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COMBATING MALNUTRITION IN AFRICA THROUGH DIVERSIFICATION OF THE FOOD SYSTEM (HEALTHYDIETS4AFRICA)

Final report of the Bouake HealthyDiets4Africa Living Lab Stakeholder Workshop 12-14 July 2023



Work Package 8: Scaling through diversified delivery.

Deliverable: 8.2 Multi-stakeholder Innovation Platforms and Youths in Agribusiness hubs for the production and commercialization of diversified healthy foods created or maintained (M24)

Work package Lead: Dr Sali Ndindeng (AfricaRice).

Direct partner:

AfricaRice: Dr Elliott Dossou-Yovo, Dr Arouna Aminou, Mr Damien Tchatcha (Rapporteur)



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ESST: Dr. Paul Diby, Dr. Adouko Patricia

CERFAM: Mr Patrick Teixeira, Mrs Odia Cisse

OIC-CI: Mr Ellia Kassi, Mr N'dri N'Guessan

Associated partners:

CANAAN Land

National Nutrition Program (PNN)

General Confederation of Businesses of Côte d'Ivoire (CGECI),

Movement of Small and Medium Enterprises (MSME),

French Chamber of Commerce and Industry in Ivory Coast (CCIF-CI)

Savings and Credit Cooperative (COOPEC)

Office for the Marketing of Food Products (OCPV),

Youth Employment Agency (AEJ)

Bouaké Initiative Unit (CIB)

School Feeding Program (SSP)

Integrated Program for the Sustainability of School Canteens (PIP/CS).

SOTARA Cooperative, Bouake

SCOOP-FG cooperative, Bouake

Sion Service, Bouake

Regional Union of Market Gardeners of Gbeke (URMAG)

Introduction

The World Health Organisation (WHO) has established healthy eating as imperative throughout human existence. A healthy diet is essential from before birth until the last days of life to prevent all forms of malnutrition as well as diabetes, cancers, and other non-communicable diseases (NCDs). WHO findings and the figures reveal the difficulty of integrating healthy eating habits into the lives of consumers all over the world. According to WHO data, 37% of stunted



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children in the world live in Africa. These figures, which are not without impact on economic and sociological developments, signal that major challenges remain in the fight against food insecurity and malnutrition. With a view to limiting the disastrous consequences of bad food practices in Africa, a consortium of institutions based in 11 countries including (Côte d'Ivoire, Belgium, Germany, Spain, Nigeria, Mauritius Island, Kenya, United Kingdom, Cameroon, Italy, Denmark) proposed the HealthyDiets4Africa project. The execution of the said project will be done through five working groups on the themes put in place. Institutions in Côte d'Ivoire are mainly working in the group on scaling for impact relating to work packages 8 (**Scaling through diversified delivery**) and 9 (**Policies and communication**). Cluster 4 will work specifically to achieve the objective of having healthy, nutritious, and diversified food systems accepted and adopted in eight African countries.

Local organizations, members of the Consortium, namely AfricaRice, CERFAM, ESST, OIC-CI, work in synergy of actions to respond effectively to the expectations of their work packages. It is for this purpose that stakeholders meeting of the Living lab on healthy and nutritious diets of Bouake (Côte d'Ivoire) was organized and held from July 12 to 14, 2023 at the AfricaRice Research Station at M'Bé Bouaké (Côte d'Ivoire).

The objective of the workshop was to identify the actions to be carried out by the local participants in the execution of the work packages of the HealthyDiets4Africa project. Actions aimed at promoting and adopting the culture of production, processing commercialization and consumption of healthy, nutritious and diversified foods. This workshop was also organized with a view to encouraging the exchange of information between the different actors and improving the linkages in order to promote the production, processing, marketing and consumption of nutritious and healthy diets.

This workshop report is structured around the following points:

- 1- Opening of the workshop
- 2- Activities of the first day
- 3- Activities of the 2nd day
- 4- Activities of the 3rd day
- 5- Closing of the workshop
- 6- Appendices

1- Opening of the workshop



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The opening remarks for this workshop were given by Dr Aminou Arouna, representing Director General of AfricaRice, Dr Baboucarr Manneh. After welcoming the participants, Dr. Aminou highlighted the grim picture of malnutrition in Côte d'Ivoire, especially child malnutrition. He then urged the participants to lead a frank and constructive debate to lay a solid foundation for the success of the living labs on healthy and nutritious diets in Côte d'Ivoire.

2- Activities of Day 1

2.1. Presentation of the objectives of the workshop and the program

The three-day workshop program (July 12 to 14, 2023) was presented by Dr Sali Ndindeng and approved by all participants. The objectives were as follows:

- Provide a synopsis of the HealthyDiets4Africa project to the leaders of the target groups for their appropriation.
- Clarify the concept of Living lab.
- Demonstrate the different actors who currently make up the Bouake Living Lab (Côte d'Ivoire).
- Develop a better understanding of the selected target groups with their strengths and challenges.
- Identify potential healthy food innovations in Côte d'Ivoire and partnerships for scaling.

2.2. Presentation of the HealthyDiets4Africa Project

To get to the heart of the matter concerning the presentation of the project, Dr. Sali Ndindeng defined the concept of "Living Lab" to put all the participants at the same level. The Living Lab was defined as an open innovative ecosystem, interactive, and end-user centered. It is a springboard for public-private partnership whose objective is to create new products and in the case of the **HealthyDiets4Africa project**, the product is nutritious and healthy food. This Living Lab represents a platform that will make it possible to test innovations and achieve their scaling. The Bouake Living Lab aims to improve the production, processing, marketing, and consumption of healthy and nutritious food through the diversification of food systems within the Bouake area. The living laboratory brings into action public actors, knowledge institutes (university, scientist, experts, etc.), the private sector and consumers. This makes it credible and can help in several areas, even improving information flow processes. There is also the participation of the media which is of great importance to give visibility to the actions of various stakeholders.

The project "Combating malnutrition in Africa through the diversification of the food system (HealthyDiets4Africa)" is an EU-AU collaborative project over a period of 2023-2028 and funded

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by the European Union. The target countries are Côte d'Ivoire, Cameroon, Benin, Ghana, Liberia, Nigeria, Uganda, Kenya. It is headed by Prof. Michael Frei, from the University of Giessen in Germany with Dr Ndindeng Sali Atanga, from AfricaRice as Co-lead. It has four specific objectives which have made it possible to develop 9 work packages (WP) which revolve around (i) dietary diversity measurements and monitoring, (ii) Food environment measurements, (iii) the assessment of nutrient diversity in plants, (iv) innovations to diversify production systems, (v) acceptability and behavior change, (vi) food health, (vii) nutritional health, (viii) scaling and (ix) policy and communication. The key strategies for the implementation of the action are diversification, sustainability, food security, farm to folk, biodiversity and gender.

General debate on the presentation of the HealthyDiets4Africa Project

After the presentation, a debate allowed participants to express their concerns. When asked whether the living laboratory is a physical laboratory, it was clearly said that the laboratory is virtual, bringing together several actors from Farm to Folk. The debate also focused on the availability or not of the living lab to support private initiatives. To this question, the answer was yes, if the challenge is included in the objectives of the living lab.

2.3. Presentation of the activities of main partners of the living lab, their roles and partners

❖ ESST: Occupational Health and Workplace Safety

It is a company specializing in health, safety and well-being at the workplace. Its purpose is to share its knowledge and skills, to advance workplaces in terms of health, safety and well-being. The main activities of ESST in the workplace are training, advice, tailor-made assistance in the workplace, the organization of regular medical visits and the promotion of well-being at work. ESST works with its partners in the impact group through work packages 8 and 9. In the project, ESST and its partners will work to identify food production and consumption companies (company canteens) and weaknesses in healthy eating and possible interventions. ESST will also works to improve consumer knowledge, awareness, and consumption of healthy diets, particularly for vulnerable populations, collection and dissemination of identified good practices, dissemination of tools, guides and support for policy, engagement and advocacy. ESST's partners are: National Nutrition Program (PNN), the General Confederation of Enterprises of Côte d'Ivoire (CGECI), the Movement of Small and Medium Enterprises (MSME), the French Chamber of Commerce and Industry in Côte d'Ivoire (CCIF-CI) and CANAAN Land.

❖ National Nutrition Program (PNN)

It is a program of the Ivorian government whose vision is to guarantee the entire population an optimal nutritional status in order to improve its well-being and sustainably support inclusive



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growth and the development of the country. Its objective is to reduce mortality and morbidity through adequate nutritional coverage and the provision of nutritional care at clinical and community level. The approach used by the PNN is the specific nutrition intervention to improve the nutritional status of mothers, infants and young children from vulnerable groups; sensitive nutrition intervention for convergence of action with other sectors (agriculture, education, social protection, etc.). The activities of the PNN are: management of malnutrition (screening for malnutrition, ensuring the treatment and follow-up of cases of malnutrition), promotion of good nutritional practices (advocacy, social mobilization, communication for social and behavioral change), prevention of malnutrition (active screening for malnutrition, micronutrient supplementation (Vit. A) for children 6 - 59 months, deworming for children 12- 59 months). The key actions of the program are: **Prevention and fight against anemia (in women (iron - iron-folic acid during pregnancy, postpartum – LLIN), in children (cord – LLIN – systematic deworming)), prevention and fight against vitamin A deficiency (foods rich in vitamin A: Oil), vitamin A supplementation: SVAD, Prevention and fight against iodine deficiency (iodized salt), Fortification on a large scale : rice fortified with iron-folic acid.**

❖ Canaan Land

It is an SME whose vision is to feed West Africa by developing a model of local, sustainable agriculture that benefits small producers, especially women. It has a vegetable production network that it delivers to supermarkets and large restaurants. Canaan Land is the creation of an end-to-end value chain, with a quality policy that integrates product traceability as a priority. Canaan Land ensures a tailor-made production of local, varied and environmentally friendly products, all year round at competitive prices. This SME works for a transition towards a 100% sustainable agricultural model.

❖ OPPORTUNITIES INDUSTRIALIZATION CENTER CÔTE D'IVOIRE (OIC-CI)

It is an international Nongovernmental Organisation (NGO) based in Côte d'Ivoire with its headquarters located in Bouaké- N’Gattakro. Its mission is to promote the self-employment of young school dropouts and graduates who are unemployed in order to fight against unemployment, rural exodus and poverty in rural and urban areas. The main areas of intervention of the OIC-CI are: training in agriculture, livestock, management and entrepreneurship; cooperative management or associative life, feasibility study, computer initiation and improvement, reproductive health and nutrition, renewable energy (solar energy and bio-digester), functional literacy, construction and rehabilitation of community infrastructure. The activities of the OIC-CI in the HealtyDiets4Africa project falls under work package 8 with the main task: the establishment of training and insertion for young people in



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the production, transformation and commercialization of diversified healthy foods. This involves recruiting young people to be trained in the production and marketing of healthy food (Training Services), placing young people in companies producing healthy food (Placement Services) and providing starter kits for entrepreneurship to young people involved in the production and marketing of healthy food (entrepreneurship service). In practice, this translates into recruitment, training, supervision of beneficiaries and identification of partners. The partners of the OIC-CI are: COOPEC (Savings and Credit Cooperative), OCPV (Office for the Marketing of Food Products), AEJ (Youth Employment Agency), CIB (Cellule Initiative Bouaké). For the OIC-CI, as part of the HealtyDiets4Africa project, some achievements have already been made, namely: upgrading of training rooms, setting up of a conference room equipped with videoconferencing equipment to ensure communication within the framework of the project and the recruitment of an agent to ensure communication. OIC-CI in partnership with OCPV is working to set up an application called e-grenier ([E-GRENIER - Apps on Google Play](#)) for producers.

❖ SCHOOL FEEDING PROGRAM (SFP) and INTEGRATED PROGRAM FOR THE SUSTAINABILITY OF SCHOOL CANTEENS (IPS/SC)

The objectives of these programs are to: promote the schooling of young children and their retention in the education system, in particular young girls, improve school performance, reduce nutritional deficiencies, improve the level of household income through the transfer effect of what constitutes the food ration provided to the child by women groups involved in the production of the food. These programs have made it possible to reach 5,402 canteens in 2023 with approximately 1,000,000 food packs (30% access), which is still insufficient. To implement these canteens, a menu manual was produced to allow the use of local products in the canteens. Thus, a porridge fortified with cocoa powder was formulated for the school canteen. There is the need to analyze the quality of this product.

2.4. Summary of the debates on the presentation of the activities of the main institutions of the Living Lab, their role, and their partners

After the presentations, a debate allowed participants to express their concerns and observations. At the end of the exchanges, the summary of the observations is as follows:

The Living Lab should find ways and means to exploit the innovations of Canaan Land and consider small holders who are neglected because their investments are at risk. Also bring innovations to reduce the use of phytosanitary products in order to lower the cost of production. There are limitations in relation to the lack of regulations regarding communication in the media on the consumption of fruits and vegetables for a nutritious and healthy diet.



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ESST should use the guides already existing at PNN level and develop guides for innovations. ESST plans to perform a door-to-door sensitization of workers. AfricaRice is ready to support crop diversification because this project addresses how to diversify production systems to produce nutritious and healthy products. The OIC-CI should share the database of beneficiaries with the other actors in the Living lab to allow for other stakeholder to provide training support as well. In this Living lab, the activities will be done together in concert with all the actors of the lab, no structure will carry out the activities within the framework of this project alone without sharing information with the other members of the lab.

Emphasis should be given to processing as well as biodiversity. For studies on porridge fortified with cocoa powder that the school canteen program gives to schoolchildren, the Living Lab is ready to support these studies. PNN has already drafted a school garden project under the name "friends of nutrition", only the implementation remains.

3- Activities of Day 2

3.1. Presentations by AfricaRice and its partners

The activities of day 2 started with the presentation of the program of the day and new participants who joined the workshop. The day's program went as planned, starting with presentations from AfricaRice and its partners. Dr Sali Ndindeng gave a presentation on food preservation, handling, packaging and processing while Dr Elliott Dossou-Yovo gave a presentation on agronomic and post-harvest innovations.

Regarding conservation and processing, it should be remembered that post-harvest losses are enormous, especially in Sub-Saharan Africa. The Living Lab must do everything to reduce these losses in its area of intervention. It is very important to know the needs of consumers (school canteens, the sick, women, etc.). Several studies have been conducted by AfricaRice on traditional varieties of rice and varieties with high levels of iron and zinc have been found. These varieties have been identified and recommended for extension. Groups of women have been trained and equipped with the GEM parboiling systems. The products of these women should be promoted through school canteens, which must seize the opportunity. The living lab platform should contribute to this. There are also low glycemic rice products such as parboiled milled ORYLUX 6, NERICA 11 and TOG 6813 which have been developed and tested by AfricaRice. Parboiled rice should be favored since parboiled rice is nutritionally richer and has a low glycemic index compared to non-parboiled rice (white rice) and wheat. With the same variety of rice, we can diversify the products, as it can be processed into different value-added products and well packaged for the market. These are activities that young people can easily do to earn money. Valorization of rice by-products or other crops residues into pellets also an



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option. For preserving vegetables and fish in rural areas, they can be dried using improved methods. Storage systems that guarantee the quality of the rice have been studied. These are airtight bags and the airtight cocoon. It must be recognized that there is a need to sensitize populations to the fact that the storage of rice in inappropriate packaging leads to contamination by mycotoxins. The Living Lab should be able to get people to understand this and then adopt the right storage methods.

In relation to agronomic and post-harvest innovations, innovative technologies were presented such as:

- Climate-smart rice varieties: flood-tolerant varieties (NERICA L-19 sub1 and WITA-4 sub1), drought-tolerant varieties (NERICA 4, ISRIZ01, ARICA18), salinity-tolerant varieties (ISRIZ 01 , Mamyra , Tonsekerin and Toureya), varieties tolerant to iron toxicity (Arica 5).

3.2. Intervention of women processors, traders and market gardeners

SOTARA cooperative: The group represents one of the groups that produces parboiled rice and has benefited from the GEM parboiling system. Previously the group parboiled 100 kg of rice per day but since receiving the GEM equipment and training on parboiling it has increased to 400 kg per day and sometimes even more.

SCOOP-FG cooperative: The group represents one of the groups that produces parboiled rice and has benefited from the GEM parboiling system. Previously the group parboiled 200 kg of rice per day but since receiving the GEM equipment and training on parboiling it has increased to 1 ton per day and sometimes even more. The group has diversified products in addition to parboiled rice: fish powder, turmeric powder, pepper, okra powder.

Sion Services: Distributor of rice and other products such as fruit juices and dried fruits. The company is the main player in the development of parboiled rice and black rice which is very popular with diabetics.

Union Régionale des Maraichers de Gbeke (URMAG): This is a union of 22 cooperatives in partnership with a French NGO: Organic production, etc. They are in partnership with Auchan supermarket, the University Teaching Hospital Center (CHU), and others to deliver their product. The vegetable producers want a well-structured vegetable and fruits storage center and diversify the points of sale in Abidjan. The need for training in simplified accounting and good governance is essential.

3.3. Group work

In the rest of the program, the working groups were formed and then each group met to discuss the theme assigned to it. Here are the themes addressed according to the groups: Group 1: the



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different production systems, Group 2: the school feeding program, Group 3: communication and behavior change communication strategies, Group 4: policies, Group 5: youth engagement in urban agriculture, Cluster 6: human health and nutrition, particularly in relation to metabolic diseases, and Group 7: post-harvest handling and processing. Each group worked on its theme to identify constraints, define priorities, and identify synergies and the action plan to improve the production, processing, marketing and consumption of nutritious and healthy food. The following table presents a summary of the results of the group work:

Table 1: Constraints, priority, synergies, and action plan for the Bouake Living Lab

Work group	Constraints	Priority	Synergies and action plan
Group 1	<ul style="list-style-type: none"> - Land insecurity, Unavailability of agricultural land - Declining soil fertility - Constraints of access to water (lack of permanent water points, reduction in the quantity of water), - Low prices of agricultural products - Shift in agricultural calendars due to climate variability and change, - Limited access to good quality and high yielding seeds, - Limited access to 	<ul style="list-style-type: none"> - land insecurity, - Unavailability of agricultural land, - Declining soil fertility, - Limited access to good quality and high yielding seeds, - Shift in agricultural calendars, - Water access constraints: lack of permanent water points, - Climate variability and change, - Reduction of the amount of water, - Access to financing. 	<ul style="list-style-type: none"> - Assess the current state of land tenure security for project beneficiaries and support land security; - Validate and promote land fertility improvement technologies such as composting, biofertilizer, biopesticide, soilless, crop diversification; - Promote crop diversification including the integration of market gardening, vegetables, tubers, roots, fish farming, poultry; - Promote technologies for better water



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	<p>phytosanitary products,</p> <ul style="list-style-type: none"> - Scarcity and high cost of labor, - Low access to mechanization, - Limited access to information and low capacity of producers to use improved agricultural practices, - Low availability and high cost of agricultural inputs, - Increased incidence of plagues and diseases, - Insufficient access to climate information, - Limited access to financing, - Limited access to agricultural insurance. 		<p>management such as solar energy, drilling, motor pumps;</p> <ul style="list-style-type: none"> - Partnership with microfinance, and banking institutions for guarantees and reduce guarantee rates; - Capacity building for young people and women in financial education and simplified accounting; functional literacy; - Capacity building of youth and women in appropriate crops and profitable production technologies of crop diversification options; - Promotion of technologies that save working time and labour, including small mechanization; - Organize producers into cooperatives and build their capacity on good governance; - Promotion of digital tools for market access and climate information.
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<p>Group 2</p>	<ul style="list-style-type: none"> - Budget line allocated for the purchase and transport of food reduced by 50% (impossibility of covering the needs of school feeding programs), - Abolition of the production group support budget line; - Inadequate training received by advisers in charge of school canteens at the ENS; - Problem of access to land for Women's groups mobilized around canteens; - Problem of sustainable supply of canteens for 120 school days: 23/100 GVT days; - Mismatch between meal cost and Community Financial Contribution (CFC): According to cost/benefit 	<ul style="list-style-type: none"> - Review of the manual of menus based on local foodstuffs, - Edition and Popularization of the manual, - Training of advisers, managers and canteens, - Nutritional value of menu recipes, - Finalization of the study of the effect of porridge enriched with cocoa powder on the nutritional status of students, - Strengthening production capacities for better resilience to climate change and increased production, - Capacity building of groups for better post-harvest management, - Strengthening the transformation capacities of groups 	<ul style="list-style-type: none"> - Define a framework for collaboration with Living Lab partners, - Advocacy for the sustainable supply of canteens, - Development of ToRs, for the review of the menu manual and the determination of the nutritional values of the 29 local dishes, its publication and its popularization, - Assay of the biochemical and nutritional values of porridges enriched with cocoa powder
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	<p>study: meal 209F; CFC: 25 FCFA; commodity market cost</p>		
<p>Group 3</p>	<p>Production systems</p> <ul style="list-style-type: none"> - Lack of information and knowledge of aspects related to the production system, technology, - Lack of mastery of agricultural techniques and digitization, - aging workforce, - Low level of literacy among agricultural actors; <p>Youth Engagement</p> <ul style="list-style-type: none"> - Lack of information on the added value of agricultural activity, - Lack of training opportunities, - Lack of financial support; <p>Human health and nutrition</p> <ul style="list-style-type: none"> - Insufficient communication and awareness on healthy eating, - The high cost of 	<ul style="list-style-type: none"> - Research/Documentation: Collection of information, existing knowledge around themes and communication opportunities - Development of communication products based on the existing - Identify audience-specific channels - Information dissemination plan (awareness - scientific evidence - innovation - knowledge sharing) - Advocacy plan to influence policies (food, funding, support, etc.) - Support the creation and animation of the living Lab platform 	<ul style="list-style-type: none"> - Raising awareness, promoting healthy eating, preparing for change, adopting and maintaining good dietary practices; - Creation of a digital platform for the living lab. - Organization of events: official ceremony, round table, seminars, workshop, expert panels, knowledge sharing day, field visit, engagement with the donor... - Use of local media: local radio networks, creation of the network of communicators for nutrition, traditional, community and religious leaders - Use of traditional comedians: Group C'ca la meme - Digital communication: WhatsApp, Facebook, LinkedIn, Twitter





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	<p>living and healthy products</p> <p>Policies</p> <ul style="list-style-type: none"> - Weak financial support for agricultural entrepreneurship , - Poor knowledge of the criteria for access to financing, - Poor knowledge of populations on healthy food; <p>School feeding program</p> <ul style="list-style-type: none"> - Insufficient supplies of local food, - Lack of food storage materials, - Lack of ownership of school canteens by communities 		
<p>Group 4</p>	<ul style="list-style-type: none"> - Prevalence of risky eating habits (Westernized diet, consumption practices, etc.); - Contradictory communication on nutrition (credibility of information, etc.); 	<ul style="list-style-type: none"> - Popularization of national nutrition guidelines (to consumers and especially women); - Development of a local market protection policy against unfair competition. - Popularization of national nutrition guidelines (to consumers and especially women). 	<p>Popularization of national nutrition guidelines (to consumers and especially women);</p> <p>Development of a local market protection policy against unfair competition.</p> <p>Popularization of national nutrition guidelines (to consumers and especially women).</p>





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	<ul style="list-style-type: none"> - Low popularization of knowledge and research innovations in nutrition 		
Group 5	<ul style="list-style-type: none"> - Lack of cultivable space; - Lack of training in agricultural techniques, - Precarious use of space (lack of guarantee on cultivated space) - Ignorance of financing and support structures, - Difficulties in accessing financing - Non-formalized activities 	<ul style="list-style-type: none"> - Raising awareness and informing young people about supervision and support structures - Train young people in new agricultural techniques in urban areas - Mobilize funds for the financing of youth agricultural projects 	<ul style="list-style-type: none"> - Establish partnerships between the various actors or stakeholders ; - Contractualize the exchanges between the actors; - Develop an application to promote exchanges between the different links in the value chain - Set up field schools - Design guides to good agricultural practices.
Group 6	<ul style="list-style-type: none"> - Business leaders and workers may not buy into the project, - Quality control (nutritional and microbiological) of menus in collective catering, - the criteria for selecting companies 	<ul style="list-style-type: none"> - Obtain the support of business leaders and workers before raising awareness, - Assess the nutritional status of workers (anthropometric measurements), - Measurement of the level of knowledge (cap surveys), - Development of guides (trainers, restorers) 	<ul style="list-style-type: none"> - Guide (trainers, restorers); - Awareness workshop for business leaders and management teams (CGECI, MSMEs, Chamber of Commerce and Industry) (October 15 - December 15 , 2023); - Outreach and evaluation activities (January - December 2024)





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<p>Group 7</p>	<p>Fruits and vegetables:</p> <ul style="list-style-type: none"> - Conservation issues, - Lack of reliable clientele, - Transport of products from the field to the store, post-harvest loss, - Lack of storage warehouse, - Sale on credit over a long period which constitutes a shortage for traders, - Products perish faster now than before, - Problem of conservation of orange and papaya juices, - Loss of organoleptic qualities due to poor methods of preserving dried vegetables, loss of clientele for dried vegetables, - Improved methods of preserving and processing fruits and vegetables, - Mill for crushing dried products <p>Cereals :</p>	<ul style="list-style-type: none"> - Conservation, - Declining customer base, - Transportation, - Drying, - Bag for good conservation, - Drying and preservation 	<ul style="list-style-type: none"> - Possibility of installing cold rooms with solar panels by the Living Lab. - Bring women together to find space; - Training on the preparation and preservation of fruits and vegetables and dried vegetables preservation. - Putting women in contact with Canaan Land and other Living Lab structures to help with marketing. - Possibility of having a dryer for fish and a large dryer for cereals; - Advocacy of women with the municipal authorities to have a site for the installation of all this equipment.
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	<ul style="list-style-type: none"> - Drying problem (corn, millet, rice, sorghum, etc.), - Sorter to remove stones and bad grains, - Problem of conservation of the powder, bag for the good conservation, attack of the insects, - Mill for rice steamers to avoid mixing parboiled and non-parboiled rice. <p>Fish :</p> <ul style="list-style-type: none"> - Mill for crushing dried products, - Poor conservation of dried fish. 		
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3.4. Summary of plenary discussions on group work

The youth aspect is extremely important, the OIC, COOPEC, and the other partners of the Living Lab must be able to say what the youth produce and who are the customers. Indeed, for young people to thrive in agriculture, appropriate policy measures should be considered. The case of young people is very critical because there is a risk limited access to financing and agricultural insurance is not yet developed. As such, the intervention of the Living Lab is important to find solutions. The Living Lab could be a platform that can help small producers to market their production through the system set up by the OCPV and its partners.



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4- Activities of Day 3

4.1. Presentation of CERFAM and its role in the HEALTHYDIETS4AFRICA project

The Regional Center of Excellence Against Hunger and Malnutrition (CERFAM), has the mission to contribute to accelerating progress towards the elimination of hunger and malnutrition in Africa. CERFAM's vision is to be a catalyst and facilitator of good practices and innovative solutions against hunger and malnutrition in Africa through its strategic objective which is to: promote and facilitate access and exchange of knowledge, transform good practices and lessons learned into opportunities to advance the fight against hunger and malnutrition in Africa. CERFAM is therefore a channel of exchange and facilitation for progress in the fight against hunger and malnutrition in Africa. CERFAM's role in the HEALTHYDIETS4AFRICA project can be summed up in six points:

- Policy analysis and monitoring: Analyze policies and tools and assess the potential impact of nutrition-related policies and measures.
- Good practices: Facilitate the documentation and dissemination of good practices for a healthy and varied diet.
- Advocacy tools and strategies: Facilitate communication and advocacy with stakeholders to promote the implementation of adequate policies.
- South-South Cooperation: Facilitate South-South cooperation for the sharing of identified good practices.
- Dissemination plan: Develop the dissemination and exploitation plan in order to maximize the visibility of the project results.
- Policy orientation note: Develop policy proposals that can advance access to and use of healthy and diversified food.

4.2. Presentation of AfricaRice on Innovations and Impact

Dr. Arouna Aminou made a presentation on Policy and Strategy for the Promotion of Rice Cultivation in Africa: Achieve Self-Sufficiency and Reduce Import Costs. It was about:

- Rice situation - consumption and production in Africa: rice consumption has increased from 10 kg per capita in 1961 to 58 kg per capita in 2021 (with more than 90 kg per capita in Sierra Leone, Guinea Conakry, Guinea Bissau and Liberia). Total consumption was 38.3 million tonnes in 2021 in West Africa and production in 2021 was 22.8 million tonnes, a gap of 15 million tonnes.



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- Rice situation - self-sufficiency in rice: The rate of self-sufficiency in rice increased slightly from 59% to 60% in West Africa and decreased from 61% to 57% in Sub-Saharan Africa and between 2008 and 2020.
- Description and mission of the Africa Rice Center (AfricaRice): AfricaRice is an intergovernmental association of 28 African countries, it is one of the 15 international agricultural research centers of the CGIAR, its headquarters is in Abidjan with stations in Mbé (Bouaké), Senegal, Liberia, Nigeria, Uganda and Madagascar. AfricaRice contributes to reducing poverty, ensuring food and nutrition security and improving the livelihoods of farmers and other actors in the rice value chain in Africa through 3 programs (Genetic diversity and improvement, Sustainable improvement of Productivity, Policy, Innovation System & Impact Assessment) and a development oriented program (Rice Sector Development). The operating mode of the Center is partnership at all levels (global, regional and national).
- Impact of the activities of the Africa Rice Center (AfricaRice): AfricaRice and its partners over 50 years of research for development have developed several innovations in the rice value chain. As an impact of the center's activities, there are 15 million people lifted out of poverty in sub-Saharan Africa in 2021, 37 billion US dollars in cumulative gross profit from research, or 3.49 US dollars generated for each US dollar invested. More than 2 million hectares covered by NERICA varieties in more than 16 countries in sub-Saharan Africa. The RiceAdvice technology generated gains of approximately \$3.7 million in 2016 as well as the Smart- Valleys technology which increased yields by 0.9t/ha and revenues by US\$267 per hectare.
- New strategies: AfricaRice's new strategy aims to transform the food system to meet several objectives: health, food security/nutrition, and the resilience of actors and production systems to uncertainties. This makes AfricaRice the leader of the HEALTHYDIETS4AFRICA project in Africa.
- The economic model: several economic and business models implemented by AfricaRice such as, economic model - Village Riz (model to allow small producers to be at the center of development), economic model - Start-up agripreneur (Business model for the employability of young people in value chains), economic model - inclusion of women (Model of modernization of women's activities for family well-being), economic model - seed production (Increase in production at through the dissemination of new varieties and the production of quality seed in PPP), Economic model – investment reinforcement (CIPRISSA), Business and employment models for young people (Business models with the digitalized agricultural advice RiceAdvice (Nigeria), Business models with the ASI thresher (Nigeria).
- Prospects for collaboration between EBID and AfricaRice: With its technologies, its experience and its institutional anchorage in the region, AfricaRice wants to work with its partners for the



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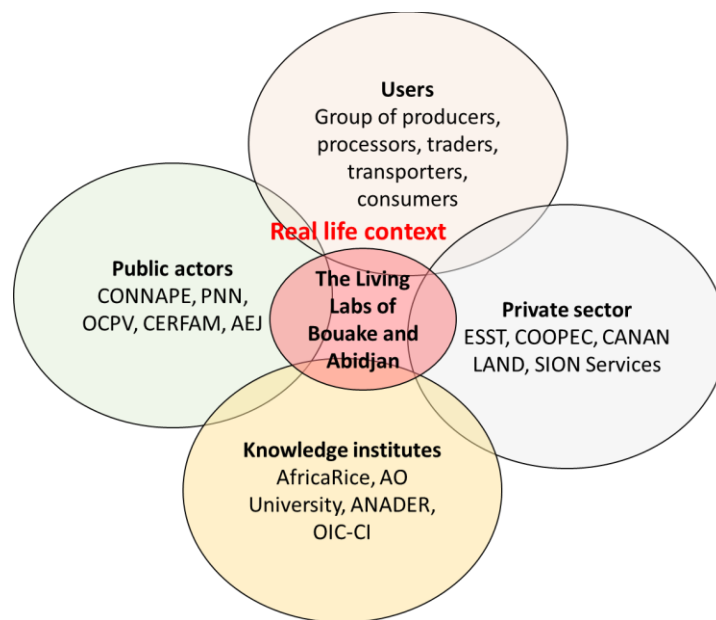
creation of villages for the transformation of the rice sector, the promotion of young start-up agripreneurs , the dissemination of women's inclusion models with the improved GEM parboiling system, creation of rice business models with better contractual mechanisms, large-scale dissemination of the best rice innovations (RiceAdvice, hybrid varieties, ARICA varieties, GEM, low-cost development of lowlands, etc.), development of investment programs (regional and country) for self-sufficiency in West Africa, and capacity building of extension systems and other actors in the rice value chains in the countries.

4.3. Visit of AfricaRice laboratories

Three key AfricaRice laboratories and the post-harvest technologies workshop were visited by all participants. The visit was made to the soil analysis laboratory, the genetic biodiversity and gene bank laboratory, then the grain quality and post-harvest technology laboratory. This visit was very enriching for the participants because they were very enthusiastic and asked a lot of questions in order to better understand the expertise activities carried out by AfricaRice through its various key laboratories.

4.4. Presentation of key points and action points

Before the closing of the workshop activities by the representative of the DG AfricaRice, a summary of the key points and action points as well as the designation of the focal points were made by Dr Sali Ndindeng. In this summary, it focused on the identification of the key consumers (school canteens, patients of metabolic diseases hypertension and diabetes, company canteens, and the public) and of the target group on which all the members of the Living Lab will have to work.



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Figure 1: Bouake Living Lab Members

Question for each member of the Living Lab

- Where does your organization fit in this diagram?
- Are your goals or those of your organization related to producing, marketing or consuming healthy foods using diversification as a strategy?
- What is your role in Bouake HealthyDiets4Africa living lab and your interest in this lab?
- What are your practical challenges in achieving your personal goals or the goals of your organization?

Summary of key action points from the Bouake Living Lab

Target consumers

- School canteens/feeding program (Focal Point)
- Patients with metabolic diseases (Hypertension and diabetes)
- (Dr. Azoh Auguste)
- Company canteens/ food programs (Dr Adouko Patricia)
- General public (Communication – Mrs. Family Francine)

Target groups

- Market gardeners working with CANAN LAND (Ms. Patricia Zoundi)
- Legalized market gardeners who are part of URMAG (Mr Koffi Raimond).
- Cereal producer (Mr Kwame Kouakou Simon).
- Processors and traders of vegetables and fruits in Marche de Gros and Bromakote (Yao Akissi Antoinette)
- Cereal processors and traders: Marche de Gros, Bromakote and SION Service (SION Service: Ms. Kouadio Annick)
- Fish processors and trader in Marche de Gros and Bromakote (Mme ABO Augustine)
- Youth affiliated to OCI-CI, AEJ and CIB (CIB)
- Digitization of commercial action (OCPV – Kouame Kouakou Simon)
- Funding (AEJ, COOPEC, CIB,) – (AEJ: Nestor Atsa SAHOUIIN)

Key actions to take

- Research on Dietary Diversity Matrices (University of Heidelberg)
- Food environment research (Biodiversity-CIAT)



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- Innovations on diversified food systems, including training (AfricaRice)
- Food processing and marketing innovations including trainings (AfricaRice)
- Youth in Nutritious Diet Agribusinesses (OCI-CI)
- Company Canteen Training and Assimilation (ESST)
- Policy and communication (CERFAM)

5- Closing of the workshop

Before the closing ceremony, the floor was given to a representative of the participants who expressed her satisfaction with this workshop and thanked the organizers for its success. For the closing of the workshop, the representative of DG AfricaRice in the person of Dr. Aminou Arouna, welcomed the achievement of the objectives of this workshop and noted the richness of the discussions which were of a high level. Indeed, according to him, it is rare to see such encounters between those who design and develop technologies and those who use them. Finally, the participants were urged to work together for the success of this Living Lab, the launch of which takes effect immediately. According to him, the interest is the impact the Living Lab will create.

Links to pictures and videos.

Photos : [Health4DietAtelierdespartiesPrenantesenCoteD'Ivoire12-12juillet2023](#)

Le Monde Agricole : <https://youtu.be/nPdsxMCkink>

Retrouvez ci-dessous les articles de presse sur le laboratoire vivant de Bouaké:
Business 24 TV News

[Bouake : Le projet healthydiets4Africa ouvre un laboratoire](#)

Afrik24info

[AfricaRice présente de nouvelles variétés de riz](#)

[Un laboratoire vivant pour trouver des solutions à une alimentation saine et diversifiée](#)

Le monde agricole

[AfricaRice organise un atelier de formation pour combattre la malnutrition en Afrique par la diversification du système alimentaire](#)



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6- Appendix

Annex 1: List of participants



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Atelier de mise en place du laboratoire vivant des régimes alimentaires sains en Côte d'Ivoire dans le cadre du
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Bouaké 12-14 juillet 2023

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18									

YAHOUATTA 17 | BICI | KOUAKOU |
56.90 | 56.90 | KOUAKOU



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27									tel 0555150644	

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Bouaké 12-14 juillet 2023

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2. YVOVO
3. ATANGA
4. AROUNA
5. DOSSOU-YOVO

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Annex 2: Some photos of the workshop



Group work



Living lab leaders



Visit of the laboratories and fields during the workshop



Plenary sessions



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