, an actor in speculation, inclined to join a cooperative, receptive, enjoying his civil and moral rights.

➢ Downstream of cooperatives, it is the Agro-industries or exporters of cocoa, natural rubber, cashew nuts, and the consumer for the paddy rice processing company.

This commercial presentation of by-products is part of the technological development of bio-based products. It is in this perspective of sustainable development that day 3 was marked by the SDGs and CSR as presented below.

PROGRAM DAY 3: Sustainable Development Goals (SDGs) and CSR Indicators

The Sustainable Development Goals (SDGs)

Sustainable development is a set of decisions that improves the living conditions of the present without endangering the resources of future generations. Development is not sustainable if we use all our resources today and leave nothing for future generations. Sustainable development means growing together, encouraging solidarity and respect for the environment. To ensure sustainable development, we must work ALL together!

On 25 September 2015, in parallel with the United Nations General Assembly, 193 world leaders committed to 17 global goals in order to achieve 3 super-goals by 2030: (i) End extreme poverty. (ii) Fight inequality and injustice. (iii) Addressing climate change.

CSR indicators

An indicator is either qualitative or qualitative data used to measure the evolution (progression or regression) of an activity, of a set of behaviors in relation to the objectives set to be achieved.

A CSR indicator (Corporate Social Responsibility) is a tool that will allow you to know what the points are to improve in your company to be able to make it perform and establish the right strategies to move towards sustainable development and adopt the right societal behaviors. CSR indicators first make it possible to know its starting point in a societal and environmental approach. It is important to work with these indicators so that the company adopts better communication on its CSR approach. CSR indicators are represented by figures, but they mostly come from questionnaires, surveys, charters signatures, or official data. They can come from data that the company has even before implementing a CSR approach, such as traditional human resources indicators (absenteeism rate, accidents at work, etc.). These indicators presented according to ISO26000 are divided into seven (7) classes: Governance, Relationship and working conditions, Environment, Loyalty of practices, Customer relations, Human rights, and Local development. For a better understanding, participants were asked to list indicators considering their professional experiences within their respective cooperative enterprises.

Case study of CSR indicators

At the end of this practical exercise, the following indicators were selected in accordance with these cooperative enterprises:

1- Governance
   - Number of meetings of the Board of Directors.
   - Number of General Assemblies held.
   - Number of oversight bodies.

2- Relationship and working conditions.
   - Rate of permanent employees (fixed-term contracts, permanent contracts);
   - Number of workers who have benefited from leave.
   - Rates of employees with living wages.
   - Rate of employees who benefit from adequate work equipment.
   - Total hours of capacity building.
   - Number of relaxations activities.
   - Number of days dedicated to CSR. o Rate of employees who benefit from social security coverage.

3- Environment o Producer rates compliant with Rainforest Alliance requirements.
   - Rate of valorization of by-products.
   - Rate of recycled and reclaimed waste.
   - Carbon footprint in CO2 equivalent.
   - Percentage of services to ecological products (tourism);
   - Number of producers adopting good agroecological practices.

4- Fairness of practices
   - Number of producers adopting good agroecological practices.
   - Number of in-house trainings on corruption.
   - Number of partners who have signed the CSR charter.

5- Relations clients
   - Percentage of customers and producers who have received satisfaction questionnaires.
   - Complaint handling rate and claims.
   - Rate of satisfied customers.
   - Rate of customers, suppliers, partners aware of CSR.
   - Number of employees trained in 1st level Civic Prevention and Relief (PSC1).

6- Human Rights o Employee satisfaction rate on respect for human rights.
   - Harassment rate in the company.
   - Adoption rate of the diversity charter (Gender);
   - Number of employees sensitized to the fight against stereotypes (tribalism, gender, disability).

7- Local development
   - Number of local development actions carried out.
   - Amount of donations to local actors (associations, individuals, local authorities);
   - Number of employees mobilized in sponsorship (sponsors);
   - Number of sponsors and percentage of local purchases.

The digitalization of agriculture

The integration of digital systems on farms increases the farmer's expertise and improves the efficiency of farm management. The data collected and mobilized to inform the farmer's decision are internal and external to the farm. In other words, they are not only agronomic or labor-related, but they also relate to price developments on the market, weather forecasts. The use of drones, weather stations, soil, pest and crop diagnostic equipment, field sensors, as well as a wide variety of digital devices for consumers, smallholders and farms have revolutionized agricultural production.

PROGRAM DAY 4: ACTION PLAN

Presentation of the Action Plan

To develop an action plan, it is necessary to identify:

- Business problems.
- The causes of business problems.
- Actions to stem the causes of business problems and identify.
- Intervention bodies (actors or structures capable of intervening effectively).

In order to help the consultants, define their action plans, the consultants asked them to do a practical exercise taking into account not only the real situations of each cooperative enterprise, but also the evolution of each culture or sector. Indeed, these four sectors produce different waste certainly, but have one thing in common in the recovery of these: the production of Biochar. In addition to Biochar, some of these sectors have diversified the upgrading of their by-products. (See Table 5)

Case study of the action plan

Participating companies were asked to:

- Formulate a value proposition.
- Conduct a market analysis.
- To develop a commercial strategy.

Table 12: Biochar marketing and commercial actions bootcamp in Côte d'Ivoire

Sectors	Value Proposition	Market analysis	Market research
COCOA	**Product:** Biochar and Compost **Location:** Bouaflé, Bonon **Value Proposition**: ***"Bio revitalizing the soil and economical"***	**Persona:** member producers and others, be of legal age and have a plot in operation **Price:** 100 Frs/Kg (Biochar and compost) **Format:** 50Kg bag **Distribution:** radius of 50 to 70 km	**Sites**: Daloa, San Pedro, Yamoussoukro Two (2) Biochar production units. One (1) compost production unit. NB: KAPATCHIVA by-products go to Daloa

		Communication: Internet, WhatsApp SMS, community radio	
HEVEA	**Product**: Biochar and rubber seed oil soap **Location**: Soubré **Value** Proposition: « **Non-*corrosive foaming soap".***	**Persona:** households (all types, average income: 100,000 to 150,000 francs), restaurants, hotels, hospitals... **Price - Format:** - Box of 24 pieces of 100g: **2 200 F CFA** - Box of 20 pieces of 200g: **3 800 F CFA** - Box of 14 pieces of 350g: **3 700 F CFA** **Distribution:** radius of 50 to 70 km (short and long circuit) **Communication:** Internet, WhatsApp SMS, community radio	**Sites**: Soubré One (1) Biochar production unit. One (1) soap factory production unit.
ANACARDE	**Product**: Biochar and agri-food **Location:** Yamoussoukro **Value Proposition:** - ***"Resistant and biodegradable packaging"*** - ***"Animal food and multivitamins"***	**Persona:** households, traders, businesses **Price:** **Format:** **Distribution:** **Communication:** Internet, WhatsApp SMS, community radio	**Sites**: Daloa, San Pedro, Dimbokro Three (3) Biochar production units. Three (3) Bioplastics production units.
RICE	**Product:** Biochar **Location:** Yamoussoukro **Value Proposition:** ***"Bio revitalizing the soil and economical"***	**Persona:** member producers and others, be of legal age and have a plot in operation **Price:** 100 Frs/Kg (Biochar and compost) **Format:** 50Kg bag **Distribution:** radius of 50 to 70 km **Communication:** Internet, WhatsApp SMS, community radio	**Sites**: Yamoussoukro One (1) Biochar production unit.

Closing ceremony

At the end of the workshop a closing ceremony was organized on April 28, 2023, at 11:40 am. This ceremony was an opportunity for Professor BROU to thank the participants for their availability and their very active participation in the various activities. Then, the consultants thanked the participants for their significant contributions, proof of the interest they gave to this workshop.

Speaking on behalf of the participants, Mr. AMOIKON thanked the project coordinators for the opportunity given, through the BIO4AFRICA project, to each of the companies to recover the waste from their activities. This waste is an additional source of income. He also thanked the consultants who had kindly shared their knowledge on the topics discussed. A special mention was made to the brave ladies who provided the logistics.

Professor YAO Benjamin continued the series of interventions by thanking Professor COULIBALY and Mrs. ONIANO for their availability. He then encouraged the participants to share the knowledge acquired at this workshop with their collaborators and managers. He recommended that they convey to their managers the commitment of INP-HB and the BIO4AFRICA project to support the selected companies in this business acceleration process. But, to achieve this, he suggests the provision of precise information from companies. This information will certainly remain highly confidential.

It was with these words that Professor Yao declared the Business Acceleration Workshop closed.

6. VISITS ONE TO ONE

After the Bootcamps, the visits one to one respond to the need to ensure the following aspects, which are necessary for the management support phase:

- Basic management concepts for the growth and control of the company
- Monitoring indicators, both economic and of positive impact
- Generate a relationship of proximity and mutual knowledge
- On-site knowledge of the businesses and social and economic reality

In BIO4AFRICA project, with 20 participants from four countries, different management background and different business realities, this is an essential action to facilitate the 12 months of remote monitoring.

We have defined one day of work per company, using our management support method, which we have been developing for more than 25 years, working with SMEs around the world like Peru, Colombia, Chile, Morocco, Nigeria, India, UE and USA, through international projects in collaboration with Chambers of Commerce, Local Governments, City Councils or Enterprises Associations.

Experience tells us that a full day is more than enough to achieve the above objectives.

We divide the session in two: we start by visiting the facilities and the people at work there and establish informal conversations on specific operational aspects.

Once the visit is over, we define and agree with the organisation the format and contents of the monitoring instruments.

At the end of the visits, discussions will be held with the rest of the consultants in order to establish the final roadmap for each organisation.

Table 13: Visits one to one calendar

	COUNTRY
10th – 14th April, 2023	Senegal
15th-19th May, 2023	Uganda
29th-2st June, 2023	Côte d'Ivoire
10th – 14th July 2023	Ghana

The road map is the main tool to develop the managing support program, when the actions defined in the training part (Bootcamp, one to one visit and mentoring program), are going to be implemented.

BPE has designed a synthetic evaluation tool with three different objectives:

1. Competitiveness
2. Circular economy
3. Social impact

Each perspective wants to focus key aspects to be analysed. The objective is to confirm all the positive aspects managed in a correct way, identify areas of improvement and set an alarm over key issues. Next step is to propose actions to modify the initial evaluation.

The tool is an excel sheet describing perspectives, actual situation and action to be done. Includes a column with three colours (red=alarm, orange=improvement, green=ok) to facilitate a quick screen check.

The tool has to be updated every four months; in that way we can track the evolution of the management support program.

1. Competitiveness

The first objective is to evaluate different key perspectives of each company to define a start situation. We normally use three colours to define this point: green is ok, orange means we need to improve something and red is not correct. In the second column we describe the actual situation per each perspective. In the last column we describe the actions we need to execute to improve the actual situation.

Table 14: Competitiveness template

PERSPECTIVES		ACTUAL SITUATION	ACTIONS
FIT TO MARKET			
Add value			
Singularity			
Market fit			
Brand & image			
Packaging			
Sales/Transport/logistics			
PRODUCTIVITY			
Human resources			
Quality control			
Production capacity			
FINANCIALS			
P&L			
CashFlow			
Financing to grow			
Benefit			
Margin			
MANAGEMENT AND DIGITAL TOOLS			
Professional Manager			
Business Plan			
Budget and P&L			
Data			

2. Circular economy

The second objective is to evaluate the technology already existent or the potential thecnology to implement. To include or improve the technology in terms of reducing the energy costs or prodcuce new prodcuts are the core of the BIO4AFRICA project. We wanted to split the 20 companies selected in actual users of thecnology or potential users. In this way we have defined an initial situation per each company. Next step is to define objectives and describe actions to achieve the objectives.

Table 15: Circular economy template

Bio4africa technology	ACTUAL SITUATION	OBJECTIVES	ACTIONS

3. Social impact

The third objective is to improve the social impact provided by these companies in their communities, manly in gender perspective. We decide to track KPIs related with gender and also with education and hungry because are part of the problem in the households in Africa. Gender equality through better incomes and more labour stability helps the families in terms of education and nutrition.

Table 16: Social impact template

ODS 5 - Gender equality	NUMBER OF WOMEN	AGES AND SALARIES
Employment		
Position in the company		
Salary		
Contracts		
ODS 1 and 4 - Hungry 0 and education		
Ensure acces to food		
Ensure acces to school		
Other incomes		
Number of sons and daughters		
Housholds decison to spend money		

Ghana is the only country where the visits one to one has been carried out exclusively by the local partners, just as it happened whit the selection of participants. The reason given by the local partners are the initial distrust of participants towards foreign consultants.

BPE shared the knowledge, methodology and tools with iHUB and support the consultants on remote.

7. MENTORING PROGRAMME

The objective is to open up, question, reflect on and reinforce the business model based on the experience of the mentors, so that participants may reach conclusions and perspectives beyond those they would reach on their own.

In this line, it is also important to make the mentors' network of contacts available to the participants, and to identify possible synergies.

In BIO4AFRICA project we have decided to assign three mentors per company. First, every mentor will have to do one online session per company assigned but the reality was not exactly like this. Connectivity and logistics not allowed such number of sessions so we decided to join the three mentors per each company in one session all together. In those way we have ensured the execution of the program.

Mentoring session has been focused on technological perspective, evaluating which technology from the BIO4AFRICA project matches better. The reason is because we would like to focus the session in one perspective otherwise one session was not enough.

The deliverable resulting from the session is a final document in which the mentors must define the actual situation, potentiality to introduce a technology or improvements about technologies already existents and actions.

Considering the participants of each cohort, we have made two teams according to their language, French in Senegal and Côte d'Ivoire and English in Ghana and Uganda, in order to establish sessions with a higher level of complicity without having to go through local interpreters.

The French-speaking team is composed of mentors from CIRAD "CENTRE DE COOPERATION INTERNATIONALE EN RECHERCHE AGRONOMIQUE POUR LE DEVELOPPEMENT" and CTA "FUNDACION CORPORACION TECNOLOGICA DE ANDALUCIA".

We propose two mentors from CIRAD l and one mentor from CTA to work with the 10 companies based in Côte d'Ivoire and Senegal.

The English-speaking team consists of mentors from Q-PLAN "Q-PLAN INTERNATIONAL ADVISORS PC" and CTA "FUNDACION CORPORACION TECNOLOGICA DE ANDALUCIA". We propose two mentors from Q-PLAN and one mentor from CTA to work with the 10 companies based in Ghana and Uganda.

The mentoring program has been executed from May to August 23, after the Bootcamps and the visits one to one.

The feedback from mentors and mentees has been very positive. At the end of the sessions all the companies have the possibility to understand the benefits to include biobased technologies and identify which one fits better with their needs.

Some businesses have been more focus on energy as an alternative cheaper and green respect their actual situation. Other put the focus to develop a new business line producing new products.

In fact, all the participants were interested to include biobased technologies the point is the viability in terms of investment and return and the access to be financed.

BPE is going to work and support the businesses in the financing needs during the management support program.

The mentoring program is the last action to finish the training part. In this way we have the actual situation about the companies in terms of management background, competitiveness, circular economy and social impact.

BPE shared the knowledge, methodology and tools with iHUB and support the consultants on remote.

At the end of the mentoring program, we had the basic information per country in terms of bio-based technology situation in every business, starting point for the circular economy perspective.

Table 17: Mentoring program template

Country	Company	Actual situation	Objectives	Needs	Actions

Ghana is the only country where the mentoring program has been carried out exclusively by the local partners, just as it happened whit the selection of participants or the visits one to one. The reason given by the local partners are the initial distrust of participants towards foreign consultants.

8. FIRST RESULTS

After the training program – bootcamps, visits one to one and mentor program - we had better knowledge about the agrobusiness value chain in rural areas in Africa.

We have been working and understanding much better the economic situation in every stech of the value chain thanks to the different business selected.

We applied the same methodology for the different participants. We run per each country a Bootcamp, we have visit individually one to one all the companies, and finally the mentors interviewed all the participants one by one.

During all the training program we gathered the relevant information. Formal information through standard tools like Business model, P&L, Balance etc. and informal information through interviews.

The result was a business diagnosis under the methodology of triple perspective – management, circular economy and social impact - per each one.

Next step was to defined a standard unit to compare the different positions in the value chain. The standard unit we have decided to compare is the farm.

We have studied the social and economic reality about the management of one small farm from four different positions:

1. Small farmer alone selling not processed products
2. Small farmer part of a cooperative selling not processed products
3. Small farmer part of a cooperative selling certified products
4. Small farmer part of a cooperative selling processed products

The objective is to understand which model suites best to include biobased technologies and measure the benefit of the triple perspective: management. Circular economy and social impact.

We start the study from the following premises:

- Property is a key indicator.

  Some small farmers are not the owners of the land. We have not a reliable data from our participants in the accelerator program but is a significant issue. This first premise determines investments, could explain a lack of long-term management, and creates a potentially risky situation.

- Size sets income level.

  Small farm unit extension is from 1Ha to 3ha of land.

- Organization model facilitates better margins.

  To be part of a cooperative improves margins. Cooperatives could help in access to market and could provide services related with the expenses like seeds, transport, fertilizers or credits. Another relevant aspect to be part of a cooperative is the security.

- Transformation unit.

  Installation where products can be processed adding value. We have one examples in the accelerator program like dry cashew nuts and sunflower oil.

- Market is the king.

  Price/unit is the start point. We have identified three examples: (1) local market selling not processed products without add value. Commodities like tomatoes, lettuce, rice, etc. that means low prices. (2) national market selling processed products like mango dry, mango vinegar or sunflower oil, that means better price (3) international market selling processed products like bio cashew nuts that means much better price.

- Certifications to add value.

  Concerning market and selling price we have to take in account the certifications. There are very relevant for the P&L analysis. Certification Bio and fair-Trade market label are two ways to increase the price. In the accelerator program, all the cooperatives that are selling their products in the international markets has minimum one of them.

- Biobased technologies and circular economy.

  We have two different examples. (1) technologies are part of the business model because reduces costs or increases incomes or services. (2) business model can't include biobased technologies because has no viability.

- Social impact

  We have studied the composition household incomes and the role of women in a rural family as a key indicator. Our approach is double (1) measure the income gap into a household economy to achieve a decent standard of living. In rural areas in Africa all the families have other incomes out of the farm activity but not always are enough to ensure a decent quality of living (2) women capacity to decide the destiny of the money like food, education, clothes etc. Capacity in terms of decision, who really manages the familiar economy. Our study is inspired by the living-income theory exposed by GIZ – German international cooperation for a sustainable development, COSA – Committee on sustainability assessment and Kit - Royal Tropical Institute in Guidance on calculating household income version1. (May 2020).

8.1 Small farmer alone selling not processed products

This is a very basic model in terms of management. In fact, when the unit farm is around 1Ha, its more appropriate to define this model in terms of subsistence not business.

Normally is a family without employees harvesting, selling and managing all the farm at the same time, with credit and treasury difficulties.

In general, small farmers harvest different crops at the same time. In Ghana, for example, we have small farmers producing okra, tomatoes, lettuce, pepper in one farm.

All of these products are commodities, not singular or different from the concurrence, that means local market and low price.

We have also to take in account productivity. Not all the potential capacity is harvested, the percentage lost is minus income. We have also to realize, in this kind of farms, part of the production goes to the family, this also reduces the potential income. The rest goes to the market.

It's not difficult to understand sales are going to be reduced. That's why every small cost has a relevant impact in terms of margin.

We have determined two kinds of basic costs, variables and fixed. Principal variable costs are: fertilizers, pesticides, insecticides, fungicides, credit, seeds, purchases, transport. Basic fixed costs are: costs of land, small machines and agricultural tools.

Result is a no profit. Not enough to have money to run the business without credit. We identified a high level of risk. Every negative impact coming from the costs, productivity or devaluation of prices could strangle the business.

How biobased technologies can improve this model. Potential improvements related with Bio4africa biobased technologies project could Increase productivity and reduce cost of fertilizers.

In this model social impact, overall focus on gender, has a very difficult approach and treatment. There are big barriers to overcome like roles between men and women, not paid work, background education and cultural behaviours. Reliable data and transparency to understand the real situation are also large deficits.

The analysis of this this model concludes, household incomes providing from the farm activity could represent the 50% to 65%, no farm labour incomes, coming from goods or services is the rest to achieve the 100%. Petty trading, cottage industries or handy crafts are typical activities.

Another livelihood is no farm no labour incomes obtained form off farm non labour activities such as cash or in-kind gifts, public or private transfers amongst others.

Figure 1. Small farmer alone selling not processed products.

CONCLUSIONS

Risky position. Every negative impact can struggle the business, insecurity.

No profit. High costs and low prices, not singular value proposition - commodities products.

No capacity to growth. The lack of credit and treasury without benefits from the activity.

No possibility to include biobased technologies. No capacity to invest not enough volume.

Social impact on gender equality. Strong cultural barrier. No capacity to transform the household roles one by one.

8.2 Small farmer being part of a cooperative selling not processed products

In general terms medium and big cooperatives has thousands of families onboard. Every family manage a farm. In average, farms are 2Ha size. In single product farms like mango, cacao or rice that number increases. The average is 2,5Ha.

In small farms is a family without employees harvesting, selling and managing all the farm at the same time, with credit and treasury difficulties. In bigger farms there are employees.

All of these products are commodities, not singular or different from the concurrence, that means local market and low price.

We have also to take in account productivity. Not all the potential capacity is harvested, the percentage lost is minus income. We have also to realize, in this kind of farms, part of the production goes to the family, this also reduces the potential income. The rest goes to the market.

Cooperatives facilitates a better costs prices and access to market and credits. Cooperatives can give better prices in: fertilizers, pesticides, insecticides, fungicides, credit, seeds, purchases, transport. Sometimes cooperatives can also provide small machines and agricultural tools.

Result is a reduced profit. Sometimes not enough to run the business without credit.

How biobased technologies can improve this model. Potential improvements related with Bio4africa biobased technologies project could Increase productivity and reduce cost of fertilizers.

In this model social impact, overall focus on gender, could come only from the cooperative. The approach and treatment are not easier but we studied cooperatives with very interesting gender programs inside. There are big barriers to overcome like roles between men and women, not paid work, background education and cultural behaviours. Reliable data and transparency to understand the real situation are also large deficits.

The analysis of this this model concludes, household incomes providing from the farm activity could represent the 60% to 70%, no farm labour incomes, coming from goods or services is the rest to achieve the 100%. Petty trading, cottage industries or handy crafts are typical activities.

Another livelihood is no farm no labour incomes obtained form off farm non labour activities such as cash or in-kind gifts, public or private transfers amongst others.

Figure 2. Small farmer being part of a cooperative selling not processed products.

CONCLUSIONS

Low risky position. Be part of a big group, security.

Reduced profit. Better costs and low prices.

Difficult to growth. Not substantial benefits from the activity difficult investment and improvements.

Possibility to include biobased technologies. They have volume but spread around the territory. The big challenge is to collect and move all the feedstock from each plantation. Logistics and investment in vehicles and biobased technology. This kind of cooperatives has problems to invest.

Social impact on gender equality. Strong cultural barrier, capacity to transform household roles through programs coming from the cooperative. The cooperative is the key but few (small and medium cooperatives with not processed products) have this objective on mind.

8.3 Small farmer being part of a cooperative selling certified products

In general terms medium and big cooperatives has thousands of families onboard. Every family manage a farm. In average, farms are 2Ha size. In single product farms like mango, cacao or rice that number increases. The average is 2,5Ha.

In small farms is a family without employees harvesting, selling and managing all the farm at the same time, with credit and treasury difficulties. In bigger farms there are employees.

Certified products are singular they have a different position from the concurrence, that means international market and high price.

In general terms certified products come from one single planation. In the accelerator program we have cashew nuts and cacao. Cooperatives are manly focus to help on productivity. This is a key indicator because certified products have sense with large quantities.

Cooperatives facilitates training and resources to increase productivity and also general services to achieve better costs prices, access to market and credits.

Result is a profit. Depending of market prices, farmers have capacity to invest.

How biobased technologies can improve this model. Potential improvements related with Bio4africa biobased technologies project could Increase productivity, reduce cost of fertilizers and access to products like briquettes, nutrients for animals among others.

In this model social impact, overall focus on gender, could come only from the cooperative. The approach and treatment are not easier but we studied cooperatives with very interesting gender programs inside. There are big barriers to overcome like roles between men and women, not paid work, background education and cultural behaviours. Reliable data and transparency to understand the real situation are also large deficits.

The analysis of this this model concludes, household incomes providing from the farm activity could represent the 80% to 90%, no farm labour incomes, coming from goods or services is the rest to achieve the 100%. Petty trading, cottage industries or handy crafts are typical activities.

Another livelihood is no farm no labour incomes obtained form off farm non labour activities such as cash or in-kind gifts, public or private transfers amongst others.

Figure 3. Small farmer being part of a cooperative selling certified products.

CONCLUSIONS

Low risky position. Be part of a big group, security.

Better profit. Better costs and high prices. Certified products could be 200% better prices.

Capacity to growth. Profits from the activity afford investment and improvements.

Possibility to include biobased technologies. They have volume but spread around the territory. The big challenge is to collect and move all the feedstock from each plantation. Logistics and investment in vehicles and biobased technology. This kind of cooperatives has the possibility to invest. They have also access to loans or soft debt through partners-international clients.

Social impact on gender equality. Strong cultural barrier, capacity to transform household roles through programs coming from the cooperative. This kind of cooperatives are oriented to improve gender equality, is part of their strategy.

8.4 Small farmer being part of a cooperative selling processed products

In general terms medium and big cooperatives has thousands of families onboard. Every family manage a farm. In average, farms are 2Ha size. In single product farms like mango, cacao or rice that number increases. The average is 2,5Ha.

In small farms is a family without employees harvesting, selling and managing all the farm at the same time, with credit and treasury difficulties. In bigger farms there are employees.

Processed products have add value, is a final product. Production capacity, certification, packaging and marketing position are key factors to jump from national to international market. We have both examples in the accelerator program. Obviously international market is better price but a good strategy in national market can be extremely profitable.

In general terms processed products come from one single planation. In the accelerator program we have mango, cashew nuts and sunflower. Cooperatives are manly focus to help on productivity. This is a key indicator because processed products in general terms have sense with large quantities.

Cooperatives facilitates training and resources to increase productivity and also general services to achieve better costs prices, access to market and credits.

Result is a better profit. Depending of market prices, farmers have capacity to invest.

How biobased technologies can improve this model. Potential improvements related with Bio4africa biobased technologies project could Increase productivity, reduce cost of fertilizers and access to products like briquettes, nutrients for animals among others.

In this model social impact, overall focus on gender, could come only from the cooperative. The approach and treatment are not easier but we studied cooperatives with very interesting gender programs inside. There are big barriers to overcome like roles between men and women, not paid work, background education and cultural behaviours. Reliable data and transparency to understand the real situation are also large deficits.

The analysis of this this model concludes, household incomes providing from the farm activity could represent the 80% to 90%, no farm labour incomes, coming from goods or services is the rest to achieve the 100%. Petty trading, cottage industries or handy crafts are typical activities.

Another livelihood is no farm no labour incomes obtained form off farm non labour activities such as cash or in-kind gifts, public or private transfers amongst others.

Figure 4. Small farmer being part of a cooperative selling processed products.

CONCLUSIONS

Low risky position. Be part of a big group, security.

Better profit. Better costs and better prices. Processed products have better prices.

Capacity to growth. Profits from the activity afford investment and improvements.

Possibility to include biobased technologies. The transformation process generates a lot of waste that can be used in biobased technologies producing new products and/or producing energy.

Social impact on gender equality. Strong cultural barrier, capacity to transform household roles through programs coming from the cooperative. Most of this kind of cooperatives are oriented to improve gender equality, is part of their strategy.

9. ROADMAP

During the training program we have been working together with the different companies selected in three directions:

1. Identify different business models in the agrobusiness value chain
2. Understand much better the economic and social situation in every stech of the value chain
3. Made a customized business diagnosis per each company

Number one and two are related with previous chapter (8. First conclusions) where we describe the four business models identified.

Number three is the first step of the road map.

What's a road map? A list of actions – activity, cost and timing - to achieve a strategy starting from an initial business diagnosis. In Bio4Africa accelerator program we have evaluate three perspectives – management, circular economy and social impact.

We would like to present the results about the Bio4Africa portfolio business diagnosis.

(1) MANAGEMENT

We have no authorisation by all the participants to share the information used during the training program like sales, figures, costs, prices and relevant financial information like banks, access to credit or loans among others. We have decided to share the conclusions in percentages and without company names in this way we can present the business diagnoses and prevent the identity.

We have identified four areas to evaluate the competitiveness of each business:

1. Fit to market
2. Productivity
3. Financials
4. Management and digital tools

Initial situation about **Fit to market**

a. Add value. Only 6 over 20 has a product with add value. We have identified processed products like dry mango, mango vinegar, sunflower oil or certified products like cacao trade fair or cashew nuts Bio.
b. Market fit. 2 companies are selling in the international market, 6 in national market and 12 in local market.
c. Brand & image. 4 over 20 works on this trying to have a good market position.
d. Packaging or bulk. 14 over 20 sells their products without packaging. We have identified packaging for international markets where quality, size and characteristics are defined by the clients, and national markets where all companies have a similar packaging without singularity versus the concurrence.
e. Sales - logistics / transport. We would like to define two kinds of transport. Internal between small farmers units and cooperative collect hubs and external between cooperatives and market. We have 5 cooperatives that provides internal transport to their farmers. External transport is well resolved in 9 cooperatives.

Conclusions, objectives and actions

In general terms there is no uniqueness in the value proposition and distribution channels. That means low prices and not enough revenues.

Concerning the 20 examples coming from the accelerator program:

Worst position is for not processed products without volume and certification. They can be sold only in local markets without margin. Difficulty to move the production from the land to the market. Part of the production is sold at low prices.

Processed products in local or national market are packaged in similar size and design and they are offered in similar channels of distribution. Visiting different local points of distribution (small shops, markets, informal sellers etc.) we realized this general uniformity. The result is low prices and low margins. There is also a big issue with transport.

Better prices are linked to processed products ready to export. They have always a standard of quality – Bio or faire trade certification, international packaging requirements and volume.

Obviously objective must be focus on price and sales. The problem is when there is no possibility to add value or increase volume. Small farmers alone or cooperatives offering not processed products has big difficulties to increases revenues because they have capacity only to cover local markets.

Without trucks and small vehicles to collect and distribute all the crops, or adding some value transforming products there is no possibility to change the reality. Improvements can come only through investments, but this is another big issue to resolve we analyse after.

We would like to present the best example done in the accelerator program concerning fit to market perspective:

Mango vinegar in Senegal.

Initial situation. 25.000 litres capacity per year. Initially bottles of 1 litre or 1,5 litres for local market.

We have identified a new client for the company – tourists visiting Senegal.

We have changed the size of the bottle, form 1 or 1,5 Litres to 250ccl. We have redesigned the size thinking in new clients (tourists). Vinegar is very well appreciated by tourist in Senegal, they are open to buy small sizes, easier to transport at better prices. You can find one litre of mango vinegar in the local market at 2.000 Francs CFA. Tourists can pay 3.000 Francs CFA per 250 ccl bottle of mango vinegar. That means potentially to multiply the revenues per 4 transforming the same volume of natural mango to vinegar.

Next challenge is the distribution. How to be present in places where tourists can buy like: small boutiques in the international airport, small markets near petrol stations, boutiques in hotels, small corners in restaurants or tourist local markets among others.

Big issue is to invest in vehicles and human resources.

First action was to test the market in two places with tourists as a pilot and results was great. Next step will be finding financial and human resources to scale the pilot.

Another change we are trying to do to increase the price of 250ccl mango vinegar bottle is to switch plastic in glass. There is a local supplier working for other brands but we have no received a proposal in terms of quantities and prices until now.

A glass bottle of mango vinegar 250ccl capacity can be paid at 3.500 Francs CFA.

Initial situation about **productivity**

f. Human resources. In general terms is not an issue in terms of number of people need to work in not qualified positions. It's an issue in some positions more qualified.
g. Quality. Is the most important issue to resolve with processed and certified products and no questionable characteristic for export.
h. Capacity. Without volume is not possible to achieve international or national markets. The destiny of the production is local. In our cohort we have 2 in international markets, 6 in national markets and 12 in local market.

Conclusions, objectives and actions

Without volume is not possible to sell in national markets and to achieve international markets is necessary to have volume and quality. Objectives are strategies to provide quality and increase productivity.

We would like to present different examples concerning this perspective:

Sunflower oil in Uganda

10.000 tones oil processed per year. Sales are manly focus on national and international market in bulk. Prices floating every season around 2 dollars litre. In bulk prices goes down even more.

The strategy is to increase the position in local market selling bottles of one litre and increase capacity to maintain national and international markets.

There is a program to increase the capacity starting from farmers unit plantation.

To facilitate a better production the cooperative bought a tractor. Is a new service “pay per use”. Every farmer has the possibility to use the tractor and paid for it. The cooperative has also small vehicles to move the crop to the transformation unit.

PKWI developed a permanent training program focus on productivity.

Some processus of the transformation unit has been modified to increase the capacity and cover the new estimated volume of production.

Forecast was to increase around 5% the capacity. That means 500 Tones more per year.

Potential revenues for local market are the result to multiply 500.000 bottles more in local market per 2 dollars and maintain national and international markets in bulk.

Local market is ready to buy more but PKWI should define an ambitious strategy to distribute and sell all this quantity.

Dry mango in Senegal

Two transformation units working in the same area in Senegal offering similar products. 70% of the production is sold in bulk at low price for national market and the rest in small packaging better price for local market. They produce also juices and marmalades for local market.

We have defined a strategy of partnership focus on price and volume.

Price will be increased by getting a Bio certification and volume is going to increase through joining both structures and buying more raw material (natural mango) thanks of synergies and better costs and logistics.

Companies are committed in this partnership and they are starting the Bio certification process. In terms of volume, they have improved some transformation processus, they have more capacity to buy and next step could be to include biobased technologies during the transformation process to reduce energy costs.

Initial situation about **financials**

i. Financial needs to growth. 20 over 20, all the business has to invest. It doesn't matter about their initial position in terms of activity or market. From local small farmer selling in their area to a big cooperative selling abroad this is a problem to resolve. The difference come from their viability – capacity to generate profits and access to credit. 14 over 20 has very difficulties to cover the financial needs to growth.
j. Margins. Not more than 8 business over 20 has acceptable margins. This is the starting point of the operational difficulties in cash flow and treasury. Margins without volume explain the difficulties to invest. In our cohort only 4 business have margins and volume.

Conclusions, objectives and actions

As we described previously margins and treasury are the main issues to resolve in agrobusiness sector in rural areas. Access to credit is also a big problem in Africa, banks doesn't offer competitive prices and works with low risks. In Bio4africa cohort we have few examples of success and all of them are linked with big figures and international markets. The reality is international clients provide access to money through direct investments, commercial loans or advance payments.

We would like to present different examples concerning this perspective:

Cashew nuts in Senegal

Small business with capacity to growth thanks to a client introduced in national and international markets. Big issue is money to buy raw material (natural cashew nuts) and capacity to invest in better machines and processus to dry and pack, market is not a problem.

In Bio4africa project we helped to design and evaluate the possibility to be prepaid by the client to facilitate new purchases. Purchase is a key processus in this kind of business. International buyers come at the same time with big orders during the starting season and prices flows from one week to another and orders are hard to get without cash.

Next season provably this business will be able to increase their purchases in 20% more minimum thanks to receive the money from the client in advance.

Initial situation about **Management and tools**

k. Professional manager – board. 4 over 20 have board and professional managers.
l. Business Plan – strategy. 4 over 20 have a clear strategy and a Business Plan before the accelerator program.
m. Budget and P&L. 4 over 20 have a budget and a P&L before the accelerator program.
n. Data. 4 over 20 manage the business with data.

Conclusions, objectives and actions

In general terms agrobusiness sector is not professional in terms of management. They work without real figures doing more or less the same as always and without planification, all the activity is focus on short time. Objectives has to be focus on introduce management habits and tools.

We have no examples to show in this perspective.

(2) CIRCULAR ECONOMY

This perspective is very relevant into Bio4Africa project.

After the training program we realized we could implement real examples of biobased technologies in the accelerator program to complement the pilots.

When we designed the training program, we decided to focus the mentoring program on this perspective. We thought it was better to concentrate the support of the mentors on this and avoid to open other discussions related with other perspectives. We must say it was a very efficient decision.

Thanks to the mentoring program we have defined the initial situation concerning biobased technologies and the potentiality to be include during the Bio4Africa program in the following months.

Potentiality has to include two indicators (1) technology capacity – knowledge and access to technology (2) economic viability – investment versus profit or/and investment versus relevant cost decrease.

We would like to present the initial situation of biobased technologies, objectives, needs and actions to run during the program.

Table 18: Circular economy analysis Côte d'Ivoire

Company	Actual situation	Objectives	Needs	Actions
Ecookim	Biocompost, an easy way to reduce the pods in the farms but not enough. Cacao bio needs to ensure the traceability	1. Fish farm 2. Charbon from the pods (cabosses)	1. Know how nutrients 2. Technology briquettes	1. Contact with Ghana Bio4africa partners for fish nutrients 2. Student from INP-HB transformation pods to charbon and tech from Uganda
Kapatchiva	Biocompost, an easy way to reduce the pods in the farms but not enough. Cacao bio needs to ensure the traceability	1. Production the biochair	1. Financial needs (build a biochar plant)	1. Suport from INP-HB University (students) to define the technological needs 2. Support from BPE to find financement for the infrastructure
Procanso	No actions to reduce the waste in the field.	No specific objective	No defined	1. Agree the objectives and road map with Procanso
Socaze	Biocompost, an easy way to reduce the pods in the farms but not enough. Cacao bio needs to ensure the traceability	1. Biochair	1. Know how from INP-HB	1. Define the circular economy model (they self or with INP-HB)
Agrim (*)	Rice waste from the transformation (without peel)	No specific objective	No defined	1. Small production. Not enough waste to transform in terms of additional income

Table 19: Circular economy analysis Senegal

Company	Actual situation	Objectives	Needs	Actions
Agropastoral	The peels and the rest of waste has not economic return. They give it without prize	1. Evaluate the possibility to install one dryer hibrid (biogaz and solar) 2. Analyze how to concentrate all the waste and calculate the value	1. Know how and support from USAZ	1. Analyze with USAZ students the viability of the project
Demiir	The peels and the rest of waste has not economic return. They give it without prize	1. Evaluate the possibility to install one dryer (biogaz) 2. Analyze how to concentrate all the waste and calculate the value	1. Know how and support from USAZ	1. Analyze with USAZ students the viability of the project
Waare	The peels and the rest of waste has not economic return. They give it without prize	No needs support from Bio4africa in terms of circular economy	No needs support from Bio4africa	No needs support from Bio4africa
Ethicajou	They have broken pieces (good in terms of quality but not in size and aspect). They sell the shells at 7 Fcfa/kg	1. Evaluate the possibility to install one dryer (biogaz) 2. Analyze how to concentrate all the waste and calculate the value	1. Know how and support from USAZ	1. Analyze with USAZ students the viability of the project
Balantacounda	They don't have any return in economic terms from the waste. Shells, broken pieces etc.	1. Evaluate the possibility transform the shells in charbon	1. Know how and support from Bio4africa project Biostar	1. Analyze with USAZ students the viability of the project

Table 20: Circular economy analysis Uganda

Company	Actual situation	Objectives	Needs	Actions
Agali	So far, the cooperative does not do any processing with the waste, they just sell it for further processing	1. Better quality on animal feeds 2. Cooking fuel & electricity to the livelihood of the cooperative	1. Financial investment (Loan from the bank) 2. Know how from Bio4africa project	1. Define a project to develope
HOCW	They have a problem with plastic waste. They don't know how to manage 1200 households	1. Collect and sort plastic waste	1. Investment of 1.2 M Ugx to collect and sort plastic waste	1. Define a project to develope
PKWI	They have collection centers in which, the waste is collected	1. Briquettes for households	1. Investment for Briquettes machinery	1. Define a project to develope
HARUGONGO	So far, the cooperative does not do any processing with the waste	No specific objective	No defined	1. Very small productions spread thoughout the territory

Table 21: Circular economy analysis Ghana

Company	Actual situation	Objectives	Needs	Actions
KOBU-BAMSIM Farmer group	Cowpea, soybean husk, corn cobs and rice husk are used to produce biochar. Plant recidue is sold to Savanet at Ghc 20 per bag.	Provide SavaNet raw materals for Biochar production	Extension service from the SavaNet Agriculture Technology Research Station in Loagri-Ghana	collaborate with SavaNet and the Bio4Africa consortium members
Tiza Boora Farmer Cooperative	Corn cobs, groundnut husk, and rice husk is used to produce biochar for use by the farmers under the cooperative.	Produce Biochar for use by cooperative members for crop production on commercial scale.	Extension service from the SavaNet Agriculture Technology Research Station in Loagri-Ghana	collaborate with SavaNet and the Bio4Africa consortium members
Nasigiri farms	Rice bran, and crop residue is used to feed pigs on the farm. They are purchased from farmers at 10 Ghana cedis per1Kg.	Produce pigs using bio-based and conventional pig feed on commercial scale.	Investment to increase pig production using bio-based pig feed and technology.	collabrote with iHub and the Bio4Africa project consortoum members
Romilla fish farms	Fish meal, soyabeans,corn etc are used to produce fish feed pellest on his farm. No waste generated.	Produce fish feed pellets and fish (Tilapia) on commercial scale using both bio-based and conventional feed.	Investment for the production of bio-based fish feed pellets on commercial scale.	collabrote with iHub and the Bio4Africa project consortoum members

Conclusions, objectives and actions

Biobased technologies from farmer perspective have sense when there is enough volume to transform, and investment versus revenues or reduction costs are positive, is profitable, and managed by the cooperative. When biobased technologies are out of the cooperative and farmers have to grow some feedstocks to be sold to biomass producers like biorefinery, biochar unit among others, volume and prices made the project unviable in terms of business. Is more profitable to grow tomatoes, peppers or other not produce products.

We would like to show some examples coming from the accelerator program:

Cacao cooperative in Côte d'Ivoire

8.000 tonnes per year to be sold in international markets thanks of Tony's chocolate company in Netherlands. They have a fair-trade agreement that means better prices and access to invest in productivity and social impact like schools, gender equality programs among others.

Years ago, before the partnership productivity was around 350Kg/Ha nowadays one Ha produce 800Kg.

Concerning social impact and productivity into Bio4africa project we are leading a project to introduce biochar technology.

We would like to achieve the three objectives

1. Increases cacao planation productivity and safety:

   The pods are taken away far from the planation and burned. This prevents pests and improves the soil.

2. Generates women activity:

   The biochar process needs hands to transform the pods in carbon and the carbon in briquettes. All the process can we managed by women.

3. Social impact:

   Briquettes are very be useful for the households.

Tony's is evaluating the possibility to invest on this pilot and scale the solution in next steps.

Cashew nuts cooperative in Senegal

38 tonnes cashew nuts processed. 110 employees (97 women). Singular table capitalisation, the company is owned by one international NGO, two cooperatives one transformation unit that wants to generate profit and social impact at the same time. Biobased technology can be interesting in terms of energy costs and new products.

We are designing with USAZ team a project to be developed during 2024. USAZ will be focus on technical aspects of the project and BPE team with business aspects.

Objectives:

- Production capacity. Increase capacity and reduce energy costs of the actual installation
- Open a new business line selling briquettes

SOCIAL IMPACT

A big challenge to afford. Cultural behaviours and prejudices have been the worst barriers to cross.

We designed a gradual approach starting with the bootcamps. The last session was about SGDs focus overall on gender equality.

In general terms, we had first feedback from women to identify social and economic issues linked with gender equality. Côte d'Ivoire is the only one without women participants where we have no inputs about it. For Côte d'Ivoire we made another strategy to afford the gender equality perspective.

After bootcamps we visited one by one all the companies. We had the opportunity to be alone, face to face, and that moment was crucial to build an initial relationship, very important in terms of commitment and trust.

The individual approach was relevant for all the project but even more for the gender perspective.

With all the information after the training program we conclude to focus the gender equality KPIs on the household reality. That means, understand roles and economic independence of women in rural households.

Main objective has been to understand the gender equality situation and try to share some good practices between participants and implement some new activities related with biobased technologies.

We have identified different projects to run during the accelerator program involving women to improve gender equality.

We have studied equality educational programs examples in Uganda and Senegal, and we have identified potential projects to be managed by women. For example, fish pellets production project in Côte d'Ivoire or new business line like briquettes, in Senegal, Uganda and Côte d'Ivoire.

We would like to present the initial gender diagnosis.

We didn't have all the data we need. Not all the questionnaires have been filled and sometimes we did not receive any feedback from the participants. However, we have some interesting conclusions coming from informal chats and incipient data.

To understand and propose some gender equality actions during the Bio4africa project we tried to select and study KPIs aligned with World Bank gender strategy. The strategy aims to accelerate gender equality for all with an emphasis on three aspirational strategic objectives:

- end gender-based violence and elevate human capital
- expand and enable economic opportunities
- engage women as leaders

We defined the principal KPIs to measure and understand better gender equality in African rural areas.

We analyse known data providing from formal information like accountancy, capitalisation table or organization chart and soft data from questionnaires or interviews.

KNOWN DATA

Management roles

- CEO, we have four women in this position.
- Board, we have two examples of women being part of the Board

Salary/incomes

We have data about money only from Senegal.

- Amount. Workers on the field from 35€ to 50€ per month. Workers on the transformation unit from 60€ to 70€. Maximum salary is for responsible on the transformation unit around 138€.
- Frequency. One hundred per cent are seasonal in rural area that means between 4 and 5 months. Frequency it's longer on transformation unit. Two or three more months.
- Contractual relationship. One hundred per cent are informal with workers on the field, they don't have contract. Only women engaged in administration responsibilities have contract.

SOFT DATA

Property (land)

Property of land in rural Africa is a big issue to resolve, only 10% is registered. Countries want to resolve this situation because they would like to receive taxes but there are a lot of barriers and resistance from different stakeholders. Women owns only the 15% of 10% registered land.

Household social situation

- How many children do they have to take care. The average is between 5 and 10.
- Who decides how to spend the money in the household. Only women can decide when they are alone or
- How many hours a day do they have to spend in household works. Minimum three or four. This average is worst when women live without water near the house. Women and girls are in charge of this.

Rural area reality

We have not received data and no one was enough open to talk about these issues.

- How far is the work from the household.
- How far is the school from the household.
- Do they have water on their village.

Conclusions, objectives and actions

Women have access to own small business or being part of agro-cooperatives in few rural areas. Concerning Bio4africa project we have only examples in Senegal and Uganda.

Women as a worker can received a salary only in some kind of crops. Some examples coming from the accelerator program (1) cacao in Côte d'Ivoire there are less than 10% of women working in (2) cashew nuts in Senegal 100% women working in (3) Sunflower in Uganda around 70% women working in (4) mango in Senegal 100% working in.

Economic independence and living conditions like access to water are very important challenges to achieve and limitations to avoid.

Gender equality in rural areas starts at primary school. Girls have so many limitations to go every day. Thats why is very important to ensure enough money in households and provide better conditions to help women to decide to spend their income in education.

Working on this direction we are empowering women at same time.

Equality on short time is 100 x100 linked with economic independence and safety live conditions.

10. CONCLUSIONS AND NEXT STEPS

We have successfully done the training program.

It was a great challenge to develop the training program in four countries with local trainers in some countries, participants coming with different management backgrounds and known economic and social environments.

Finally, we can conclude we achieved the objective. We have trained with the triple approach – bootcamps, mentors and visits, twenty business along the agrobusiness value chain.

We have been working and understanding much better the economic situation in every stech of the value chain thanks to the different business selected.

During all the training program we gathered the relevant information. Formal information through standard tools like Business model, P&L, Balance etc. and informal information through interviews. We must notify we missed more data from the participants related with economic figures and over all about gender perspective.

The result was a business diagnosis under the methodology of triple perspective – management, circular economy and social impact - per each one.

Next step was to defined a standard unit to compare the different positions in the value chain. The standard unit we have decided to compare is the farm.

We have studied the social and economic reality about the management of one small farm from four different positions:

1. Small farmer alone selling not processed products
2. Small farmer part of a cooperative selling not processed products
3. Small farmer part of a cooperative selling certified products
4. Small farmer part of a cooperative selling processed products

The objective is to understand which model suites best to include biobased technologies and measure the benefit of the triple perspective: management. Circular economy and social impact.

We start the study from the following premises:

- Property is a key indicator.

  Some small farmers are not the owners of the land. We have not a reliable data from our participants in the accelerator program but is a significant issue. This first premise determines investments, could explain a lack of long-term management, and creates a potentially risky situation.

- Size sets income level.

  Small farm unit extension is from 1Ha to 3ha of land.

- Organization model facilitates better margins.

  To be part of a cooperative improves margins. Cooperatives could help in access to market and could provide services related with the expenses like seeds, transport, fertilizers or credits. Another relevant aspect to be part of a cooperative is the security.

- Transformation unit.

  Installation where products can be processed adding value. We have one examples in the accelerator program like dry cashew nuts and sunflower oil.

- Market is the king.

  Price/unit is the start point. We have identified three examples: (1) local market selling not processed products without add value. Commodities like tomatoes, lettuce, rice, etc. that means low prices. (2) national market selling processed products like mango dry, mango vinegar or sunflower oil, that means better price (3) international market selling processed products like bio cashew nuts that means much better price.

- Certifications to add value.

  Concerning market and selling price we have to take in account the certifications. There are very relevant for the P&L analysis. Certification Bio and fair-Trade market label are two ways to increase the price. In the accelerator program, all the cooperatives that are selling their products in the international markets has minimum one of them.

- Biobased technologies and circular economy.

  We have two different examples. (1) technologies are part of the business model because reduces costs or increases incomes or services. (2) business model can't include biobased technologies because has no viability.

- Social impact

  We have studied the composition household incomes and the role of women in a rural family as a key indicator. Our approach is double (1) measure the income gap into a household economy to achieve a decent standard of living. In rural areas in Africa all the families have other incomes out of the farm activity but not always are enough to ensure a decent quality of living (2) women capacity to decide the destiny of the money like food, education, clothes etc. Capacity in terms of decision, who really manages the familiar economy. Our study is inspired by the living-income theory exposed by GIZ – German international cooperation for a sustainable development, COSA – Committee on sustainability assessment and Kit - Royal Tropical Institute in Guidance on calculating household income version1. (May 2020).

CONCLUSIONS

Small farmer selling not processed products

Risky position. Every negative impact can struggle the business, insecurity.

No profit. High costs and low prices, not singular value proposition - commodities products.

No capacity to growth. The lack of credit and treasury without benefits from the activity.

No possibility to include biobased technologies. No capacity to invest not enough volume.

Social impact on gender equality. Strong cultural barrier. No capacity to transform the household roles one by one.

Small farmer being part of a cooperative selling not processed products

Low risky position. Be part of a big group, security.

Reduced profit. Better costs and low prices.

Difficult to growth. Not substantial benefits from the activity difficult investment and improvements.

Possibility to include biobased technologies. They have volume but spread around the territory. The big challenge is to collect and move all the feedstock from each plantation. Logistics and investment in vehicles and biobased technology. This kind of cooperatives has problems to invest.

Social impact on gender equality. Strong cultural barrier, capacity to transform household roles through programs coming from the cooperative. The cooperative is the key but few (small and medium cooperatives with not processed products) have this objective on mind.

Small farmer being part of a cooperative selling certified products

Low risky position. Be part of a big group, security.

Better profit. Better costs and high prices. Certified products could be 200% better prices.

Capacity to growth. Profits from the activity afford investment and improvements.

Possibility to include biobased technologies. They have volume but spread around the territory. The big challenge is to collect and move all the feedstock from each plantation. Logistics and investment in vehicles and biobased technology. This kind of cooperatives has the possibility to invest. They have also access to loans or soft debt through partners-international clients.

Social impact on gender equality. Strong cultural barrier, capacity to transform household roles through programs coming from the cooperative. This kind of cooperatives are oriented to improve gender equality, is part of their strategy.

Small farmer being part of a cooperative selling processed products

Low risky position. Be part of a big group, security.

Better profit. Better costs and better prices. Processed products have better prices.

Capacity to growth. Profits from the activity afford investment and improvements.

Possibility to include biobased technologies. The transformation process generates a lot of waste that can be used in biobased technologies producing new products and/or producing energy.

Social impact on gender equality. Strong cultural barrier, capacity to transform household roles through programs coming from the cooperative. Most of this kind of cooperatives are oriented to improve gender equality, is part of their strategy.

After the training program we deigned roadmap per each participant.

What's a road map? A list of actions – activity, cost and timing - to achieve a strategy starting from an initial business diagnosis. In Bio4Africa accelerator program we have evaluate three perspectives – management, circular economy and social impact.

We would like to present the results about the Bio4Africa portfolio business diagnosis, first step for the roadmap.

MANAGEMENT

We have no authorisation by all the participants to share the information used during the training program like sales, figures, costs, prices and relevant financial information like banks, access to credit or loans among others. We have decided to share the conclusions in percentages and without company names in this way we can present the business diagnoses and prevent the identity.

We have identified four areas to evaluate the competitiveness of each business:

5. Fit to market
6. Productivity
7. Financials
8. Management and digital tools

Fit to market conclusions, objectives and actions

Kip's: add value, market fit, brand & image, packaging or bulk, sales-logistics-transport

In general terms there is no uniqueness in the value proposition and distribution channels. That means low prices and not enough revenues.

Concerning the 20 examples coming from the accelerator program:

Worst position is for not processed products without volume and certification. They can be sold only in local markets without margin. Difficulty to move the production from the land to the market. Part of the production is sold at low prices.

Processed products in local or national market are packaged in similar size and design and they are offered in similar channels of distribution. Visiting different local points of distribution (small shops, markets, informal sellers etc.) we realized this general uniformity. The result is low prices and low margins. There is also a big issue with transport.

Better prices are linked to processed products ready to export. They have always a standard of quality – Bio or faire trade certification, international packaging requirements and volume.

Obviously objective must be focus on price and sales. The problem is when there is no possibility to add value or increase volume. Small farmers alone or cooperatives offering not processed products has big difficulties to increases revenues because they have capacity only to cover local markets. Without trucks and small vehicles to collect and distribute all the crops, or adding some value transforming products there is no possibility to change the reality. Improvements can come only through investments, but this is another big issue to resolve we analyse after.

Productivity conclusions, objectives and actions

Kip's. human resources, quality, capacity

Without volume is not possible to sell in national markets and to achieve international markets is necessary to have volume and quality. Objectives are strategies to provide quality and increase productivity.

Financials conclusions, objectives and actions

Kip's: financial needs to growth, margins

As we described previously margins and treasury are the main issues to resolve in agrobusiness sector in rural areas. Access to credit is also a big problem in Africa, banks doesn't offer competitive prices and works with low risks. In Bio4africa cohort we have few examples of success and all of them are linked with big figures and international markets. The reality is international clients provide access to money through direct investments, commercial loans or advance payments.

Conclusions, objectives and actions

Kip's: *professional manager-board, business Plan strategy, budget & P&L, data*

In general terms small and medium agrobusiness are not professional in terms of management. They work without real figures doing more or less the same as always and without planification. All the activity is focus on short time. Objectives has to be focus on introduce management habits and tools.

CIRCULAR ECONOMY

This perspective is very relevant into Bio4Africa project.

After the training program we realized we could implement real examples of biobased technologies in the accelerator program to complement the pilots.

When we designed the training program, we decided to focus the mentoring program on this perspective. We thought it was better to concentrate the support of the mentors on this and avoid to open other discussions related with other perspectives. We must say it was a very efficient decision.

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Potentiality has to include two indicators (1) technology capacity – knowledge and access to technology (2) economic viability – investment versus profit or/and investment versus relevant cost decrease.

Circular economy conclusions, objectives and actions

Biobased technologies from farmer perspective have sense when there is enough volume to transform, and investment versus revenues or reduction costs are positive, is profitable, and managed by the cooperative. When biobased technologies are out of the cooperative and farmers have to grow some feedstocks to be sold to biomass producers like biorefinery, biochar unit among others, volume and prices made the project unviable in terms of business. Is more profitable to grow tomatoes, peppers or other not produce products.

SOCIAL IMPACT

A big challenge to afford.

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In general terms, we had first feedback from women to identify social and economic issues linked with gender equality. Côte d'Ivoire is the only one without women participants where we have no inputs about it. For Côte d'Ivoire we made another strategy to afford the gender equality perspective.

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We have studied equality educational programs examples in Uganda and Senegal, and we have identified potential projects to be managed by women. For example, fish pellets production project in Côte d'Ivoire or new business line like briquettes, in Senegal, Uganda and Côte d'Ivoire.

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- expand and enable economic opportunities
- engage women as leaders

We defined the principal KPIs to measure and understand better gender equality in African rural areas.

We analyse known data providing from formal information like accountancy, capitalisation table or organization chart and soft data from questionnaires or interviews.

KNOWN DATA: Kip's Management roles - Salary/incomes – Frequency - Contractual relationship
SOFT DATA: Kip's Property - household social situation – rural area reality

Social impact conclusions, objectives and actions

Women have access to own small business or being part of agro-cooperatives in few rural areas. Concerning Bio4africa project we have only examples in Senegal and Uganda.

Women as a worker can received a salary only in some kind of crops. Some examples coming from the accelerator program (1) cacao in Côte d'Ivoire there are less than 10% of women working in (2) cashew nuts in Senegal 100% women working in (3) Sunflower in Uganda around 70% women working in (4) mango in Senegal 100% working in.

Economic independence and living conditions like access to water are very important challenges to achieve and limitations to avoid.

Gender equality in rural areas starts at primary school. Girls have so many limitations to go every day. Thats why is very important to ensure enough money in households and provide better conditions to help women to decide to spend their income in education.

Working on this direction we are empowering women at same time.

Equality on short time is 100 x100 linked with economic independence and safety live conditions.

Next steps:

Period March '24 - December '24

Roadmap execution: Support and advice all the participants in the execution.

Best examples: Describe best practises to be presented at the end to be replicate.

Identify mistakes and barriers: Describe mistakes and barriers to avoid in the future.

January '25

Summit D6.9 Deliverable Publish the evolution and metrics of all the organisations in the programme to be able to draw conclusions that can be extrapolated to achieve a greater impact and dissemination of the circular economy with bio-based solutions and avoid potential failures.

11. PHOTOS REPORT

Participants at the boot camp training in Ghana

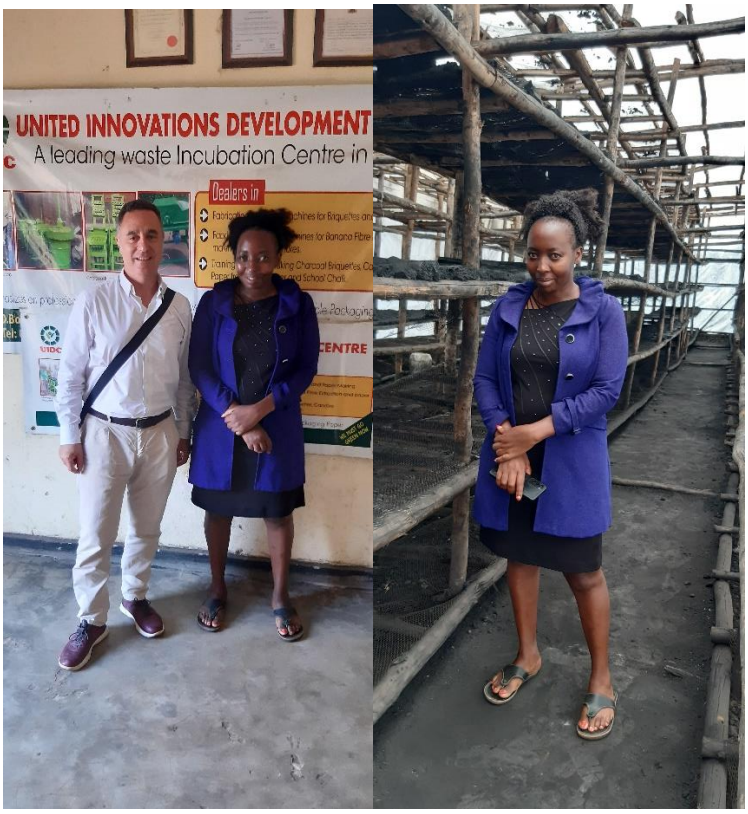
Participants during the boot camp training

Visits on the field Agropastoral in Senegal

Visits on the field Waare in Senegal

Visits on the field Ethicajou in Senegal

Visits on the field Pkwi in Uganda



Visits on the field United Innovations Development in Uganda

Visits on the field Harugongo and Agali in Uganda

Visits on the field Socaze in Côte d'Ivoire

Visits on the field Kapatchiva in Côte d'Ivoire