MID-TERM EVALUATION

BRA 12/002

SUPPORT FOR THE DEVELOPMENT OF THE COTTON SECTOR THROUGH SOUTH-SOUTH COOPERATION

FINAL REPORT 2021

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ACRONYMS

ABC	Brazilian Cooperation Agency
AFA	Agriculture and Food Authority
AIC	Interprofessional Cotton Association
AMATER	Technical Assistance and Rural Extension Company
AMIPA	Minas Gerais Association of Cotton Producers
AT	Technical Assistance
ATER	Technical Assistance and Rural Extension
CGAA	General Coordination for Technical Cooperation - Africa, Asia, and Oceania
CGP	Project Management Committee
CGU	Comptroller General of the Union
COGERCO	Compagnie de Gérance du Coton
COOPERCAT	Catuti Rural Producers Cooperative
CRA-CF	Cotton and Fiber Agricultural Research Center
CRETTA	Cotton Technology Transfer Center
CRETTA/IAM	Cotton Technology Transfer Center/Mozambique Cotton Institute
DARS	Department of Agricultural Research Services
DUS	Demonstrative Units
EMATER/MG	Technical Assistance and Rural Extension Company of the State of Minas Gerais
EMBRAPA	Brazilian Agricultural Research Corporation
EPAMIG	Agricultural Research Company of Minas Gerais

FACE	Funding Authorization and Certificate of Expenditure
FAO	Food and Agriculture Organization of the United Nations
FONPA	National Forum of Cotton Producers
GDP	Gross Domestic Product
Genbank	Genetic Resource Center
GM	Genetically Modified
IBA	Brazilian Cotton Institute
ICAC	International Cotton Advisory Committee
ICD	International Cooperation for Development
IER	Institute of Rural Economy
IITA	International Institute of Tropical Agriculture
ILO	International Labour Organization
INERA	National Institute of Agricultural and Environmental Research
INRAB	National Institute of Agricultural Research of Benin
IO	International Organization
IOs	International Organizations
ISABU	Institut des Sciences Agronomique du Burundi
ITRA	Togolese Agricultural Research Institute
ITRAD	Chadian Institute of Agricultural Research for Development
KALRO	Kenya Agricultural and Livestock Research Organization
M&E	Monitoring and Evaluation
MRE	Ministry of Foreign Affairs
MAPA	Ministry of Agriculture, Livestock and Food Supply

MoU	Memorandum of Understanding
MIP	Integrated Pest Management
MRE	Ministry of Foreign Affairs
PPE	Personal Protection Equipment
PRODOC	Project Document
PRONAF	Program for the Support of Family Farming
R&D	Research and Development
SEA	African Southeast
SGPFin	Project Management Financial System
SSC	South-South Technical Cooperation
TCB	Tanzania Cotton Board
TOC	Theory of Change
TT	Technology Transfer
UAs	Learning Units
UCAs	Community Learning Units
UCTTA	Community Cotton Technology Transfer Unit
UFLA	Federal University of Lavras
UNDP	United Nations Development Programme
USA	United States of America
USD	American Dollar
UTDs	Demonstrative Technical Units
UTTD	Technology Transfer and Demonstration Unit
WFP	World Food Program
WTO	World Trade Organization

0

EXECUTIVE SUMMARY

GOALS

The purpose of this mid-term evaluation is to provide the Brazilian Cooperation Agency (ABC), partner countries, Brazilian implementing agencies, and the United Nations Development Programme (UNDP) with evidences on the results achieved by the BRA 12/002 project, as well as recommendations and lessons learned that inform their future planning. The purpose of this document is predominantly formative, with summative aspects regarding already completed subprojects. The objectives of this evaluation are: to examine the quality of the design, the management and implementation of the actions; to consolidate the results of the subprojects; to assess the relevance, effectiveness, efficiency, effectiveness, replicability, and sustainability potential of the initiative, as well as measure its performance; to analyze the lessons learned and propose recommendations for improving the project.

PROJECT BRA 12/002: SUPPORT TO THE DEVELOPMENT OF THE SECTOR THROUGH SOUTH-SOUTH COOPERATION

The BRA 12/002 Project aims to contribute to increase the productivity and further strengthen traditional agricultural culture, thus generating income for the rural population of partner countries. To this purpose, the project foresees the transfer of Brazilian technologies in cotton cultivation and the strengthening of the capacities of researchers, farmers, and institutions in partner countries. The project started in 2012 and is scheduled for completion in 2026.

With a total budget of USD 37 million, at the end of 2020, the project presented 11 subprojects and eight simplified actions, constituting the most important international technical cooperation action that Brazil is currently developing with its African partners. The project, to date, has promoted the exchange of capacities between 9 Brazilian institutions and 21 institutions from African partner countries.

APPROACH AND METHODOLOGY

The evaluation approach combined conceptual elements, that underpin the reconstruction of the Project's Theory of Change and, later, the Evaluation Matrix. They are: **capacity development** as a key element of South-South Technical Cooperation (SSC); **technology transfer** as one of the central axes of the capacity development sought by the project; **portfolio evaluation** to respond to the 'umbrella' nature of the PRODOC BRA 12/002; and **contribution analysis**, recognizing that the SSC initiatives contribute to achieving development impacts, but these cannot be exclusively attributed to the analyzed initiatives. The evaluation sought to be **sensitive to racial, ethnic, and gender equity**, thoroughly considering the local realities.

The mid-term evaluation covers the period between 2012 and 2020 and covers all the subprojects and activities under BRA 12/002 in this period. Its geographic scope includes the 11 partner countries of the project during the analyzed period: Benin, Burkina Faso, Burundi, Chad, Mali, Malawi, Mozambique, Kenya, Senegal, Tanzania, and Togo; moreover, it incorporates the perspective of Brazilian partners. The evaluation used the following methods for collecting primary and secondary data: interviews, document review and survey. Data collection and analyses were systematized through the development of nine case studies.

CONCLUSIONS

C1 The project is relevant and appropriate to the contexts in which it operates, but demands greater clarity regarding its strategies and the expected results, including further details about the expected mutual benefits and their link to development agendas

The project has responded to the demands of its partners, in which the cotton sector has strategic importance for development. As for technology transfer, BRA 12/002 has advanced by incorporating diversified and complementary approaches to better suit the technologies offered to local production contexts.

Within the scope of the inside the gate, BRA 12/002 has addressed different dimensions, such as: good agronomic practices, rural extension, production and improvement of seed quality, and institutional strengthening. Outside the gate, BRA 12/002 has incorporated a multi-sector approach, with the inclusion of actors involved in the different links of the production chain in the design and implementation of subprojects, which has the potential to expand the scale of transferred technologies. More recently, BRA 12/002 has addressed cross-cutting development agendas, such as health and food security in cotton-producing territories.

These approaches result from identifying, alongside partners, the necessary actions to strengthen the countries' cotton sector. However, they are not explicitly articulated from a Theory of Change perspective. In this regard, the umbrella project does not provide adequate guidelines on how the subprojects should address, in their objectives and expected results, the multidimensionality, multi-sectorality and transversality of the cotton chain.

The absence of a Theory of Change unfolds in the absence of strategic guidelines for planning complementary actions between subprojects, between projects of the Brazilian Cotton Initiative, and strategic exchanges between the various partners. Furthermore, BRA 12/002 does not explicitly articulate in its PRODOC the mutual benefits expected by Brazil and its implementing agencies. In addition to the creation of the Diffusion Center in Catuti, the mutual benefits identified are very generic or at the individual level of the technicians

participating in the project. Finally, BRA 12/002 did not undergo a revision to adapt it to the South-South Technical Cooperation Manual, nor does it make explicit its link with cross-cutting international agendas, such as the Sustainable Development Goals and the 2030 Agenda, which includes a sensitive approach to gender, for example.

C2 The subprojects under BRA 12/002 are coherent and complementary and have shown improvement in the quality of the design based on lessons learned, but have not been systematized

The quality of the subproject design has shown significant improvements both in its formal aspects (problem tree, logical matrix) and in its substantive aspects through complementary approaches (incorporation of multidimensional productive aspects, multi-sector approaches, and cross-cutting agendas). The quality derives from well-planned prospecting missions, from the participatory problem tree construction methodology; from inviting relevant stakeholders to discuss the project; and the skilled facilitation and translation during the design process.

This set of elements has contributed to adapt technologies to the production scale of the partner countries, as well as to advance the inclusion of the most vulnerable producers in technology transfer processes.

Furthermore, based on the learning and experience of Cotton-4, the BRA 12/002 advanced in consolidating its main technology transfer strategies while at the same time promoting the multiplication of technologies with a greater focus on the producer. As a result of existing partnerships, a third generation of projects is devoted to more focused dimensions through bilateral projects. Lastly, under the BRA 12/002 portfolio, other strategic initiatives aim to complement and strengthen results in partner countries, such as courses in Brazil and the Catuti Diffusion Center.

The BRA 12/002 consolidated new partnerships with Brazilian implementing agencies, thus expanding its capacity to serve a greater number of countries and diversifying the Brazilian repertoire available to support partner countries. The diversification of the profile of Brazilian implementing agencies also allows for a broader dialogue with the different actors in the cotton chains in partner countries.

However, the experience of the BRA 12/002 – from its approach rooted in the principles of the SSC to its strategies, results, and administrative management practices – has not been systematized or made available, which implies a greater learning curve for Brazilian and African partners and negatively impacts the efficiency of the BRA 12/002 as a whole.

Although the subprojects under BRA 12/002 follow the guidelines of the South-South Technical Cooperation Management Manual regarding the instruments for monitoring implementation, there is no greater detail on the regularity, flows, and uses of information or, in other words, a follow-up and monitoring system. In the case of subprojects on cotton, which involve complex management processes linked to the agricultural calendar, this system proves to be necessary, given that its absence has shown to undermined the scope of the results: the ability to respond to strategic questions for a smoother flow of the subprojects is slower and often impacts the alignment of actions with the agricultural calendar; the dependence on annual or biannual reports generates a considerable delay in the reading and evaluative interpretation of technology transfer; reports are not standardized, making shared interpretation of results difficult.

C3 The project presents excellent results but faces important challenges to promote the long-term sustainability of the results

The project has been successful in its technology transfer strategies, with results in their assimilation and replication. BRA 12/002 contributed with innovative methodological proposals suitable for the African productive system, such as the Learning Units, the training of technicians and researchers to act as agents for replicating knowledge; sending tools suited to the conditions of producers; and sharing genetic material from Brazilian cotton varieties and cover crops for evaluation and reproduction based on local needs. The fact that shared technologies are technically simple, having a low cost and a high impact, facilitates the adoption and replication of the proposed techniques. The shared knowledge was replicated, as there was an increasingly explicit strategy to strengthen multiplication.

However, with regard to institutional capacities, the subprojects presented mixed results. The challenges in implementing infrastructure resources or purchasing equipment hindered the effectiveness of the subprojects, both in terms of their scope and in strengthening partner institutions. Furthermore, projects with completed or advanced implementation presented different strategies and results regarding the institutionalization of technology transfer results, which does not allow us to assess to what extent the set of subprojects is being guided by robust strategies aimed at sustainability.

C4 The project showed gains in efficiency, but its performance still faces obstacles, including on areas under the sole responsibility of the ABC

The project showed gains in efficiency, albeit still insufficient to mitigate procedural challenges that impact the final results. Within the subprojects, there is still great difficulty in allocating resources in a timely manner for implementation within the subprojects' timetables, which directly impacts the results of the subprojects.

The most latent challenges are delays due to obstacles in the procurement processes: sizing of the project's disbursement planning, technical specifications and reference terms, customs clearance, procedures for disbursements and accountability, delays in the approval of disbursements within the ABC, lack of clarity and communication between the different areas of the ABC and UNDP on ongoing processes.

In addition to the performance within the scope of the subprojects, the BRA 12/002 has available and planned resources for actions under its exclusive governance with minor progress, such as promoting the systematization and sharing of good practices or the elaboration of a common monitoring and evaluation strategy that would effectively guide the Monitoring and Evaluation (M&E) of subprojects as well as the PRODOC umbrella. Finally, coordination between the different projects under the Brazilian Cotton Initiative is small, considering its reach and budgetary relevance for the ABC portfolio. Although these are admittedly the most fragile areas of the SSC, the BRA 12/002 is able – both technically and financially – to invest in cutting-edge solutions to provide lessons promoting the consolidation of Brazil's SSC.

RECOMMENDATIONS

The recommendations are interdependent. As an overarching guideline across all recommendations, we suggest that they be implemented through participatory, horizontal processes, based on the knowledge acquired by the BRA 12/002 staff. To speed up the implementation of some recommendations, the suggestion is to evaluate the possibility of hiring external support, with explicit guidance that they should act as process facilitators and promote ownership of the results among the participants.

R1

ANSWER TO CONCLUSIONS
C1 AND C2

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
IMMEDIATE

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM
in consultation with project partners

Review the PRODOC BRA 12/002 thoroughly, explaining its Theory of Change

Develop a broad enough Theory of Change for the BRA 12/002 to adapt to the different contexts of the project's performance, clarifying how the strategies and approaches promoted by the project contribute to what types of change in the different links of the cotton chain, incorporating the multidimensional, multi-sector, and transversal dimensions already promoted by its subprojects. Clarify how the productivity increase sought by technology transfer contributes to development results, and explain the project's contribution to international and regional development agendas. Detail the premises related to the principles of the SSC, including strategies to promote results in terms of mutual benefits. The Theory of Change must unfold into planning with concrete goals.

R2

ANSWER TO CONCLUSIONS
C2 AND C4

BUDGETARY IMPLICATION
– MEDIUM

DEADLINE
2022

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM
in coordination with other areas of the ABC

Design and implement a Monitoring and Evaluation strategy to increase project effectiveness and support the communication of results *

Within the scope of the PRODOC 12/002, to build indicators that align with the Project's Theory of Change, including indicators that can be translated into all subprojects, including the scope of mutual benefits and other indicators related to the principles of the SSC. Within the scope of the subproject, to prepare evaluability studies, mid-term evaluation, and final evaluations. Ex-post evaluations should be considered in countries that cooperated with Brazil in consecutive subprojects. The implementation of a solid monitoring strategy in these two areas aims to provide timely information for the implementation of the PRODOC BRA 12/002 and its subprojects; support the systematization and communication of results and lessons learned (see R3); support future evaluations and promote transparency and communication about the results of the Brazilian SSC to domestic and partner country constituencies, as well as to the international community.

R3

ANSWER TO CONCLUSIONS
C1 AND C4

BUDGETARY IMPLICATION
– MEDIUM

DEADLINE
2022 - 2023

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM
in consultation with project partners

Design and implement a knowledge management strategy that strengthens capacity development within the Project and the communication of results

To develop a knowledge management strategy with concrete objectives, target audience, products, activity planning, and goals. The systematization of results, good practices, and lessons learned from the subprojects aims to provide feedback to the process of capacity development and learning among partners, as well as to communicate the results more precisely and explicitly.

R4

ANSWER TO CONCLUSIONS
C3

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
2023

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM
in consultation with project partners

Build strategies alongside partners for the sustainability of results and possibilities for continued cooperation

To promote strategic dialogues with partners, based on lessons learned and systematized results, on possible alternatives for ending support to the BRA 12/002. On the one hand, to consider strategies designed alongside countries towards the institutionalization of national results and investments so that they are permanent and may grow in scale. To ensure greater tangibility to the partnership agreements, it is recommended to translate them into expected results, products, and activities included in subproject reviews. On the other hand, explore the possibility of expanding the profile of project partners in partner countries, including universities to ensure the multiplication of knowledge in a sustainable manner for new generations of technicians and researchers or other development partners.

R5

ANSWER TO CONCLUSIONS
C3 AND C4

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
IMMEDIATE

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
DIRECTORATE OF THE ABC, CGAA, CGAO, AND PNUD

Build strategies to improve the efficiency of subprojects*

To map and analyze the quality of flows, deadlines, and responsibilities of the most common administrative processes or those that consistently present hindrances. Based on this mapping, to promote meetings between the UNDP and responsible areas of the ABC (General Coordination of Technical Cooperation – Africa, Asia and Oceania, General Coordination of Administration and Budget, Management) in order to prioritize urgent improvements and changes (greater bottlenecks that prevent further effectiveness) and agree on joint solutions for improvement.

*Aligned with recommendations under the mid-term evaluation of the PRODOC 13/008

R6

ANSWER TO CONCLUSIONS
C4

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
2022

PRIORITY
– MEDIUM

RESPONSIBLE ACTORS
THE ABC AND COTTON PROJECT TEAMS

Invest in coordination mechanisms and processes of the Brazilian Cotton Initiative

To promote a structured dialogue process between the ABC teams and international organizations involved in the Brazilian Cotton Initiative projects in order to: identify areas of synergy and feedback between projects; define processes, mechanisms, frequency, and responsibilities for communication and constant sharing of information between technical teams.

1

INTRODUCTION

CONTEXT

The BRA 12/002 Project "Supporting the development of the cotton sector through South-South Cooperation" is intrinsically linked to the transformations in cotton production and trade experienced over the last two decades, which also reflects in the sector's international cooperation dynamics.

By the late 1990s, cotton trading prices on the international market had dropped by half, and by 2002 it had reached the lowest levels since the 1929 Crisis. Production subsidies in developed countries, particularly the United States, contributed significantly to distortions regarding the *commodity* in the international market. Government subsidies to US cotton growers in 2001 exceeded the cotton's market value by 30%.[1]

The crisis revealed the fragility of countries with an economy mostly based on cotton production. While these countries had some of the lowest cotton production costs in the world, they had been losing ground in the international market, which had a great impact on the living conditions of local producers, contributing to situations of extreme vulnerability.[2]

This scenario reinforced the demands of developing countries to eliminate subsidies. Amid these demands, we find Brazil's request in 2002 for a panel at the World Trade Organization (WTO) against US subsidies, and the call for a Sectoral Initiative in favor of Cotton at the WTO, supported by the four countries known as Cotton-4 (Benin, Burkina Faso, Chad, and Mali), at the 2003 Cancun Inter-ministerial Conference.[3] In fact, the Conference's final declaration recognizes the importance of cotton to developing countries and the need for urgent action to address market distortions, including calling on development partners to direct cooperation programs for the diversification of the economy of countries whose Gross Domestic Product (GDP) is heavily dependent on cotton.[4]

Since then, the international cooperation scenario for developing the cotton sector of African countries has undergone a major transformation, with the exponential increase in the num-

1. OXFAM. Cultivating Poverty: The Impact of US Cotton Subsidies on Africa. [S. l.]: Oxfam International, 2002.

2. OXFAM. Cultivating Poverty: The Impact of US Cotton Subsidies on Africa. [S. l.]: Oxfam International, 2002.

3. MOREIRA, Alvaro Gomes. From Ad Hoc to Durable?: Development cooperation and institutional bricolage in the cotton sector in Benin. 2021. Tese (Doutorado em Estudos de Desenvolvimento) - Institute of Development Studies, University of Sussex, Brighton, 2021.

4. WORLD TRADE ORGANIZATION. Preparations for the Fifth Session of the Ministerial Conference: Draft Cancún Ministerial Text. Second Revision. Cancún: [s. n.], 2003.

ber of projects and the diversification of actors, overcoming the predominantly colonial nature of previous years.[5] As of 2004, traditional donors supporting the sector have diversified, as well as cotton-producing partners from the Global South, such as China, Brazil, India, and Turkey, which have joined the African efforts.

It is within this scenario that Brazil's technical cooperation in the cotton sector begins. The Cotton-4 countries summoned the Brazilian Ministry of Foreign Affairs (MRE) and requested cooperation, officially established in March 2009. Thus emerged the project "Support for the Development of the Cotton Sector in the C-4 Countries".[6] – commonly known as Project C-4, the first Brazilian technical cooperation project to support the African cotton sector, preceding and supporting the origin of the BRA 12/002.[7]

Regarding the litigation within the WTO, Brazil obtained a favorable decision in March 2005, being formally authorized, in 2009 to apply retaliatory countermeasures against the United States. Retaliation was suspended with the signing of the "Memorandum of Understanding Related to the Fund for Technical Assistance and capacity development with Respect to the Cotton Dispute" (MoU), which demanded the United States to transfer the annual amount of USD 147.3 million for activities related to technical assistance, training, and cooperation in the Brazilian cotton sector. This memorandum stipulates that 10% of the transferred resources should be channeled to international cooperation projects with other developing countries. Finally, in order to receive these amounts, Brazil created the Brazilian Cotton Institute (IBA).[8]

The BRA 12/002 project, therefore, has its origins in Cotton4's prior experience, responding to the Brazilian commitment to support cotton-producing countries, and supported by litigation resources to finance technical cooperation projects.

5. MOREIRA, Alvaro Gomes. From Ad Hoc to Durable?: Development cooperation and institutional bricolage in the cotton sector in Benin. 2021. Tese (Doutorado em Estudos de Desenvolvimento) - Institute of Development Studies, University of Sussex, Brighton, 2021.

6. AGÊNCIA BRASILEIRA DE COOPERAÇÃO. Cotton-4 + Togo: Uma parceria de sucesso. [S. l.: s. n.], N/D.

7. For a detailed analysis of how trade diplomacy established a technical cooperation dynamic based on trade disputes at the WTO, see: Adriana Mesquita Corrêa Bueno (2018).

8. CÂMARA DE COMÉRCIO EXTERIOR (CAMEX). Brasil e EUA assinam memorando que encerra contencioso do algodão. Brasília, 1 out. 2014. Disponível em: http://www.comexresponde.gov.br/portalmdic//sitio/interna/noticia.php?area=1¬icia=13421. Acesso em: 5 out. 2021. php?area=1¬icia=13421. Acesso em: 5 out. 2021.

BOX 1

THE BRAZILIAN COTTON INITIATIVE

With the formation of a council at the IBA to monitor the SSC projects, it was decided that resources would be implemented in bilateral and trilateral modalities. BRA12/002 is the umbrella project that encompasses bilateral cooperation between Brazil and African countries. In the trilateral modality with International Organizations, the projects are:

- **MORE COTTON,** implemented alongside the Food and Agriculture Organization of the United Nations (FAO) and Latin American and Caribbean partners, with a focus on the socio-productive inclusion of cotton growers through the strengthening of the cotton culture as part of the agri-food system.
- **COTTON WITH DECENT WORK,** implemented alongside the International Labour Organization (ILO) and Latin American and African partners, for the promotion of decent work and improved working conditions in cotton-producing countries.
- **BESIDES COTTON,** implemented with the World Food Programme – PMA Brazil/Center of Excellence against Hunger, aims to support small cotton producers and public institutions by establishing links between cotton by-products and food crops associated with safe markets, including school feeding programs.

COTTON SECTOR CONTEXT

INTERNATIONAL MARKET

The global production and marketing of cotton are important economic activities with high potential for growth and development, as cotton is an important product for the commercial balance of several developing countries (CHIURCIU et al., 2016). Even with the COVID-19 pandemic, consumption measured by the International Cotton Advisory Committee (ICAC) (2021) indicates a 1 3% growth between 2019/20 and 2020/21, and 1% between 2020/21, and an estimate for 2021/22.

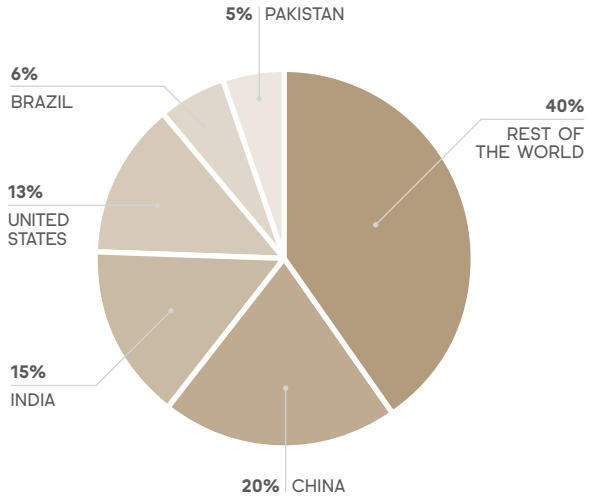
The world's largest cotton producers are India, China, the United States, Brazil[9], and Pakistan. Together, these five countries account for three-quarters of the global cotton production. Regarding global exports, the largest cotton exporters in 2019 were the United States (39%), Brazil (18%), and India (7%), as these three countries contributed to 64% of world cotton exports. Among the BRA 12/002 partner countries, Benin and Burkina Faso accounted for 3% and 2%, respectively. Regarding national exports, cotton and its by-products correspond to 69% of the volume of agricultural products exported in Benin, 38% in Burkina Faso, 3.6% in Mali, and 25% in Chad (FAO, 2020)

Exports of “white gold”, as cotton is called, are vital to cotton-dependent economies. In the African continent, 37 of the 55 African countries produce cotton, and twenty countries heavily rely on such production for their national GDP and foreign trade exchange. The African continent contributes with circa 8% of the global cotton production and more than 9% of world exports (AMANET et al., 2019).

There are a total of six cotton basins on the continent, including the West African basin, the most important from a productive point of view, accounting for more than three quarters of African cotton exports, followed by Southeast African countries (SEA) – priority action regions for the BRA 12/002 project. The highest rates of cotton contribution to GDP are in West African countries: for countries in the Cotton-4 group, cotton and its by-products represent 48% of the volume of agricultural products exported by the 4 countries (FAO, 2020).

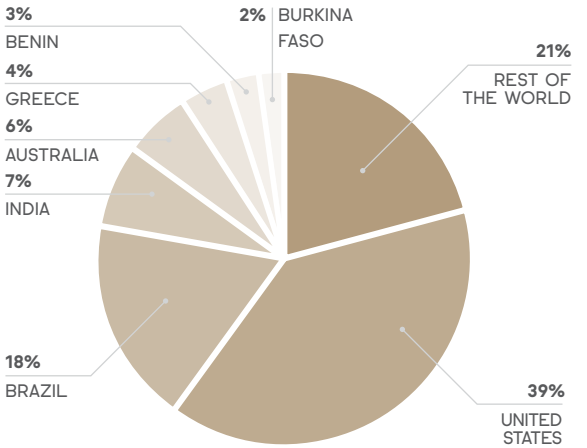
9. According to data from the Agricultural Census, in 2017, there were 3,224 properties producing herbaceous cotton in Brazil, with 77% of these properties concentrated in the Northeast, and 86% of the total properties in Brazil consisting of small properties (with an area less than 10 ha). However, although the Northeast concentrates the largest number of cotton-producing properties, the Midwest is the largest cotton producer in the country, having produced 2.6 million tons of cotton in 2017, or 70.5% of the volume of cotton produced by the country this year. It is noteworthy that in the Midwest, unlike other Brazilian regions, cotton production is concentrated in medium and large properties.

FIGURE 1 Share in the total volume of cotton produced in 2018, by country



Total global production **30.754,5 mil tons**

FIGURE 2 Share in the total volume of cotton exported in 2018, by country



Total global production **9.094 mil tons**

SOURCE: FAO (2020)

TRENDS AND CHALLENGES

World cotton production is expected to grow by 1.5% per year until reaching a volume of over 28 million tons of cotton in 2030 (OECD/FAO, 2021). This estimated increase is a consequence of a 0.5% increase per year in cotton planted areas, as well as a 1% increase per year in global productivity.

On the African continent, cotton production is expected to have an annual growth of 3.5% between 2020 and 2025, which is in line with the average 3.4% annual growth in seed cotton production in the period 2008-2018, according to data from the FAO (2020).

Regarding international trade, the expectation is that by 2030 China will have the largest demand for cotton, with a projected increase of 17% in the volume of imports. In addition, demand is also projected to increase in other Asian countries, such as Bangladesh and Vietnam, with a growth in cotton imports of approximately 41% in 2030.

In terms of challenges, productivity is seen as a major challenge for the international cotton market, as world productivity has shown low gains.

The dominant production model in the sector relies on investment in biotechnology to ensure high productivity rates. In 2019, of the twenty-four countries in the world that adopted biotech crops, the United States of America (USA) holds 40% of the global share. Most biotechnology solutions applied to cotton crops focus on insect tolerance and herbicides. In 2015, the compliance rate for Genetically Modified (GM) cotton was nearly 80% worldwide. The greatest increase (compared to the previous year) was in South Africa with an increase of 315%, followed by the US (24%) and Brazil (19%) (MALINGA, 2019). Although the technology has increased productivity rates, costs have also increased due to pest resistance. Strategies to increase the productivity of GM cotton crops include investments in new technologies, reducing plant density per hectare and implementing efficient pest management, nutrients, and water, among others.

In addition to productivity challenges, the cotton market also faces some uncertainties regarding both demand and supply. On the side of demand, there is uncertainty for the 2021-2030 decade regarding the behavior of per capita consumption of cotton-based textiles in developing countries, in addition to competition with polyester in emerging and developed countries and the recovery of the world economy after the COVID-19 pandemic. On the side of supply, uncertainties focus on pests in crops, the effects of climate change, and trade tensions between countries.

COTTON ON THE AFRICAN CONTINENT

Most of the cotton cultivation in Africa is done by smallholders (grown on less than twenty hectares of land), which reveals a major potential for rural development. Over 18 million people rely directly and indirectly on the cotton chain. It is difficult to estimate the real participation of family farming in the cotton sector, but recent studies estimate that 80% of the cotton area is cultivated by smallholder farmers (MALINGA, 2019).

Sub-Saharan Africa has a favorable climate for pest growth, which results in subsequent production losses. In West Africa, about 25–35% of cotton production is lost to pests. In addition to damage caused by pests, many other challenges are faced by small farmers, such as low seed germination, inadequate seed storage facilities, low soil fertility, low level of education, and lack of training.

Recent studies suggest that conventional cotton production in Africa could be increased with the availability of good quality seeds, support for agricultural research, and capacity development and rural extension strategies, so that farmers could get the most profit from cotton. Although cotton production volumes increased in major producing countries during the first decade of the 2000s (largely due to increased acreage), productivity rates fell by more than 20% compared to major global producers (USA, Brazil and India) in the same period (ITC, 2013).

Regarding regional differences, several studies confirm that productivity rates in countries in the Midwest region of the continent are higher than in the Southeast region (PELTZER and ROTTGER, 2013). According to Tschirley et al. (2010, 312) this difference in productivity rates does not automatically translate into lower income taxes: these are equal when there is access to good quality inputs and the producers are asset owners, especially plowing equipment.

Finally, it is important to recall that each country has a singular production structure and marketing chain, largely reflective of the land organization inherited from the (post)colonial system and the pendular decentralization and re-centralization movements of the State in the structuring of the cotton sector. Since the early 1990s, the governments of most cotton-producing countries in sub-Saharan Africa have been implementing sectoral reforms, often with support from the World Bank and other institutions for development. These reform processes are generally oriented towards the progressive decentralization of the role of the State, aiming at greater involvement of the private sector and producer organizations.

However, the full potential of the cotton sector for the rural development of the respective countries faces numerous challenges, among which the lack of financial sustainability, low economic efficiency and stagnant productivity at the level of production units, low levels of productivity and low quality, in addition to long-term concerns about the depletion of natural resources, precariousness of rural work, and the inability to translate economic and productive gains into reductions in rural poverty rates.

Moreover, cotton fabric consumption remains limited across sub-Saharan Africa, and foreign demand, mainly from South and Southeast Asia, plays a key role for West African producers as many countries export practically their entire production (FAO, 2020). However, the textile and clothing industry has been growing in some African countries, especially in Ethiopia, as the region presents favorable conditions for Foreign Direct Investment, which has been significant in recent years. This could change the export network of Sub-Saharan Africa in the long term, with growth projected at around 2.7% per year for the period 2021-2030, with South and Southeast Asia as the main export destinations.

CERTIFICATION AND SUSTAINABILITY

It is expected that the growing preference for consumption of natural fibers by the textile industry will boost the African cotton market between 2021-2026 (Mordon Intelligence, 2020). Furthermore, such growth should benefit from certification initiatives that contribute to a transition towards more sustainable production systems.[10] Main producing countries tend to move away from genetically modified seeds, which has contributed to the increase in organic cotton production during the last three years: in 2020 five of the ten main African producing countries were responsible for 4% of the global cotton production of organic cotton. However, the global share of organic cotton production remains quite limited: in 2016 it represented 0.4% of the total volume, and 0.1% in terms of cultivated area (ICAC, 2016).

10. See for example the positioning report on the future of the sector in Africa published in 2020 by the Pan-African Supply Working Group of the global organization Textile Exchange, which brings together the main leaders of the cotton chain.

THE BRA 12/002 PROJECT

The BRA 12/002 Project hopes to contribute to increasing productivity and further strengthening traditional agricultural culture while generating income for the rural population of partner countries. To achieve this goal, the project provides the transfer of Brazilian technologies in cotton cultivation and promotes capacity development for researchers, farmers, and institutions in partner countries.

The project has two results. The first concerns the implementation of subprojects while the second refers to the strengthening of capacities for SSC in the cotton sector, including knowledge management on good practices and the capacities of actors involved in implementing SSC projects.[11] The project began in 2012 and is scheduled for completion in 2026.

At the end of 2020, the project had 11 subprojects and eight simplified actions for strengthening the cotton sector in African countries, comprising the most important international technical cooperation action currently developed by Brazil with its African partners.

11. Knowledge management is a multidisciplinary approach for an institution to make the best use of its knowledge to achieve its goals. It includes processes and instruments through which knowledge is generated, assimilated, recorded, validated, disseminated, and applied

Figure 3 shows the distribution of projects and actions under BRA 12/002 over time, as well as their geographic reach, the implementation percentage, and the availability of evaluations carried out. It is noteworthy that: four subprojects temporally coincide with the COVID-19 pandemic; two subprojects are intended for technical coordination activities (001 and 004); of the 11 partner countries, Mali and Benin participate in three subprojects each: Cotton-4, Cotton-4 + Togo, and subprojects related respectively to soils and cotton fiber classification.

Figure 4 summarizes the volume of resources mobilized by subprojects and actions, including the partners' envisaged financial contribution.[12]

12. The PRODOCS of the subprojects also consider non-financial counterparts, but the information presented here refers only to financial resources.

FIGURE 3 BRA 12/002 Timeline

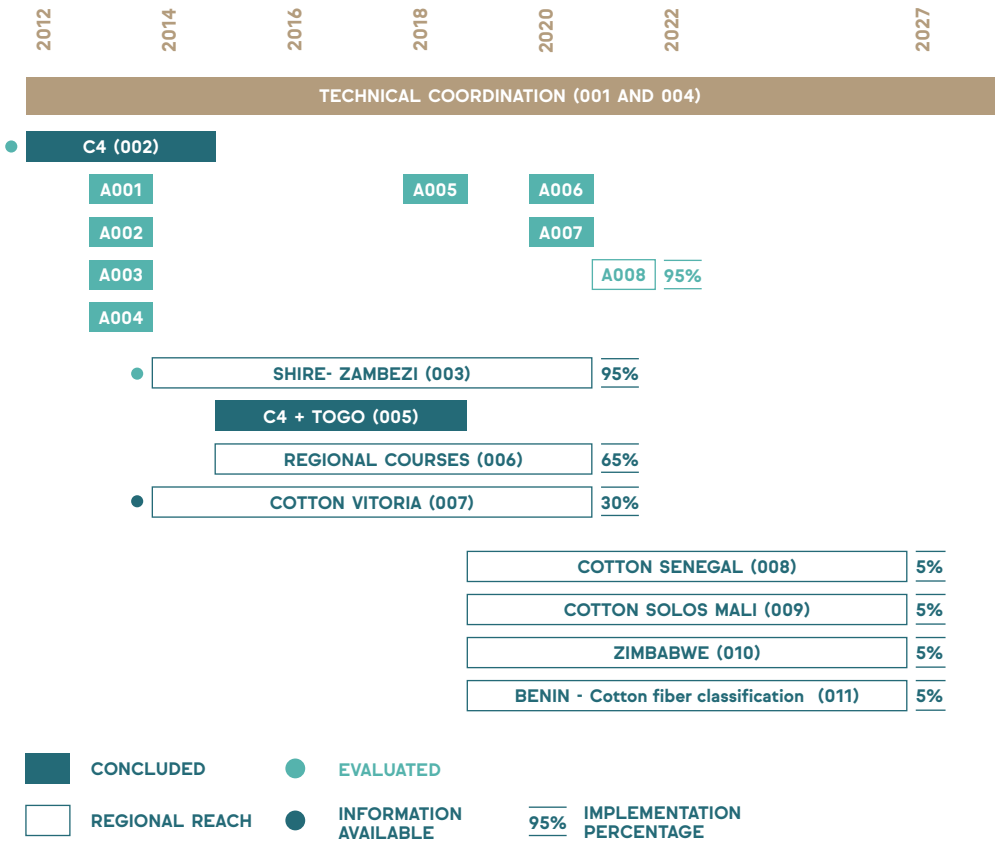


FIGURE 4 Financial allocation summary BRA 12/002

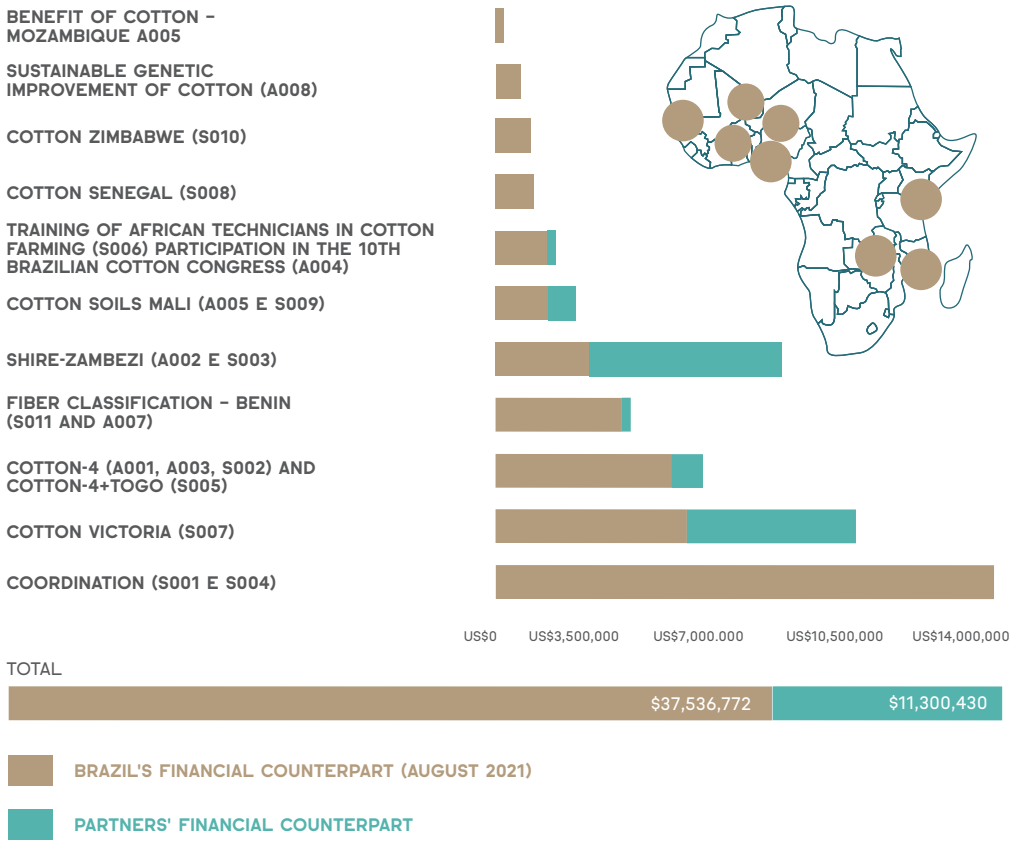
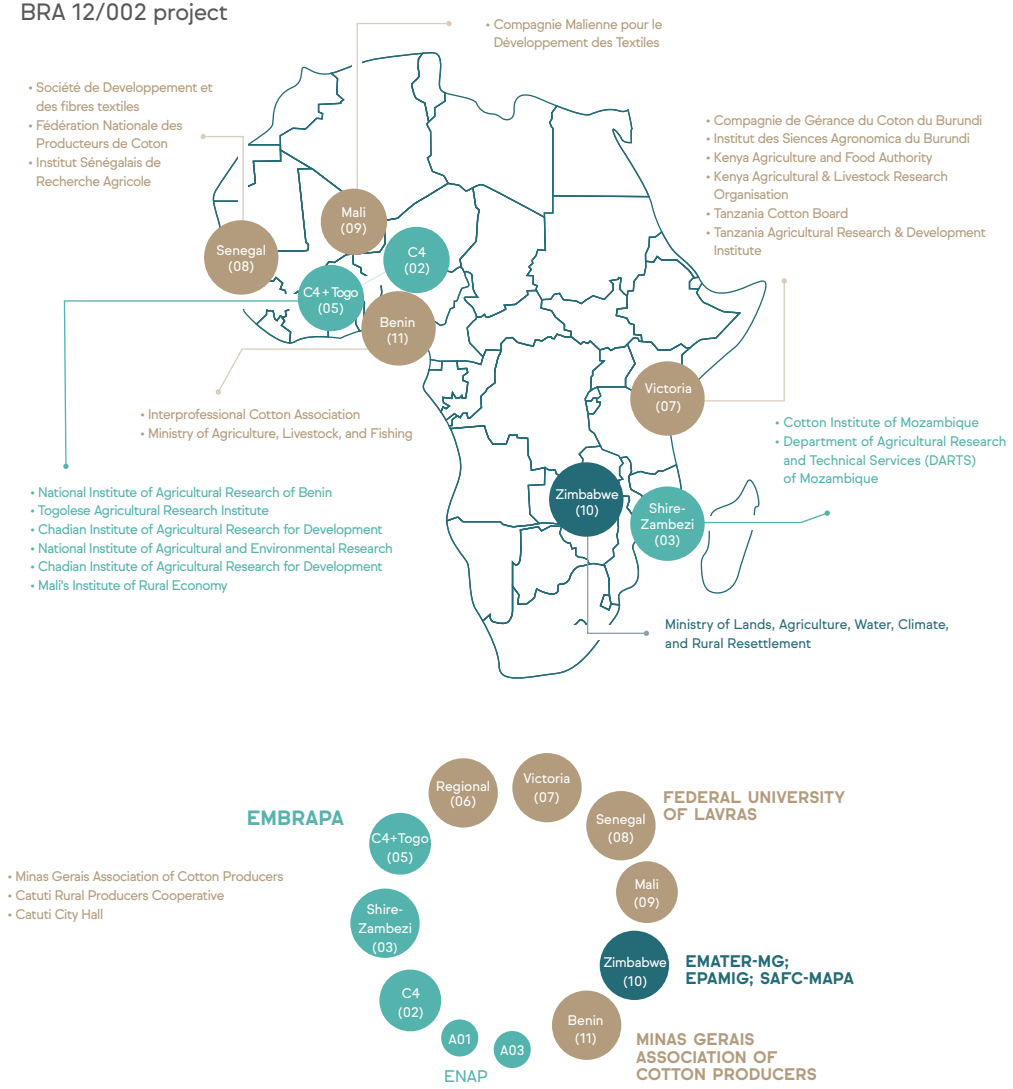


Figure 5, in turn, maps the universe of Brazilian and African institutions mobilized under the BRA 12/002 project. On the Brazilian side, the project diversified the implementing agencies, having added 9 different institutions by the end of 2020. The African counterparts, in turn, represent a total of 21 institutions.

FIGURE 5 Implementing institutions and partners of the BRA 12/002 project



THEORY OF CHANGE

To underpin the mid-term review of the BRA 12/002, we reconstructed the Project's Theory of Change (TOC). The Theory of Change focuses on the premises, strategies, products, and results outlined in the aforementioned PRODOC – and within the set of its subprojects and actions – in order to achieve short, medium, and long-term results.

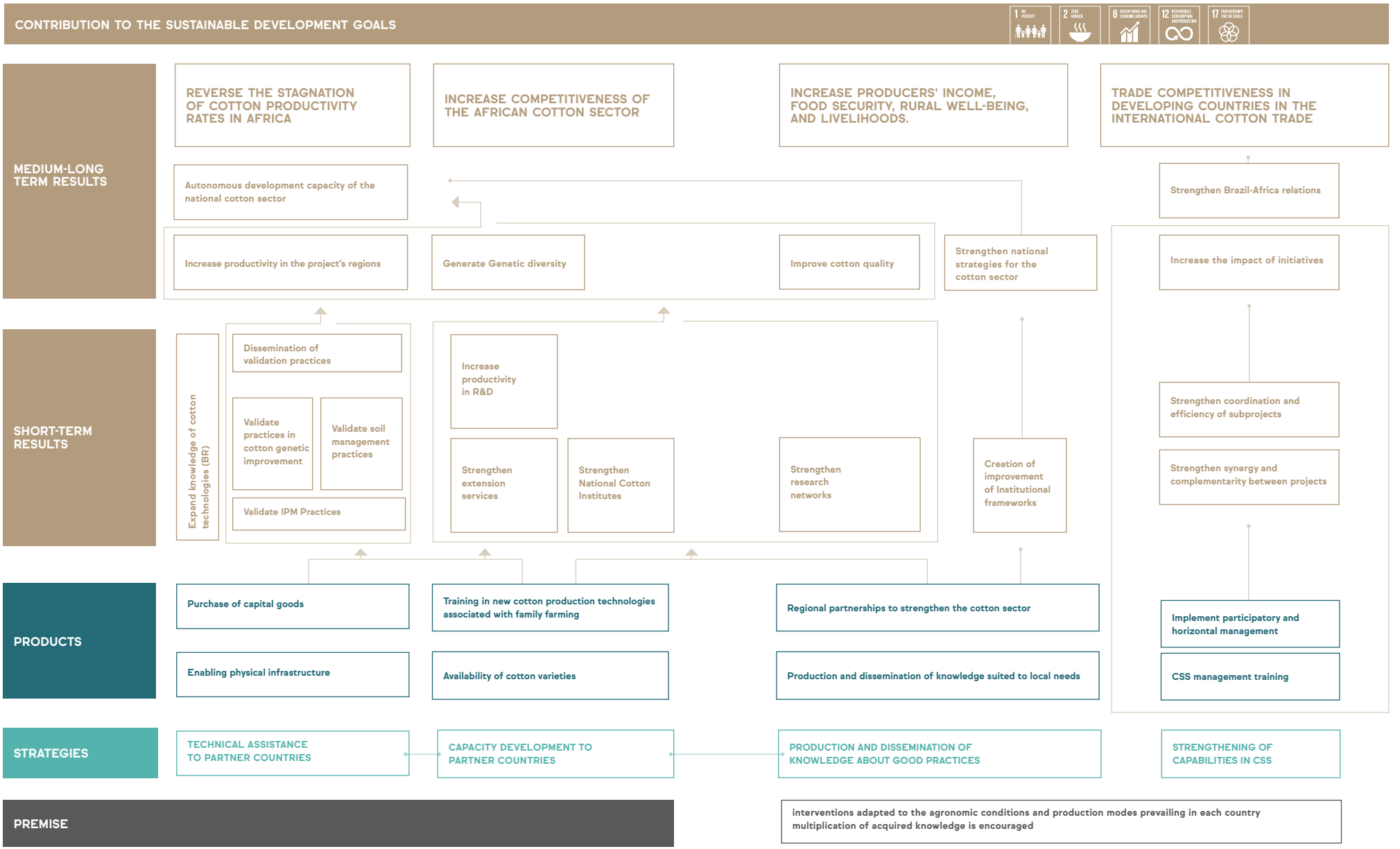
The project's medium and long-term results seek to reverse the stagnation of cotton productivity rates in partner countries, increase the competitiveness of the African cotton sector, as well as that of developing countries, in the international cotton trade, and contribute to increased income, food security, rural well-being, and the livelihood of cotton farmers. To this end, the project is devoted to strengthening the cotton sectors of partner countries by improving the quality of cotton, generating genetic diversity, increasing productivity in the project's areas of operation, and contributing to national strategies for the cotton sectors.

To achieve such medium and long-term results, the project relies on four complementary strategies, namely:

- provide **technical assistance (1)** and **training (2)** in new technologies to actors in the cotton chain in order to increase the productivity and income of cotton producing territories through investments in physical infrastructure, availability of genetic varieties, and training courses, in which the main focuses are the validation and dissemination of practices in Integrated Pest Management (MIP), Soil Management, and genetic improvement;
- **produce and disseminate information on good practices (3)** through knowledge products and exchanges, with the aim of strengthening national cotton institutes, researcher networks, extension services, and Research and Development (R&D) capacity;
- **strengthen capacities in SSC (4)** as a complementary strategy with the goal of increasing the efficiency, effectiveness, and impact of subprojects, under the principles and practices of South-South Cooperation (SSC). Furthermore, horizontal and participatory management may strengthen the relationships between partners, contributing to greater articulation at the international level.

Finally, for the TOC hypotheses to be valid, the project stems from the premise that the knowledge generated and acquired within its scope must be shared and disseminated; and interventions must be adapted to the prevailing agronomic conditions and modes of production in each country.

FIGURE 6 Theory of Change of the BRA 12/002 project



BOX 2

BRA 12/002 AND THE COTTON CHAIN

The cotton production chain is responsible for generating great economic opportunities in the regions where it is located through a complex production chain with high added value (Severino et al. 2019). The chain may be divided into three phases:

- **BEFORE THE GATE:** necessary equipment, materials, supplies, or Technical Assistance (AT) for the development of cotton cultivation and management;
- **INSIDE THE GATE:** cotton cultivation, production management, and subsequent cultivation of cotton, both seed and lint;
- **POST-GATE:** processing of seed and lint cotton and supply to the final consumer.

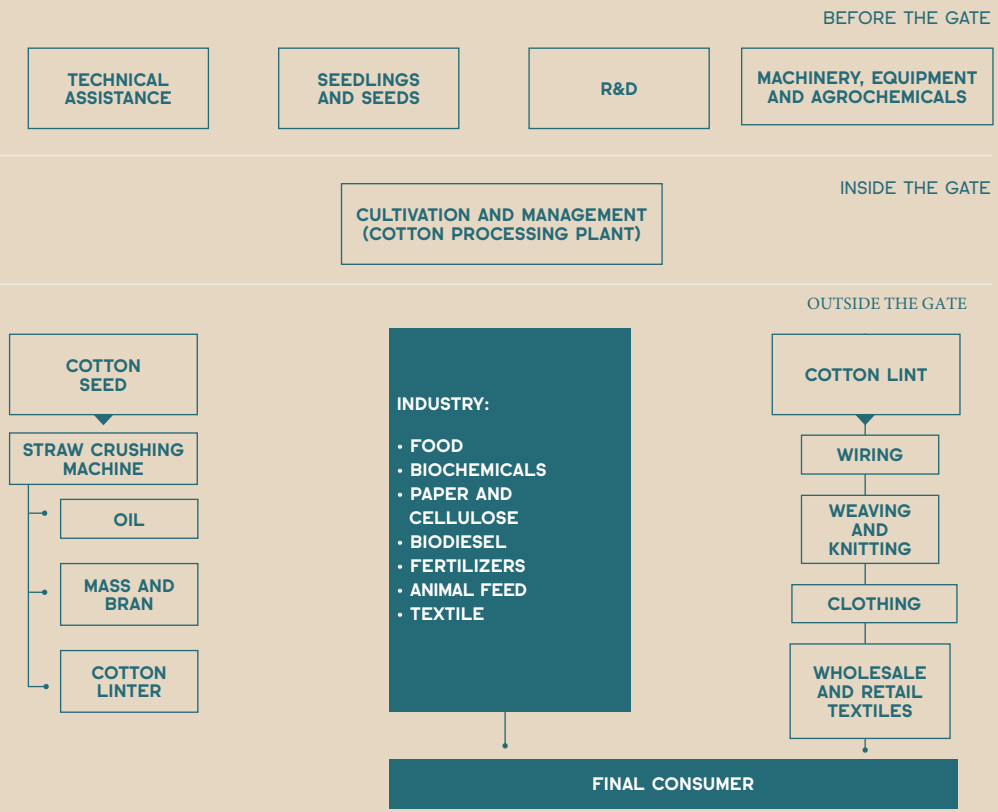
THE 12/002 SUBPROJECTS FOCUS MAINLY ON THE "INSIDE THE GATE" PHASE, in which the primary concern is the acquisition of cotton seedlings and seeds; essential inputs such as fertilizers, pesticides, insecticides, fungicides, and correctives; sowing and harvesting machinery; fuel and lubricants, irrigation equipment, and Personal Protective Equipment (PPE) for field workers. Furthermore, with a view to improving productivity and production efficiency, it is important to contract Technical Assistance for the producer as well as investments in R&D.

In the "inside the gate" phase, before planting seedlings and seeds, it is necessary to analyze and prepare the soil for conventional planting or, in the case of direct planting, the use of straw or organic matter in the soil. In addition, it is important for the harvest to take place during a dry period, for better yield of the cotton.

At planting time, it is important to use herbicides to control weeds; insecticides to combat pests such as weevils, caterpillars, and aphids, as well as fungicides to prevent fungi and other diseases. In the case of organic farming, other products and techniques are used to fight weeds, insects, and diseases. Cotton harvesting may be either manual or mechanical, while the latter is divided into stripper (dense cotton) and picker (selective extraction of seed and lint cotton), and after harvesting the cotton must be prepared for transport and further processing.

As two harvest products, cottonseed and cotton lint have different destinations. The seed goes to crushing, where oil, mass, bran, and cotton linter are obtained as by-products, all of which destined for a myriad of industrial activities, such as food, biochemistry, and animal nutrition industries, among others. Cotton lint, in turn, goes to the production of fabrics, ultimately destined to the textile retail and wholesale market.

Source: Prepared from ABRAPA (2011) and Retamiro, Silva and Vieira (2013)



PURPOSE, OBJECTIVES, SCOPE, AND TARGET AUDIENCE

PURPOSE

The purpose of this mid-term evaluation is to provide the ABC and the UNDP with evidence on the results obtained by the BRA 12/002 project, as well as recommendations and lessons learned.

The evaluation seeks to contribute to institutional learning for the improvement of the SSC. The evaluation results are expected to inform future planning, including substantive revisions of the BRA 12/002 project until its completion.

As a mid-term evaluation, its character is predominantly formative, with summative aspects regarding data compilation and complementation regarding the completed subprojects.

GOALS

The main goal of this mid-term evaluation is to examine the capacity of the institutions involved in the sustainability and replicability of subprojects within the framework of the BRA 12/002.

The specific goals of the evaluation are:

- to examine the quality of design, planning, management, coordination, and execution of actions;
- to consolidate the qualitative and quantitative results of the projects, including in terms of mutual gains;
- to assess the relevance, effectiveness, efficiency, effectiveness, replicability, and sustainability potential of the initiative, as well as measure its performance;
- to analyze lessons learned and propose recommendations for improving SSC and propose measures to mitigate risks that may interfere and/or affect the achievement of results.

SCOPE

The mid-term evaluation covers the period between 2012 and 2020. The start date represents the beginning of the project and the end date marks the year of the last available project reports. As such, in view of the temporal scope, it will be possible to assess, albeit partially, the impact of the COVID-19 pandemic on the implementation of the expected results in the year 2020.

The mid-term evaluation encompasses all ongoing subprojects and activities implemented under Project BRA 12/002 in the covered period. The geographic scope of the exercise focuses on 11 project partnering countries: Benin, Burkina Faso, Burundi, Chad, Mali, Malawi, Mozambique, Kenya, Senegal, Tanzania, and Togo; in addition to incorporating the perspective of Brazilian partners.

TARGET AUDIENCE

The main users and expected uses of the mid-term evaluation are in table 1.

TABLE 1. Users and uses of the mid-term evaluation of the BRA 12/002 project

Users	Uses
ABC	Obtain evidence on the results of the project, as well as recommendations and lessons learned that may inform future actions, including substantive reviews of the PRODOCS, subprojects, and ABC institutional development practices, processes, and tools.
Strategic project partners	Be informed of the results of the mid-term evaluation to adjust future strategies alongside the ABC and implementing agencies.
Epistemic community	Be informed of the results of the mid-term evaluation.
Interested actors and the general public	Be informed of the results of the mid-term evaluation.

2

EVALUATION METHODOLOGY

ANALYTICAL APPROACH

The evaluation approach merged conceptual elements to underpin the Project's Theory of Change and the Evaluation Matrix. Namely:

The focus on **capacity development**, through the exchange of knowledge, as a key element of the SSC. In this regard, the observed results focus on interdependent capacity changes at the individual, organizational, inter-institutional, and social levels.[13] Given that capacity development is an endogenous process, the evaluation is guided by the **Contribution Analysis** approach, acknowledging that SSC initiatives can only contribute to the scope of development impacts, but these cannot be attributed exclusively to the initiatives.

The focus on **technology transfer** (TT) as one of the project's central axes for capacity development. TT processes encompass both technical variables, which in the case of the BRA 12/002 are agricultural, as well as public policies and management and production models. A technology is considered transferred when it can be modified and adapted according to the needs of the actors who have incorporated it, or even when they identify new research opportunities, boosting technological succession and innovation (Dereti, 2009).

Given the 'umbrella' nature of the BRA 12/002, we used advances in **portfolio evaluations** as a reference to address the object.[14] Portfolio evaluations are more wide-ranging than depth-oriented, offering the opportunity to examine trends, interactions, and effects across projects. They denote a summary and cannot serve as substitute for project evaluations. Portfolio evaluations should provide systemic evidence and systemic reflections in project design, innovative methodologies, and synergies, including thematic and geographic coherence, across portfolio projects.[15] In this regard, success and risk factors – when confirmed in different

13. MINISTÉRIO DAS RELAÇÕES EXTERIORES (Brasil). Agência Brasileira de Cooperação. Manual de Gestão da Cooperação Técnica Sul-Sul. Brasília: Agência Brasileira de Cooperação, 2013.

14. A portfolio of projects is understood as: "an aggregate grouping of discrete projects or programmes linked by an overarching, time-bound strategy. Individual projects within the portfolio have vertical lines of accountability to an overarching organising entity and all share a core unifying element, but the specific objectives and interventions each project pursues may be quite different. BUFFARDI, Anne L.; MASON, Paige; HUTCHINGS, Claire; SHARP, Samuel. Monitoring and learning for country-level portfolio decision-making and adaptation. Londres: ODI, maio 2019. Disponível em: https://cdn.odi.org/media/documents/12713.pdf. Acesso em: 5 out. 2021

15. SANDERS, James. Cluster Evaluation. The Evaluation Exchange: Emerging Strategies in Evaluating Child and Family Services, [s. l.], v. 4, n. 2, 1998.

projects – gain greater significance within the portfolio, informing the future of the interventions under analysis.

Finally, the evaluation sought to be **sensitive to racial, ethnic and gender equity**, taking into account local realities and the way in which gender, race and ethnicity categories are understood and prioritized by partner countries.

EVALUATION MATRIX

The evaluation matrix seeks to reflect upon, through evaluation dimensions and criteria, the purposes and objectives of the evaluation, as well as to understand the chain of results reconstructed within the TOC. As shown in table 2, the evaluation matrix proposes 3 dimensions detailed in 13 criteria, with their respective evaluation questions.

The complete matrix can be found in Annex 1. We chose to use a series of projections as a descriptor of the evaluation criterion (indicator), all qualitative, through which we valued the collected evidence. The matrix also records the methods and sources that will be used to analyze the evidence collected in each of the evaluation criteria. For all criteria, the analyses were contextualized, triangulated, and complemented with explanatory factors.

The dimensions, criteria, and guiding questions were presented and validated by the Cotton/ABC Working Group, in a workshop held on May 21, 2021.

TABLE 2 Evaluation matrix

Dimension	Criterion	Question
Portafolio/ Proceso	Relevance and strategic pertinence	To what extent has the project been responsive to the priorities of the actors involved, including the final target audience?
	Complementariedad y coherencia	To what extent has the project ensured complementarity and coherence between its subprojects?
	Learning and Replicability	To what extent has the project evolved in terms of replicability and learning across subprojects?
	Efficiency	To what extent has the project management ensured the quality of deliveries and contributed to the achievement of the stipulated goals?
	Performance	To what extent has the project management ensured the quality of deliveries and contributed to the achievement of the stipulated goals?
	Design quality	To what extent has the project covered the multidimensionality related to the cotton sector and improved the quality of the subproject design?
Short and medium-term results 65%	Individual skills development	To what extent has the knowledge disseminated by the project been relevant, assimilated, and applied?
	Institutional capacity development	To what extent has the project contributed to install sufficient infrastructural, technological, and institutional capacities to allow countries to improve crops and seed production autonomously, from an equitable and sustainable perspective?
	Conducive regional environment	To what extent is it possible to observe a cumulative effect of the different subprojects at a regional level, with a view to strengthening results in partner countries?
	Technology Transfer	What transfer levels have been achieved so far in the subprojects?
Long term results 65%	Economic sustainability	To what extent may the project contribute to ensure sustainability of cotton production by its partners?
	Productivity and competitiveness	To what extent may the project contribute to reverse the stagnation of cotton productivity rates and promote competitiveness in the international cotton trade?
	Socio-environmental sustainability	To what extent may the project contribute to increase income, food security, rural well-being, and livelihoods of Cotton Producers and Cotton Producing Territories?

EVALUATION METHODS

This evaluative design is based on **Mixed Methods**, seeking an intelligent combination of qualitative and quantitative analyses. The following approaches and methods were used according to the Evaluation Matrix:

Case studies: sought to provide an in-depth view over the sub-projects and actions of the BRA 12/002. They were used to identify trends, issues, and divergences between different cases.

Online poll: applied to the participants of the two editions of "capacity development and Technology Transfer in Cotton Culture" offered by the Federal University of Lavras (UFLA) and aimed at technicians from French, English, and Portuguese-speaking African countries, under subproject S006.

Semi-structured interviews: carried out with the ABC, implementing agencies and Brazilian partners, the Itamaraty, the UNDP, the IBA, institutional representatives from partner countries, and representatives from international organizations involved in other projects financed by the cotton litigation. The list of people interviewed can be found in Annex 2. There was no data collection from the communities implementing the subprojects.

Document review: document analysis related to the project, as listed in Annex 3. The secondary data review included relevant data to the Brazilian cooperation in the field of cotton, as well as those related to the cotton chain of each partner country and international databases. The documents review constituted an evidence source, triangulated with other collected data through the different evaluation methods.

The principles of **Utilization-Focused Evaluation** guided the evaluation process, seeking a dialogic construction with the main project stakeholders. **Collaborative methodologies** were used to validate the evaluation dimensions, as well as prioritizing the evaluation criteria. The analysis of the results and the construction of recommendations were carried out in conjunction with the ABC staff.

udies and analysis dimensions

DATA COLLECTION

The following instruments for data collection were created from

	CASE STUDIES	DIMENSIONS
✓ 95%	A01, C4 (02) + Togo (05), A03, A02, Shire-Zambi (03)	1. PORTFOLIO 2. SHORT AND MEDIUM-TERM RESULTS 3. LONG-TERM RESULTS
65%	Victoria (07), A06, A02, A04, Course (06)	1. PORTFOLIO 2. SHORT AND MEDIUM-TERM RESULTS
5%	Zimba-bwe (10), Benin (06), A07, Senegal (08), Mali (09), A05	1. PORTFOLIO
	A08, Technical coordination: (01 and 04)	1. PORTFOLIO

the Evaluation Matrix: interview scripts for each of the consulted profiles and a poll in three languages for the participants of the two editions of the capacity development carried out in Brazil.

We systematize the collected data in interview registration forms and in the evidence database, which gathered information from interviews, surveys, and document reviews consolidated in case study reports.

Within the scope of the case studies, we built an analysis to provide greater objectivity to the analysis of the evaluation team. The instrument disaggregates the elements of each descriptor in the Evaluation Matrix, and provides an operational definition of the main concepts present in each descriptor. Finally, the instrument defines rubrics (from 1 to 5) to assess the findings of each descriptor in each subproject, depending on its implementation stage. These instruments ensured the reliability and uniformity of data collection and analysis. In addition, the evidence database was used to verify the quality and robustness of the evidence supporting the analysis. All instruments are listed in Annex B1.

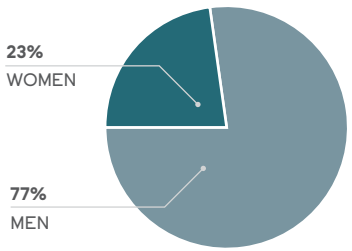
Table 3 records the main limitations faced by the evaluation, as well as the mitigation strategies used.

SOURCE

56
INTERVIEWED PEOPLE

25
POLL PARTICIPANTS

+70
REVIEWED DOCUMENTS



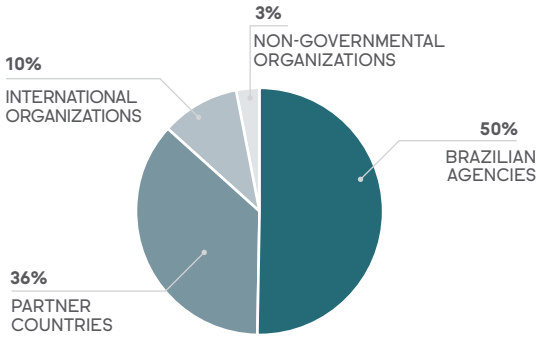


TABLE 3 Main Limitations and Mitigation Strategies

Limitation	Mitigation Strategy
Impossibility to carry out evaluation missions to partner countries due to restrictions imposed by the COVID-19 pandemic. Remote data collection has constrained the team's ability to make field observations and obtain information through informal conversations during journeys and interactions in the field. During online interviews, we noticed that the feedback of African partners was limited to formal responses.	To obtain a greater diversity of perceptions and perform a deeper analysis, the evaluation team intensified the document review of primary and secondary sources and sought to increase the number of interviewees on the Brazilian side and other actors with knowledge of the sector and Brazilian cooperation. In addition, the evaluation team had the collaboration of a Beninese researcher to establish a closer contact with the respondents (both in terms of language, time zone and – to some extent – culture).
Difficulty in obtaining interview confirmations from African partners. In most cases, the political focal points of the subprojects did not accept the interview request, referring the evaluation team to the technical focal point. Nevertheless, the interview confirmations required reiterated requests from the evaluation team.	The evaluation team kept a systematic monitoring of the confirmations and, when necessary, requested further reinforcement from the ABC. However, the evaluation team considered the interview canceled after three email requests and one direct contact via messages to private phones.

ETHICAL CONSIDERATIONS

The evaluation process ensured at all times:

Usefulness: To ensure that the evaluation process and its products are relevant to stakeholders, the evaluation team consulted with ABC throughout the process. This was done mainly through (i) constant information about the process and progress of the evaluation; (i) survey with coordinators to gather information for defining the sample of case studies; (iv) workshop to inform the elaboration of recommendations; (v) analyses and returns of contractual products by the ABC.

Integrity, independence, impartiality, and transparency: In order to provide transparency and systematic feedback throughout the evaluation process, the evaluation team provided systematic written justifications for the acceptance or rejection of all comments about each of the evaluation products. At all stages, the team ensured objectivity, professional integrity, and absence of bias. Finally, we recommend that the final reports are accessible to the public.

Privacy, confidentiality, and respect for rights: The stakeholders consulted were duly informed about the purpose of the evaluation, the contractors, and the use of the findings. Participation in the evaluation was entirely voluntary. The independent evaluation team consulted all collected information exclusively, which they never shared with the contracting parties. The contribution of the consulted actors is anonymous and confidential.

Respect for dignity and diversity and the right to self-determination: The evaluation team sought to respect at all times the diversity of the actors involved in this evaluation process, taking into account the beliefs, manners, and customs of their social and cultural environment as well as human rights and gender equality.

Credibility: To ensure credibility, the evaluation team ensured independence, impartiality, rigorous methodology, transparent evaluation process, the involvement of relevant stakeholders, and a robust quality assurance system. All evaluation questions were answered by triangulation of data from multiple sources.

3

MAIN FINDINGS

1. The BRA 12/002 project has been relevant for the development of the cotton sector in Africa, and its sub-project portfolio has advanced by incorporating productive and multidimensional aspects without losing its focus on increasing productivity

DIMENSIONS: Strategic relevance and pertinence, Learning and Replication, Quality of design

The BRA 12/002 is – alongside other projects under the Brazilian Cotton Initiative – one of the main responses to the call for greater international cooperation for cotton, expressed by developing countries in the Cancun round (2003). According to information voluntarily reported to the WTO's cotton subcommittee, from a total universe of 27 projects that add up to around USD 190 million, Brazil currently contributes with five initiatives, which represents 37.5% of the total resources allocated to International Development Cooperation (ICD) projects in the global cotton sector. The BRA 12/002 represents 18% of the total.[16]

The project is relevant and appropriate across different dimensions: it has been responsive to the demands of partners and the technologies made available for transfer are suited to local production contexts and relevant to improve the living conditions of vulnerable populations. The project is also relevant for the Brazilian institutions involved.

1.1 THE PROJECT HAS RESPONDED TO THE DEMANDS OF ITS PARTNERS

The Cotton-4 Project, carried out between 2009 and 2013, is considered a milestone for Brazil's SSC, consolidating itself among the first examples of structuring cooperation promoted by the ABC. The neighboring country, Togo, having knowledge of the positive

16. According to the figures reported to the WTO and made available in document WORLD TRADE ORGANIZATION. Sub-Committee on Cotton. Director-General's Consultative Framework Mechanism on Cotton: Evolving Table - 31th Version, Revision. Genebra: [s. n.], 2021.

results achieved in the first phase of the project in the region, requested the participation of the Brazilian government in the second stage (S005 - Cotton-4 + Togo). The dissemination of the results of Cotton-4 and, later, Cotton-4 + Togo, boosted demands from other countries. Informants from more recent subprojects confirmed that the proven results of Cotton-4 and other BRA 12/002 projects, as well as the alignment of technology transfer to local realities, were important when choosing Brazil as a cooperation partner.[17]

For partner countries, the cotton sector carries strategic importance for the commercial balance as well as to reduce poverty among the rural population, generate jobs in all links of the production chain, and contribute to food security and sustainable development. While the African partners have differently structured cotton production chains, they have similar characteristics (among each other and with Brazil). Among these similarities, the fact that over 90% of producers in the respective cotton sectors are small-scale (up to 1 hectare) translates into shared challenges in terms of increasing productivity and competitiveness of production units and in the selection of strategies to encourage the structuring of the production chain.

One *proxy* of the relevance of the BRA 12/002 for partner countries is the commitment of more than USD 11 million by its partners, which corresponds to circa 30% of the budget committed by the Brazilian government thus far. The main financial counterparts were within the Shire-Zambezi and Cotton Victoria subprojects. Furthermore, the PRODOCs also account for the professionals' technical hours from the implementing agencies equivalent to financial values, i.e., the cost of the working hour of Brazilian professionals dedicated to cooperation is calculated.

In addition to the volume of resources allocated, the relevance of the respective subprojects is also a result of BRA 12/002's attentive approach to institutional priorities in partner countries and its capacity to align technology transfer to local demands and contexts.

17. Partner country Interview.

18. For the purposes of this evaluation, the consultancy carried out research in survey format with the course participants in the 2017 and 2018 editions. The poll was sent to 35 participants of the 2017 edition and to 33 participants of the 2018 edition – a total universe of 68 people. A total of 25 participants responded to the survey (36%), 11 from the 2017 edition and 14 from the 2018 edition, accounting for 31% and 42%, respectively, regarding the total number of participants in each edition. These data indicate that the 2018 course participants contributed the most to the survey. The systematization of this poll is in Annex 4.

19. Brazil interview.

20. Interview with partners.

21. Partner country Interview.

The S006 (UFLA Courses) is illustrative of this approach. While it did not emerge from a specific demand, the project responds to a need identified among partners, regarding a need for knowledge that may be easily transferred, assimilated, and replicated to increase the productivity of the small cotton producer. This approach is pertinent for countries where the cotton sector is dominated by the small producer. The course participants further corroborate this evidence[18], who consider the contents to be highly relevant and suitable for the productive contexts and technological levels in their countries.

> "One of the pivotal working points is a technology transfer approach that does not increase cost for farmers."[19]

The character of the BRA 12/002 on demand, free from conditionalities and dissociated from colonial relations is a differential factor when compared to other cooperation initiatives in the cotton sector, whose projects often respond to interests outside the partner country or demand conditionalities.[20]

The ability to respond to the demands of partners is tied to the SSC principles, which guide the identification of demand, project design, and the subsequent shared implementation. People interviewed in the partner countries consider that the horizontal, collaborative, and appreciative approach to local realities is the fundamental element of cooperation, setting it apart from other experiences with traditional donors.

> "The project was designed by us and for us, looking at our context."[21]

In addition to the shared definition of demand, the horizontal approach has also been used in defining and/or prioritizing the territorial scope of the project, as well as guiding the adjustments during implementation:

> "We made many diagnoses to identify the real causes behind the problem of cotton production and we sought to design an intervention strategy. We also went through a process of prioritizing strategies, as a project cannot work on all fronts. The choice for a territorial scope also went through this process. This was all done together, with active participation. The project was actually built collaboratively. Tanzania, Kenya, and Burundi offered the inputs. Once the ABC prepared the project, the countries still had the opportunity to review the strategies, considering the peculiarities of each country."[22]

The principle of horizontality guides the entire project cycle, from development to evaluation, but it is worth noting that the BRA 12/002 mainly invested in applying it during the design of subprojects: the partners emphasize that the horizontal and participatory process during the prospecting and development phases of the subprojects was to align with local demands.[23]

1.2 THE TRANSFER-READY TECHNOLOGIES ARE SUITED TO LOCAL PRODUCTION CONTEXTS AND RELEVANT TO IMPROVE THE LIVING CONDITIONS OF VULNERABLE POPULATIONS

African producers endure a context of great vulnerability, characterized by historical levels of rural poverty, which can only improve through structural changes related to international political economy, public policies for agricultural production (credits, management of economic chains, knowledge, innovation, among others), asymmetrical relationships between cotton plants and producers, climate change, health, nutritional security, among others. The BRA 12/002 has incorporated multidimensional aspects in addition to increasing productivity. Based on previous demands and results from the partners, the subprojects have advanced in incorporating different approaches that contribute to the adequacy of technology transfer.

22. Partner country Interview.

23. Partner country Interview. .

24. These terms refer to the agribusiness chain. The term "before the gate" refers to everything that is necessary for agricultural production, but is not on the farm. It is what the rural producer needs to buy before they can produce: all the inputs (machinery, chemical pesticides, fertilizers, seeds, fleet, etc.). Whereas "inside the gate" refers to everything production-related – planting, management, harvesting, processing, machinery maintenance, storage of inputs, disposal of pesticide packaging, and labor. And "after the gate" refers to storage and distribution, including logistics.

The following stand out: (i) a multidimensional approach within the scope of the *inside the gate*; (ii) an *outside the gate* multi-sector approach; and (iii) a transversal approach, which goes beyond the cotton production chain, aiming to improve the living conditions of more vulnerable populations.

MULTIDIMENSIONAL APPROACH FOR INCREASING PRODUCTIVITY

This category refers to the many contributing factors for increased productivity in the scale of the productive unit for *inside the gate*, and support services for *before the gate.*[24]

All the subprojects have incorporated a multidimensional approach to increase productivity in their design. This means focusing efforts towards the following work fronts: (i) good agronomic practices, including pest and disease management, spacing, and populational density; and no-till farming with cover crops and rotation with food plants; (ii) strengthening technology transfer and rural extension approaches and methods; (iii) production and improvement of seed quality; and (iv) institutional strengthening. Likewise, all subprojects encompassed a wide range of topics in training courses and technology transfer processes, among which: soil conservation, seeds, production, water management, pest control, among others.

We also notice a growing adequacy of technologies to make it easier for the cotton sector to assimilate small producers. This is particularly noticeable in the contents and methodologies applied in courses in Brazil, where, for example, the mechanization course also includes animal traction and adapted tools (e.g., wheelbarrow sprayer) as well as the transfer of technologies to produce insecticides from botanical extracts to compensate the unavailability of quality inputs in local markets. This approach may also be observed in Cotton Victoria, which by focusing on the producer enabled the transfer of adequate technologies without increasing production cost (e.g., spacing and seeding techniques). In practice this meant allocating the budget for management techniques before investing in new varieties.

MULTI-SECTOR APPROACH TO INCREASE THE COMPETITIVENESS OF THE COTTON SECTOR:

The inclusion of institutional and economic actors in the production chain[25] during the design and execution of the project has expanded the scale and replicability of the technological transfers within the subprojects (spillover effect)[26]. However, this approach is not standardized in all subprojects and results from negotiations between parties during the project design phase and the local contexts.[27]

Three attributes of this approach are clearly found in the subprojects, namely: (i) the importance of engaging the private sector in the dissemination of technologies developed within the project scope; (ii) the importance of including actors in the production chain to ensure adherence and scalability through anchor institutions capable of mobilizing institutions and producers in the territory; (iii) the importance of including the perspectives of different actors to enrich the identification of the project's core demand, including topics such as added value (e.g. fiber classification), niche markets (e.g. agroecological cotton), and certification.

As for Shire-Zambezi, the lack of an effective engagement of cotton farmers since the beginning of the project hindered the results in Mozambique, where the seed varieties (Ambar) selected for that subproject region were sent to another region as the concessioner operating in the territory was not interested in the purchase. We consider that the cotton farmers' engagement from the project design could have increased adherence and confidence in the achieved project results.

25. The production chain includes all the actors – public and private – that make up the cotton sector, from small producers to cotton crops and research centers and sectoral councils, among others.

26. Brazil and partner country interviews.

27. For example, Cotton Zimbabwe and Cotton Senegal include this approach into their planning. Among the ongoing projects, the approach was not successful in Shire-Zambezi. In Cotton Victoria the approach has been more relevant (more in Tanzania than Kenya), while in Burundi the issue is secondary since there is only one cotton processing plant in the country.

> "The company did not realize the advantages of working with a treated and quality seed, preferring to work with grains."

Significantly, a more inclusive approach by actors in the productive chain is relevant in countries where the disruption and privatization of productive chains were more intense. In Cotton Victoria, for example, the integrated approach to the productive chain, included in the document, was of interest to some countries in the group, mainly Kenya, which is still seeking to recover from disruption after an intense liberalization process in the sector. Before the cotton sector crisis in Kenya, the country had twenty-four cotton companies, whereas today it has only six, but none of them operate in the project region.[28]

> "In Kenya the producers do not have cotton processing plants. Therefore, this means that their engagement is crucial for distributing the producers' production."

Whereas in more recent projects, such as Cotton Zimbabwe, the productive chain approach was centered on the project design and serves as a structuring element for demand. The project design included two major innovations: the extensive engagement of actors in the cotton productive chain during the project design, and the participation of a multidisciplinary team on the Brazilian side (in addition to agronomists). It is interesting to note that both teams (Brazilian and Zimbabwean) sought to increase the representative participation of the chain during the project elaboration phase.

> "We had representatives from the government, the private sector, and producers. We requested that the audience be heterogeneous representing the different links of the production chain."[29]

28. Partner country Interview.

29. Brazil interview.

> "We designed the project to dialogue with the entire productive chain. Our approach in Zimbabwe was to look at the cotton sector through an integrated and not fragmented approach. The condition of one link affects all other links. Any challenge must be faced through an integrated approach between the actors that make up the chain."[30]

Furthermore, the participation of more than one Brazilian institution in the planning has enriched the multidimensional structure of the problem tree.[31] Brazil's and Zimbabwe's broader engagement enabled the project to align with the identified demands, both regarding technologies for increased productivity and the participation of the sector's small-scale agriculture. Although the project remains focused on productivity, the inclusion of different actors has encompassed professionals from different fields, such as sociologists.[32] This innovation is based on the Brazilian institution's rural extension experience:

> "EMATER is an advocate for social welfare. This could mean a technician concerned for his family. Not rarely, technical agronomists simply rush to the crops as soon as they step on the farm. Our technician has a different perspective and may help identify further opportunities, including the inclusion of women and young people in the process. It is important to have someone who sees the family unit as a whole."[33]

30. Partner country Interview.

31. Partner country Interview.

32. Brazil interview.

33. Brazil interview.

34. PRODOC S009

35. Partner country Interview.

36. ÁVILA, A. F. D.; VEDOVOTO, G. L.; RODRIGUES, G. S. Apresentação de Impactos Ambientais. [S. l.]: Embrapa, 2020.

CROSS-CUTTING APPROACH TO IMPROVE THE LIFE QUALITY OF VULNERABLE POPULATIONS

The most recent subprojects have incorporated issues beyond production, which was well-evaluated by the interviewees. These themes include voluntary associations, health, and greater synergy between cotton production and food security in the territories.

The most recent projects have remained focused on increasing productivity, interspersing their strategies with other innovative approaches. As for Cotton Senegal, the project design emphasizes the strong link between water conservation, irrigation, and weather forecasting capacity to support agricultural planning among small producers. Cotton Mali considered climate change and its consequence on the precipitation regime. In this case, two expected results have direct impacts on low soil fertility, due to more recurrent torrential rains, which envision planning activities on food security, soil conservation, health, and income.[34]

It is also noteworthy that cross-cutting themes tend to promote compliance to transferred technologies. Regarding Shire-Zambezi, for example, the integration of food crops with high cotton productivity was one of the major factors for assimilating and promoting technologies among small producers.[35] The integration of food crops has been adopted as a good practice since the Cotton-4 project.

In some cases, informants expressed concern as to the overemphasis on increased productivity despite other strategic dimensions for the sector's sustainability. For example, in Shire-Zambezi, the increased use of chemical inputs and its negative impact on occupational health and/or the environmental was noted in the evaluation conducted by EMBRAPA in 2018.[36] According to informants from partner countries, there is room to include concrete activities that effectively contribute to advancing these themes beyond classrooms or demonstration units. The proposal for building and/or installing a bio-factory in the project's second phase is an example of concrete action "beyond the classroom", targeting towards real impact on the production and sustainability of the cotton sector.

In Cotton Victoria, the evaluation was good regarding the inclusion of demonstrative trials on the use of PPE and capacity development on botanical insecticide production with local inputs and food safety.[37] The cotton seed machine, acquired for the project, may also be converted to benefit seeds of food crops, adding value and contributing to food security.[38]

Regarding the gender approach, in general, places where cotton production is more reliant on intensive labor tend to have a greater participation of women. Although the participation of women in the cotton chain is comparatively lower on the African continent than in Asia or America, it is still significant: in West African countries women represent circa 30% of the workforce in planting, while in East Africa they represent 60% in planting and 65% in ginning.[39]

Despite the participation of women, gender remains an absent issue within the framework of the BRA 12/002. Even actions under the exclusive governance of the ABC, such as courses in Brazil or A004, which included the participation of African partners in the 10th Brazilian Cotton Congress, make no clear mention to the inclusion of women. It is worth noting that the interviews revealed that in some cases the participation of women is informally encouraged, during meetings or through awareness-raising in missions to Brazil.[40] Cotton Victoria is an exception, as it included specific goals in the Logical Matrix to determine the participation of women in activities in the three countries comprising the project.

1.3 THE PRIORITIES OF BRAZILIAN INSTITUTIONS AND MUTUAL BENEFITS

In the realm of foreign policy, cotton cooperation holds great importance in the political agendas of embassies in partner countries and contributes to the strategic positioning of Brazilian diplomacy alongside these countries.

Regarding Brazilian implementing agencies, the BRA 12/002 is generally responsive to institutional priorities as it reinforces their internationalization processes and validates their approaches. The BRA 12/002 dialogues with missions from the UFLA, Minas Gerais Association of Cotton Producers (AMIPA), Catuti Rural Producers Cooperative (COOPERCAT), and the Technical Assistance and Rural Extension Company of the State of Minas Gerais (EMATER/MG), devoted to building knowledge and developing technologies for cotton, as well as disseminating such technologies. Regarding the UFLA, the project not only focuses on rural extension and Technology Transfer, but also on internationalization policy.[41] Hence, mutual interests of both parties combine, including the final target audience.[42]

In terms of mutual benefits, we found potential gains at different levels: (i) the incorporation of Chad's planting technology into the Brazilian repertoire; (ii) the construction of a demonstration center in Catuti; (iii) the potential sharing of genetic[43] material, and (iv) the potential knowledge acquired from exchanges on irrigated cotton cultivation technologies. However, it is worth noting that no solid evidence exists to attest gains regarding the incorporation of technologies and mutual learning.

The Catuti Diffusion Center, in turn, merits attention due to its innovative character, being an investment in Brazilian territory which not only enhances the Brazilian implementing institution, but has the potential to benefit Brazilian local producers. The Diffusion Center for Cotton Technologies in Family Farming in Catuti strive to be a model and technology demonstration center for students (such as the one carried out by S006) and interested people in general, while simultaneously operating as a permanent infrastructure (cotton processing plant) to assist local cotton producers.

S006 interviewees mention mutual gains in the implemented cooperation, where all the actors, including Brazil, gain from the exchange of knowledge, experiences, and technologies. Local political and social actors praised the participation of COOPERCAT.

> "Bringing in people from outside has given us visibility, we have become known in Brazil and other countries. Other groups came - via

37. Partner country Interview.

38. Brazil interview.

39. INTERNATIONAL TRADE CENTRE (ITC). Women in cotton: Results of a Global Survey. Genebra: [s. n.], 2011.

40. Brazil interview.

41. "An international cooperation policy in human resources training is one of the main goals of the Federal University of Lavras, in compliance with the university's institutional policies and programs on teaching, research, and extension. The UFLA has been incorporating international cooperation into its routine for a long time, (...) with several internationalization initiatives. The UFLA's inclusion in revitalization projects for the African cotton sector received the full support of different university sectors". (UNIVERSIDADE FEDERAL DE LAVRAS, 2018, p. 39).

42. "Brazil has a broad and solid experience in capacity development and technology transfer for the cotton productive chain. Qualified human resources are at the core of agricultural development and competitiveness, in which technical, economic, social, political, and environmental components gain further importance for sustainability in agricultural competitiveness. The capacity development of professionals working in the cotton productive chain in African countries will lead to further improvement of the entire cotton productive chain in countries covered by this project". (UNIVERSIDADE FEDERAL DE LAVRAS, 2018, p. 5)

43. AGÊNCIA BRASILEIRA DE COOPERAÇÃO. BRA 12/002-A008 - Integração Africana para o Melhoramento Genético Sustentável do Algodão. [S. l.: s. n.], 2021.

FAO in Latin America. We have become a reference for family farming. We have become a benign laboratory!".[44]

Nonetheless, the ABC and Brazilian institutions recently included in the BRA 12/002 seemed more concerned with mutual benefits.[45] EMBRAPA, whose role was fundamental in structuring and executing Cotton-4, Cotton4 + Togo and, recently, Shire-Zambezi, had difficulties in identifying concrete gains within the *SSC* modus operandi.[46] The interviews provided elements that may hinder actual reciprocity, which should be considered for the future.

The first concerns the difficulty of measuring intangible attributes such as international visibility and knowledge gains. The undefined costs and benefits for immaterial gains entail high transaction costs, especially in the reallocation of human resources from national projects to cooperation projects. In this regard, the participation of Brazilian institutions would benefit if linked to concrete products, which interest the institution, such as joint publications.[47] The planning of products or results of interest to Brazilian institutions also implies the creation of metrics to measure transfer reciprocity and knowledge and technology assimilation. The presence of indicators could guide concrete development strategies towards mutual reciprocity for the development of the cotton sector in African countries and Brazil.[48]

Furthermore, the very conceptualization of the term "transfer" compels the projects to share Brazilian technologies, knowledge, and processes. Notwithstanding Brazil's advanced technological level and exposure to adverse situations (from an entomological, phytopathological, phytotechnical standpoint), there are opportunities to plan strategies, gain experiences and prevent losses in possible future events in the sector.[49]

44. Brazil interview.

45. Brazil interview.

46. Brazil interview.

47. Brazil interview.

48. Brazil interview.

49. Brazil interview.

"Once we cross the border and become exposed to genetic material from cultivars that show some degree of tolerance to pests, water stress [...] this represents a gain for EMBRAPA and for Brazil. However, cooperation was defined as if Brazil were contributing with knowledge but not earning anything in return. We need a better detailed definition of technology transfer."[50]

2. The BRA 12/002 has incorporated complementary and adequate approaches to the production scale in partner countries and promoted the inclusion of vulnerable producers in technology transfer processes

DIMENSIONS: Strategic relevance, Learning and Replicability, Design quality

To incorporate Brazil's matured knowledge in the field of rural extension projects, especially within field pedagogies and transfer of agricultural technologies, the EMBRAPA, UFLA, and other Brazilian partners provided the BRA 12/002 with several approaches for the Demonstration Units (DUs). The implemented DUs included two levels: i. installed at Local Research Stations called Learning Units (UAs) or, in the case of Shire-Zambezi, called Technology Transfer and Demonstration Unit (UTTD) and; ii. Community Learning Units (UCAs) and/or Community Cotton Technology Transfer Unit (UCTTA), when installed in the field and conducted by Leading Producers.

"The demonstration unit is a tool that EMBRAPA Cotton brought to the project. It

50. Brazil interview.

is their legacy for the subprojects. The tool contains an implicit replication method. It is a classic example of appropriation and use of knowledge."[51]

The UAs and UCAs are showcases where technical innovations are put into practice so that researchers, technicians, and producers may observe and experience in the field what they learned in training, combining theory and practice. It is about a learning process: technical teams from Brazilian and African partners train local staff, who in turn train their peers in the AUs. In the UCAs, the local teams transfer knowledge to the leading producers, who in turn disseminate techniques to their neighbors.[52]

"Rural extension arrives into these technology transfer units. Technical demonstration units are for training technicians. The community unit is in the production environment, together with the farmers, generally within a common area where the person receiving capacity development must ensure that all farmers in the surrounding area have access to knowledge. The community unit serves as a test for capacity development, training, and knowledge sharing with farmers and producers."[53]

The theoretical contents are pedagogical, communicated on posters which are accessible and conscious of the local context, with drawings and photos of the field. Thus, information is concentrated in the Demonstration Unit, with tangible results of the application of innovations, reducing theoretical abstractions regarding capacity development and overcoming access barriers imposed by schooling levels or language.

"Low education is the country's reality for people outside major metropolises. Some

51. Brazil interview.

52. The subprojects, however, were not only focused on technology transfers in the field. Other activities included the sending of Brazilian genetic material for comparative analysis, installation of seeds production fields, acquisition of cultivation implements as well as vehicles and motorcycles. Investments in infrastructure and laboratory equipment had been also envisioned, however this activity was not carried out.

53. Brazil interview.

54. Partner country Interview.

55. Cotton-4, Cotton-4 + Togo, and Cotton Shire-Zambezi. All implemented in partnership with the EMBRAPA. In Cotton Victoria's case, the EMBRAPA drafted the project's first version, but with the departure of the institution, the proposal was heavily remodeled with the contribution of the UFLA

56. "In a meeting with EMBRAPA's management in 2018, the ABC was informed of the new EMBRAPA structure as well as of strategic objectives changes and their direct impacts on the project implementation. The Brazilian executing institution informed that it will not act upon activities with an extension nature, restricting its scope to technical training initiatives in decisive and strategic areas until December 31, 2018. Besides changing goals, the EMBRAPA reduced the available professional staff for technical cooperation and, thus, stated that part of the training within the project will take place at EMBRAPA units in Brazil instead of African countries." Source: AGÊNCIA BRASILEIRA DE COOPERAÇÃO. Fortalecimento tecnológico e difusão de boas práticas agrícolas para o algodão em países do Cotton-4 e no Togo. Documento de Projeto. Revisão B. [S. l.: s. n.], p. 6, 2018.

ultimately give up and fail to graduate. For this reason the adopted technology – the creation of showcases – was so effective. The producer only believes in what they see. And this is linked to educational level"[54]

The demonstration units proved successful within the scope of the first subprojects implemented under the BRA 12/002 and integrated the project's methodologies repertoire. However, the first projects focused on training researchers and extension workers at the experimental stations, in line with demands of the countries and with the very nature of the EMBRAPA's research, the main implementing agency in the first phase of the BRA 12/002.[55]

In 2018, through a unilateral decision, the EMBRAPA withdrew from the BRA 12/002 Project, alleging scope incompatibility and changes in strategic goals, which impacted the project implementation.[56] This event created a need to look for new implementing agencies to replace the company in ongoing projects, particularly in Shire-Zambezi and Cotton Victoria, given that Cotton-4 + Togo was already completed. Thus, the UFLA, which had already participated in specific actions with ABC I, was invited to take part in the BRA 12/002 subprojects.

The ingress of the UFLA brought an important methodological contribution to the BRA 12/002. The UFLA's vocation is geared towards rural extension, therefore contributing to reorienting technology transfer and improving technical abilities (for producers, extension workers, and researchers), considering territory, marketing, and economic contexts of the small-scale producer. In any case, there were no drastic changes in the training processes nor in the focus on increased productivity. By this point the institutions had already integrated the diffusion modality of the experimental units, and the UFLA integrated this system focusing on the producer.

Despite the fatigue among partners after EMBRAPA's departure, this became a fortuitous complementarity case. Through different approaches, the EMBRAPA and the UFLA strengthened the transfer

of technical and scientific knowledge for good managing practices and the production of improved seeds. Furthermore, the partnership also strengthened rural extension through an attempt to adapt knowledge to the reality of small-scale producers, while not essentially modifying the technology transfer structure.

In addition to the completed subprojects or at an advanced stage, the regional subproject's training approach for African technicians in cotton farming is also noteworthy, originating from a specific activity by the UFLA/MRE in 2014 in the training of technicians from Portuguese-speaking countries in the cotton sector. The course content evolved and adapted as the teachers grew acquainted with the reality of African countries.

> "In the first course (2017) the issue of pest control was extremely formal; from the second course onwards I used another methodology, I talked about pests, but then we started teaching them how to make insecticides: something that we no longer use in Brazil but they still do in Africa. We don't use it anymore because we have a molecule sold in stores, but they don't have it there. Our technology level is different and we realized that we had to adapt. It was only when I went to Africa that I became aware of their production scale. This experience allowed me to adapt the course."[57]

EMBRAPA's departure also taught important lessons regarding the dependence on a single institution for implementing the BRA 12/002. On Brazil's part, new partners were included in the project execution, such as the Agricultural Research Company of Minas Gerais (EPAMIG), the Technical Assistance and Rural Extension Company of the State of Minas Gerais (EMATER), the Minas Gerais Association of Cotton Producers (AMIPA), and the Ministry of Agriculture, Livestock, and Food Supply (MAPA). As discussed above, EMBRAPA's contribution to the BRA 12/002 will serve as a reference standard for future projects,[58] complemented by different approaches from other implementing agencies and enabling a broader dialogue with partner countries.

> "(it is) evident that the major lesson learned refers to the technologies of the demonstration units (implemented in the partners' institutions) and the community units (implemented together with the producers) [...]The demonstration unit is a tool that EMBRAPA Cotton brought to the project. It is their legacy for the subprojects. The tool contains an implicit replication method. It is a classic example of appropriation and use of knowledge."[59]

The change towards a producer-focused methodology emphasized adapting production techniques to ensure greater capillarity and impact of technological transfers and innovations focused on means of production (for example, production of certified seeds) In this regard, the UFLA concentrated its efforts on knowledge and good production practices, for example, changing the planting stand, rearranging the spatial set of plants, increasing plant population, redefining consortia and/or turnover between crops, and focusing on increasing cotton productivity as a strategy to ensure food security.

The proposed innovations do not increase costs for the producer, yet provide significant productivity increases, in some cases exceeding 100%. Thus, these activities can reach vulnerable producers who lack access to adequate means of production. One example is the use of a spacing calibration rope, which gained traction in Tanzania and is now used by producers from other areas outside the project's scope.

57. Brazil interview.

58. "The results from four agricultural campaigns covered by the Project (2014/15, 2015/16, 2016/17 and 2017/2018), validated by the mid-term evaluation in June 2017, allow us to state that 90% of the scheduled activities were completed by 30/06/2018. To this end, 24 researchers and specialists from different EMBRAPA units took part in 23 international missions carried out during the period, making up for a total 3,650 Technical Hours of intensive work on behalf of the Project EMPRESA BRASILEIRA DE PESQUISA AGROPECUÁRIA. Cooperação técnica Brasil-África para o setor algodoeiro Shire-Zambeze Cotton Project: Relatório de Posição 2015/2018. [S. l.: s. n.], p. 24, 2018.

59. Brazil interview.

> "The technicians carried out the tests and concluded that the 60X30 spacing had an efficiency of more than three tons of the chosen variety used in the experimental field. This information was passed along to the producers. Nowadays this information has become commonplace."[60]

Another example is the introduction of manual seed delinting processes in the Shire-Zambezi, as an alternative to the chemical delinting machine, which had not been purchased on time.[61] Delinting is a process that facilitates planting and enables very low-cost mechanization.

The UCAs are also an important tool for including vulnerable populations in the technology transfer system and were incorporated in the design of four subprojects: Shire-Zambezi, Cotton-4 + Togo, Cotton Victoria, and Cotton Soils. The proximity of the UCAS inside the communities allowed neighboring producers to learn about the proposed techniques which, for the most part, do not require financial investments. Furthermore, the Units may monitor the results over time and have a practical basis for decision-making for new technologies. The analysis of the documents on recent subprojects shows that TT's work to strengthen rural extension actions is continuous, since they count on the participation of institutions and companies that work directly with the producer.[62] This suggests a continuity of the BRA 12/002 activities alongside its partners and confirms the importance of capillarity of rural extension actions to reach vulnerable producers.

60. Partner country Interview.

61. Delays or non-allocation of resources for contracting services for the implementation of the physical infrastructure of the Cotton Technology Transfer Center (CRETTA), the Local Cotton Technology Transfer Unit (ULTTA), and the UCTTAs, with direct consequences at the start of the field activities programmed in each country and dependent on the agricultural calendar: this risk has materialized and the implementation of part of the physical structures may only occur in an eventual second phase of the project. The solution found to mitigate this risk from affecting the project development was to contract services from private cotton processing plants, rented sheds, manual chemical delinting, among others.

62. The exception is S011 Cotton Fiber (Benin) whose target audience is researchers and technicians from the Cotton and Fiber Agricultural Research Center (CRA-CF).

3. The BRA 12/002 subprojects are complementary and coherent, but there are still potential unexplored synergies among the subprojects and the other projects under the Cotton Initiative

DIMENSIONS: Complementarity and coherence, Project design, Performance, Conductive regional environment

The subprojects and actions under the BRA 12/002 show a high degree of coherence and significantly advance to complement each other. However, to enhance the complementarity between the subprojects, the BRA 12/002 could be more strategic in terms of management and knowledge exchange.

Compared to other Brazilian SSC projects financed by the cotton litigation, there is a notable geographical complementarity through the inclusion of the same partner countries, even if not always operating in the same regions. The decision to focus the trilateral cotton projects in the same countries as the BRA 12/002 was a strategic definition promoted by the ABC, now institutionalized through the umbrella PRODOCs, but there is still more room for expanding coordination as well as thematic complementarity in the implementation of the subprojects.

3.1 THE BRA 12/002 PORTFOLIO IS COHERENT AND THE SUBPROJECTS HAVE ADVANCED IN COMPLEMENTARY ASPECTS

The subprojects are coherent insofar as they emphasize the transfer of agricultural technologies and the strengthening of institutional and individual capacities in order to increase productivity and competitiveness in the partner countries' cotton sector.

Furthermore, in terms of complementarity, the portfolio has advanced with new subprojects that seek, based on the results achieved, to address subsequent demands. The BRA 12/002 launched specific initiatives to promote exchanges among different subprojects, namely, Simplified Action (A004) "Attendance at the 10th Brazilian Cotton Congress" and Simplified Action (A008) "Sustainable Cotton Genetic Improvement".

The two course editions in Brazil brought together participants from the countries involved in the ongoing subprojects, further complementing them in the building of individual capacities. In addition, the Dissemination Center in Catuti will continuously serve as a training and diffusion center, supporting all other subprojects under the BRA 12/002. Furthermore, A004 enabled the participation of African Representatives from the Cotton-4 + Togo, Cotton Shire-Zambezi, and Cotton Victoria Projects in the 10th Brazilian Cotton Congress in 2015. Lastly, some exchange missions among countries were promoted within the subprojects' framework.[63] Such initiatives, proposed by Brazil under the BRA 12/002, complement the components developed under each subproject, in addition to allowing exchanges among representatives from partner countries.

Simplified Action A008 – not yet started – also aims to promote regular exchanges among researchers, technicians, and research institutions from 15 countries for the exchange of cotton genetic material. As an effect of these exchanges, we expect to identify varieties with greater adaptability to droughts, pests, and other singular characteristics of the integrating countries.

However, in addition to the forementioned exchanges, there is no evidence of knowledge management actions underpinning a constant and deliberate knowledge sharing among partners. The data collected for this evaluation reinforced the relevance of such actions. On the one hand, the interviewees – particularly in Brazil – identified different lessons learned that could be shared to enhance cooperation among partner countries. On the other hand, the partners reaffirm their interest in establishing further exchange of good practices and challenges among countries. However, it is not clear how the BRA 12/002 project intends to promote this type of exchange.

63. The evaluation identified at least three initiatives:

1. In May 2017, technical cooperation assistants at the Embassies in Nairobi and Dar Es Salam went to Blantyre (Malawi) for their training on accountability, drawing on the experiences of Shire-Zambezi Project.

2. Researchers from the three countries participated, in Mali, in a mission to exchange experiences among regional cotton programs: "Cotton Victoria" (Burundi, Kenya and Tanzania), "Cotton-4 + Togo" (Benin, Burkina Faso, Chad, Mali and Togo), and "Cotton Shire-Zambezi" (Malawi and Mozambique).

3. The S006 project would promote a joint evaluation of the courses, but the event was canceled due to the COVID-19 pandemic.

64. Interviews Brazil.

65. PROGRAMA MUNDIAL DE ALIMENTOS, N/D.

66. Tanzania had also been included in the original PRODOC design.

3.2 THERE IS POTENTIAL FOR GREATER COORDINATION AMONG DIFFERENT PROJECTS ON THE AFRICAN CONTINENT FINANCED BY COTTON LITIGATION

The two trilateral projects financed by the cotton litigation with African partners – Cotton with Decent Labor (ILO) and Beyond Cotton (PMA) – sought to develop actions in the same countries as the BRA 12/002 portfolio, through a dialogue between the two ABC coordinators responsible for the different portfolios (General Coordination of Trilateral Technical Cooperation with International Organizations and General Coordination of Technical Cooperation – Africa, Asia, and Oceania). To this end, we sought to triangulate the BRA 12/002 countries, the technical cooperation points of the Memorandum of Understanding with the US, and the mandate and experience of Brazil's partner International Organizations (IOs) in the CSST.[64]

The Beyond Cotton project complements the BRA 12/002 in the distribution of cotton byproducts through public procurements for School Education in Mozambique, Benin, Tanzania, and Kenya.[65] In turn, the project Cotton with Decent Labor (ILO) seeks to promote decent labor (focused on preventing child labor) and better labor conditions (including health and safety at work) in Mali and Mozambique's cotton sector.[66] In Mozambique, for example, the project focuses on strengthening the National Forum of Cotton Producers (FONPA) to increase their voluntary associations.

In the case of the Cotton with Decent Work Project, which is more advanced in terms of implementation, we identified several initiatives focused on promoting synergies and optimizing resources, such as: meetings of the Monitoring Committee in Mozambique with the participation of the focal points responsible for the Shire-Zambezi; incorporation of the regions where the Shire-Zambezi operates in the project's diagnoses; training and capacity development in the regions where the Shire-Zambezi

operates, extending the trip of the Shire-Zambezi project partners, due to the Brazilian Cotton Congress, for a technical visit to Catuti to learn more about associativism and cooperation, and invitations to all BRA 12/002 countries for regional events promoted by the Cotton with Decent Work Project.[67]

However, coordination among projects during implementation remains an important challenge to be overcome.[68] Although trilateral projects with African partners have recently started, interviewees have perceived lack of communication channels and coordination among the different projects.[69]

In the case of the Beyond Cotton project, coordination between project schedules is crucial. As the results of the BRA 12/002 subprojects begin to gain scale in the production of byproducts, the project must be structured together with the PMA to allow them to flow. However, actions to support and promote this synchrony do not yet exist among the projects.[70] Informants have expressed insufficient coordination between the projects for important definitions, for example, on how to jointly define which farmers will benefit from the techniques and seeds validated by the BRA 12/002.

As for the project +Cotton, together with the FAO in Latin America, we observed similar production challenges despite the different contexts – Technical Assistance and Rural Extension (ATER), access to inputs, production flow, pest control – as well as the producer's profile (family farming). In fact, the recent focus of the BRA 12/002 initiatives on family farming in cotton promoted greater dialogue among the portfolios, and EMATER's entry to support Cotton Zimbabwe (S010) was enabled by relationships built between the ABC and the FAO within the scope of +Cotton.[71] In this regard, there is potential to explore synergies among projects in different continents. The mentioned examples include the use of the harvester developed by the EMBRAPA (within FAO's project framework), which could be made available to African partners[72]; or the app developed in Colombia for remotely monitoring crop health, which could potentially be taken to the Zimbabwe project for monitoring units in real time.[73]

67. Interviews IO and measured by the project's mid-term evaluation – ORGANIZAÇÃO INTERNACIONAL DO TRABALHO (OIT). Evaluación de Medio Término del Proyecto Algodón con Trabajo Decente. [S. l.: s. n.], 2020.

68. Interviews IO and Brazil.

69. Interviews IO and Brazil.

70. Interviews IO.

71. Brazil interview

72. Interviews IO and Brazil.

73. Brazil interview. With +Cotton, Colombia will receive support in the Demonstrative Technical Unit (UTD) for installing a software adapted to the local environment for capturing and processing microclimatic data, which will allow the development of precision agriculture techniques in cotton crops. With an integrated early warning system and water efficiency, proper crop management will also be possible. See: ESCRITÓRIO REGIONAL DA FAO PARA A AMÉRICA LATINA E O CARIBE. Rural Conectado: iniciativa inovadora na Colômbia permite aos agricultores acesso à internet. [S. l.], 19 fev. 2020. Disponível em: https://www.fao.org/americas/noticias/ver/pt/c/1376554/. Acesso em: 5 out. 2021

Regarding the dialogue between both managements responsible for the ABC, we mention their joint participation in the WTO meetings and in the Brazilian Cotton Congress, an activity financed by both managements. The interviewees perceived that the relationships among projects have improved in everyday practices as well as a growing awareness of the importance of coordinating efforts. However, the ABC's management lacks an institutional strategy, which is primarily dependent on the personal initiatives and actions of analysts and managers.

There is a consensus among the interviewees that greater dialogue among different projects may contribute to strengthening the Brazilian Cotton Initiative, whether from a more integral perspective, with shared lessons and information on good practices, or greater coordination in implementation. However, it is not clear among the interviewees which roles and responsibilities should be ascribed to which parties.

Among the recommendations for greater complementarity among projects, we find: the importance of investing in more communication about what happens in each project; coordinating strategies in the PRODOCs, through clear guidelines on how to ensure synergy among projects financed by the litigation; incorporation of transversal perspectives such as child labor prevention and labor health in the 12/002 training.

4. The quality of the subprojects' design under the BRA 12/002 has significantly improved, incorporating lessons from past experiences. The portfolio, however, lacks a monitoring and knowledge management strategy to allow for a systematic exchange between partners and contribute to a more strategic approach

DIMENSIONS: Learning and Replicability, Quality of the design, Performance, Conductive Local Environment

The elaboration of the South-South Technical Cooperation Management Manual is a milestone for the design and implantation of the ABC projects, including subprojects implemented under BRA 12/002 since 2013. The evaluation identified that the design of the subprojects has been improving both formally (problem tree, logical matrix despite difficulties with indicators, and link with Sustainable Development Goals) as well as substantially (multidimensionality). We noted a gradual maturation in the design of the subprojects, incorporating lessons from previous projects.

The contributing factors for the improvement of the subprojects' design include:[74] (i) participatory methodology based on problem trees; (ii) well-planned prospecting missions; (iii) ability to include learning from other subprojects (iv) inviting relevant actors to discuss the project (iv) knowledgeable facilitation of the design process; (vi) broadening the scope of Brazilian agencies providing new repertoires, and (vi) good on-site translation.

We consider the methodology based on problem trees decisive for the quality of the project design as well as for its appropriation by the partners.[75] Regarding the participants, we identified that – given the novelty of the methodology for the partners –it was not possible to adequately coordinate the invitations and ensure the presence of people and institutions interested in the project.[76]

74. Brazil and partner countries Interviews.

75. Brazil and partner countries Interviews.

76. Entrevista Brasil.

77. Brazil and partner countries Interviews.

78. Brazil and partner countries Interviews.

79. Brazil interview.

However, in cases with prior cotton cooperation the project planning stage not only brought interested institutions together, but decisively contributed to the subsequent progress of the initiative.[77]

The pioneering nature of Cotton-4 brought lessons for executing the second phase (Cotton-4 + Togo) which, in turn, was not without difficulties as its elaboration was based on the South-South Technical Cooperation Manual, published that same year. The initial Cotton-4 document did not have a logical matrix with indicators, targets, and clear baselines for all the parties involved. Thus, the lack of clarity in the indicators and goals hindered the partners' appropriation of activities as there was no clear guidelines on the project evolution throughout its implementation process.[78]

All subprojects under the BRA 12/002 (Cotton-4 + Togo onwards) present logical matrices, although in some cases with difficulties in elaborating indicators and baselines. There is a growing improvement in designing projects that coherently respond to the demands and challenges identified with concrete actions and results, as reflected in the annual action plan. Next, we highlight some characteristics of the subprojects showing the evolution of the BRA 12/002 portfolio.

The Cotton-4 + Togo, for example, presents a logical structure with outcome indicators, risk analysis, and sustainability principles. However, the logical structure was deemed deficient, given that the project overestimated some goals while at the same time predicted a series of activities and results that surpassed the management capacity of a single implementing institution.[79]

> "The project was one of the first to follow the ABC management manual, but there was no uniformity in the ABC's implementation, which caused managing difficulties. Each coordination took a different approach."[80]

By specifically analyzing the evolution between phases 1 and 2 of the Cotton-4 + Togo subproject, we found an intention to absorb the lessons and recommendations learned from the evaluations. The Minutes of Meeting VI of the Management Committee emphasizes the relevant role of extension activities

for disseminating the technologies created during the Cotton-4 project (phase 1). The recommendation was to integrate extension workers and producers in implementing the activities of the new project, in which the dissemination of good farming practices is a prominent theme.

In turn, Shire-Zambezi was designed according to the South-South Cooperation Management Manual and directly employs the recommendations of the Cotton-4 Evaluation Report. The design envisions consistent approaches and methodologies to increase technical capacity (individual and institutional), considering the actual limitations of the respective territories. There is consensus among the interviewed sources about the design quality of the Shire-Zambezi.[81] Its main attributes are (i) emphasis on training and building technical skills; (ii) inclusive nature, considering producers, extension workers, and actors responsible for the sector's public policies; (iii) institutional strengthening actions for structuring technical teams; and contributions to the ruling frameworks for producing certified seeds; (iv) articulation with subnational institutions that operate within the districts as focal points of the rural extension.

However, not all recommendations derived from the Cotton-4 Assessment Report were successful during the implementation of the Shire-Zambezi. For example, during the Shire-Zambezi's design phase, despite efforts to map the actors in the partner countries' cotton productive chain, the scant involvement of cotton producers (and the private sector in general) since the beginning partially hindered the expected results, with greater impact on Mozambique.[82]

The courses cycle in Brazil (S006) is innovative as it proposes a 90-day university extension program in Brazil. This model intensifies the learning and exchange period among different countries and Brazil. A course within such format required the ABC management to perform then-unprecedented activities, such as: hiring a continuous translation service for 90 days, a selection process with CV analysis, lodging foreigners at a university campus throughout the period, among other activities. The design and implementation of the courses were informed by lessons learned from past subprojects, especially from the experience gained with the Cotton-4 Project and the UFLA's prior experience with the IBA and the MRE. The 2018 course had even greater learnings, as it benefited from the 2017 edition with French-speaking countries. Another important factor to mitigate challenges from the first course edition (2014) was the visit of UFLA professors to Africa. Through learning about the local context, course contents were replaced and adapted.

Cotton Senegal is innovative for including water use and conservation to ensure increased productivity and quality of life for producers. Another positive aspect is the link between the project design and the long-term sustainability strategy. In this regard, investing in stronger public institutions serves as the greatest guarantee for continuity and replicability of the technologies built for the project.

> "Access to water is fundamental to ensure that cotton can grow throughout the entire year. Small producers depend on this as a source of income (...) the implementation of the project is guided by a comprehensive approach, considering the restructuring of cotton organizations. Cultivation does not only include producers and researchers. Hence, we decided that relevant services for farming development must be included in the design."

Cotton Soils Mali envisages a logical framework that includes the goals for the target audience (number of people and type of audience for capacity development), number of capacity development courses, the issue addressed in capacity development courses and missions, locations/communities and places where interventions will take place. In its project scope, Cotton Soils includes the dimensions of health, well-being, and income generation,[83] deriving from listening to the communities during the project's prospecting mission. Two elements favored including health and well-being in the project scope: a careful reading of the context by the ABC technical representative, as well as the presence of a skilled ABC manager to assess the possibility of such inclusion.

80. Brazil interview.

81. Interviews Brazil and partner country.

82. Interviews Brazil and partner country.

83. Result 3 - Community of Bandiagara 2 technically and physically structured to provide better living conditions for its inhabitants. Result 5 - Bandiagara 2 community with better health and well-being indicators.

Cotton Zimbabwe's (S010) design presents cross-cutting dimensions, clearly stating the goal of improving food safety for cotton producers. The expected results include increasing the capacity of the Ministry of Lands, Agriculture, Water and Rural Resettlement in implementing public policies for family farming and food security. Lastly, the design also innovates by centralizing the associations' social organization as a strategy for increasing income and cotton quality. In this case, the interaction with Catuti's experience is strategic for achieving the expected results

> "The idea behind this result is not to implement a PRONAF (Program for the Support of Family Farming) in Zimbabwe, but provide further options for supporting public policies on family farming and food security to those institutions. This may generate other specific demands in the future, resulting in other projects."

Lastly, within the scope of the S011 – Classification of Benin Fibers, the technical diagnosis mission to the Interprofessional Cotton Association lab (Simplified Action A007) enabled complementation and detailing of the problem tree, providing further clarity on the specific lab demands regarding design, infrastructure, and equipment.

The BRA 12/002 PRODOC, in turn, was developed prior to the Manual and did not undergo essential revisions to adjust it into the new proposed model. The BRA 12/002 presents flexible enough results to include different approaches, which is evaluated positively, as seen in finding 2. On the other hand, it does not provide a clear theory of change; which makes it difficult to plan further strategy and synergy actions between the different subprojects, both in terms of joint actions and strategy guidelines for the different subprojects.

In this regard, despite improvements in the design of the subprojects, the umbrella project does not include adequate guidelines on how to address the various transversal and multidimensional issues of the cotton chain to develop clear goals for the subprojects and a strategic orientation for strengthening the portfolio, with clear complementarity among subprojects, mutual benefits for Brazil and Brazilian implementing agencies, and a gender-sensitive approach.[84]

84. Brazil interview.

85. This is one of the main recommendations of the Cotton-4 evaluation report (pg. 7). See: Project Evaluation Report "Supporting the Development of the Cotton sector in the Cotton-4 countries" (Benin, Burkina Faso, Chad, and Mali), 2013

4.1 THE BRA 12/002 DID NOT ADVANCE IN MONITORING STRATEGIES AND KNOWLEDGE MANAGEMENT TO ALLOW FOR A SYSTEMATIC KNOWLEDGE EXCHANGE AMONG PARTNERS AND CONTRIBUTE TO THE PORTFOLIO'S STRATEGIC GUIDELINES

Within the subprojects, despite the constant improvement of the project documents, a persistent challenge – already identified in the Cotton-4 Evaluation – was following up on the monitoring and evaluation processes.[85]

The BRA 12/002 subprojects follow the guidelines of the South-South Technical Cooperation Management Manual regarding the implementation monitoring tools. However, the Manual does not provide specifics on the frequency, flows, and uses of information – elements that configure a follow-up and monitoring system. In the case of cotton subprojects, which involve complex management processes linked to the agricultural calendar, this system proves to be necessary.

Shire-Zambezi and Cotton Victoria, for example, have a logical matrix with indicators, baseline, goals and means of verification (as provided for in the South-South Technical Cooperation Management Manual). However, for Shire-Zambezi, the baseline was not translated into a monitoring system shared among interested parties, which hindered its effective use. In Cotton Victoria, it is not clear to what extent the progress reports in each country have established a dialogue with the predicted indicators. Lastly, in the Cotton-4 + Togo case, there was an intention to include the baseline in the project's initial phases, but that did not take place.[86]

As for the follow-up monitoring of the subprojects, the Project Management Committees (CGP) play an important role regarding the political validation of the subproject, shared management of activities, exchanging experiences and knowledge stemming from the subproject, adapting action plans, and devising risk mitigation strategies. However, since these Committees meet only once or twice a year, it is not possible to concentrate all the monitoring and project decisions in these encounters.[87] Furthermore, the submitted reports lack a standardized analysis scale, varying in content, scope, and target audience, making it difficult to use them for monitoring purposes. Through the interviews, we noticed that the teams rarely assimilate very extensive and "dense" reports, hindering shared management efforts.

Among the implications of these shortcomings, in Shire-Zambezi the lack of a clear follow-up and monitoring system made it difficult to follow up on official and/or verbally agreed positions, pronouncements and agreements during the Project Management Committee (CGP) meetings[88]. For Cotton Victoria, the technical teams of the African countries and the UFLA exchange crops pictures via WhatsApp, allowing for a more fluid and dynamic technical follow-up of the planned activities. However, the app does not allow for a further institutional approach, especially regarding eventual decisions or budget monitoring.

Still on the topic of evaluation, the courses subproject in Brazil incorporated in its design a personal evaluation questionnaire with the students at the end of the course, and the ABC initially envisioned an in-person evaluation process (Activity 2.1.4 and 1.2.11) through a meeting between students to learn about the applicability and results of technology transfer, but this activity has been postponed due to the new Coronavirus pandemic. The forecast is to perform this activity in the second phase of this project. However, an inherent difficulty in this assessment is the persistent lack of clarity on how to develop baselines and proper evaluation tools for capacity development.[89]

86. Brazil interview.

87. Brazil and partner countries Interviews.

88. Brazil interview.

89. Interviews Brazil.

90. The product was initially envisioned through workshops, in each of the partner countries as well as locally, by sharing the good practices identified by all partners. AGÊNCIA BRASILEIRA DE COOPERAÇÃO. PRODOC 12/002 - Apoio ao desenvolvimento do setor algodoeiro por meio da Cooperação Sul-Sul. [S. l.: s. n.], 2012.

91. AGÊNCIA BRASILEIRA DE COOPERAÇÃO. PRODOC 12/002 - Apoio ao desenvolvimento do setor algodoeiro por meio da Cooperação Sul-Sul. [S. l.: s. n.], 2012.

In the context of knowledge management, although the BRA 12/002 includes knowledge systematization as one of its four products: "Good practices, experiences, and knowledge generated within the framework of South-South technical cooperation in the established cotton sector, systematized and diffused", it was not possible to identify any progress in the implementation of this work front.[90] In addition, the BRA 12/002 does not list specific goals for any of the intended activities and products, nor a monitoring plan for the umbrella project, which does not allow an analysis on whether what is proposed is sufficient to achieve results.[91]

The lack of these definitions and metrics within the umbrella project, on the one hand, limits the learning potential between project analysts, countries, and/or implementing agencies. And, on the other hand, fails to provide common indicators for all subprojects, which in the future would allow us to measure the global results of the BRA 12/002.

Regarding this context, we find that learning becomes limited to the individual dimension of analysts and managers in the respective subprojects. Technicians who participated in one or more projects carry the experience to other contexts. On the one hand, this is a positive aspect and reinforces the commitment of the ABC technical cadre and implementing institutions to achieve the desired goals. Insofar as the cadres are exposed to diverse contexts and challenges, they will have a greater repertoire of mitigation and overcoming strategies. However, this approach is highly susceptible to high staff turnover at the ABC and/or partner institutions and does not promote a shared learning alongside partners, whether Brazilian or African. Nor does it contribute to the 12/002 learnings, which are highly important for the Brazilian SSC project portfolio.

5. The project demonstrated efficiency gains, albeit still insufficient to mitigate procedural challenges impacting the final results

DIMENSIONS: Efficiency, Horizontality, Performance

The interviewees consensually agree that there is great difficulty in allocating resources in a timely and flexible manner to allow implementation within the agreed schedules, especially considering that the project's investments must be in line with each country's agricultural cycle, which directly impacts the project's results at one end.

The project's financial execution percentage on August 2021 was circa 58%[92] (figure 8), in which the subprojects destined for the technical coordination of 12/002 (S001 and S002) were responsible for practically 50% of the total executed (or 23% of the total budget). Regarding the technical coordination, the interviewees recognize that the BRA 12/002 staff is stable, which contributes to a more sustainable implementation of the project.[93]

92. Information from the Project Management Financial System (SGPFin), provided by the ABC in August 2021.

93. Interviews Brazil and OI.

FIGURE 8 Total financial execution BRA 12/002. August 2021

FINANCIAL EXECUTION (AUG/2021)

Total budget USD 37,536,772

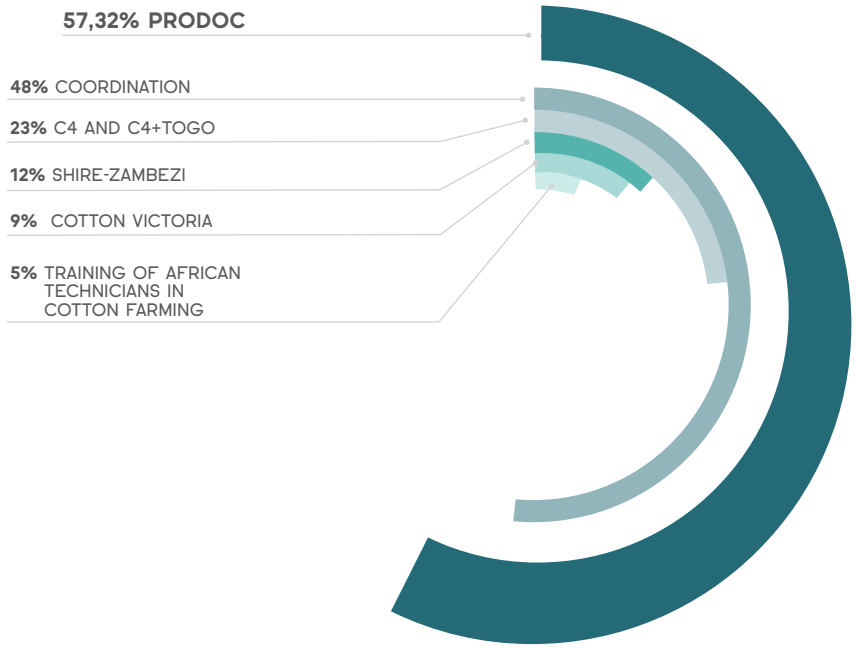
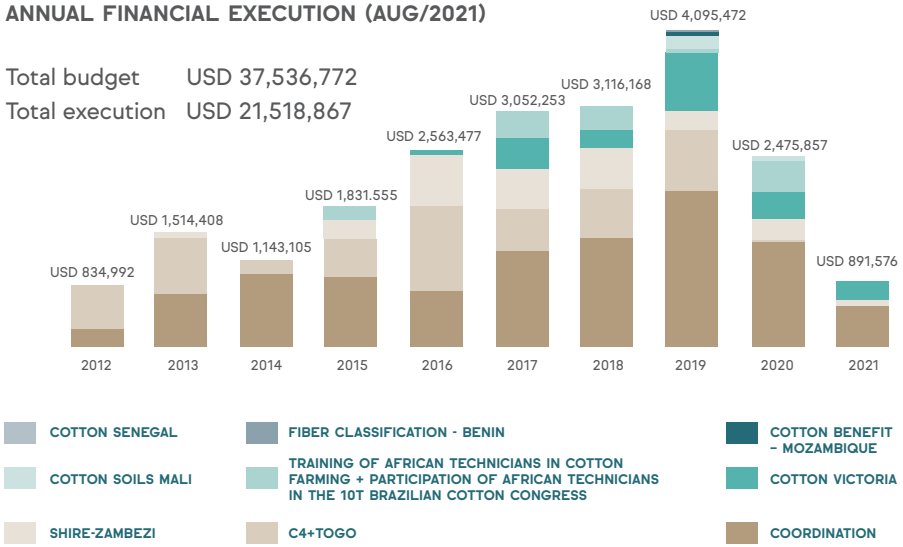


Figure 9 analyzes the annual financial execution, in which we find an upward curve from 2015, reaching its execution peak in 2019. Even in 2020, when the COVID-19 pandemic prevented in-person missions, the overall execution of the project reached over 50% of the previous year. In 2021, we find a significant execution within the scope of Cotton Victoria.

FIGURE 9 Annual financial execution BRA 12/002



There are several causes for the difficulties that all subprojects ran into, the most latent being delays due to obstacles in the procurement processes [technical specifications, customs clearance, change in the advance system of the UNDP's Funding Authorization and Certificate of Expenditure (FACE)] and slow decision-making within the ABC. Annex 5 provides a breakdown of the financial execution of each subproject, as well as the simplified actions that complement them.

In this regard, the following difficulties stand out:

PROJECT S003 SHIRE + ZAMBEZI: delays in the transfer of resources hindered the construction of infrastructure and the delivery of lab equipment and equipment for rural extension (e.g., motorcycles). Although the project prioritized implementing the multifunctional laboratory in the first years, in light of the foreseeable complexity (public bidding process, import of equipment, customs processes, among others), the work was not completed. The strategy for sustaining, replicating, and scaling the transfer of technologies in the Shire-Zambezi relied on this investment to guarantee the sale of treated seeds and the subsequent transposition of funds into project actions. We emphasize that the local teams made great efforts to mobilize national and international resources and ensure the accomplishment of actions within the cotton agricultural timeline. The commitment of local teams mitigated the damage that could have been caused by delays in disbursements. Local teams also went through a learning curve, better planning disbursements in advance.

PROJECT S005 COTTON-4 + TOGO: Construction costs for administrative and laboratory infrastructure (Output 4), as well as structures for seed storage and conservation (Output 1) are not included in the operational budget. These resources depended on the IBA's approval, which only occurred in the final period of the project, making it impossible to achieve the results on schedule. The Audit of the Comptroller General of the Union (CGU) found unforeseen activities in the budget and recommended a budget revision for their inclusion. Result 1 was revised as it overestimated the countries' capacities to have enough genetic material for a Regional Bank for the Conservation of Cotton Genetic Resources. Furthermore, it did not consider the existence of a Genetic Resources Center of the International Institute of Tropical Agriculture (IITA), which has local units in partner countries. Finally, the difficulties related to sending resources and accountability (which changed from an annual to a quarterly frequency) caused delays in activities.

PROJECT S006 COURSE AND CATUTI: good allocation of resources, albeit with delays and changes in resources and deadlines. The Catuti Diffusion Center expanded its scope, which led to new procedures and deadlines not foreseen by the ABC. This was the first time that BRA 12/002 resources were allocated for infrastructure in Brazil, making this a pilot experience in the use of cooperation resources for construction works in Brazil. The quality of the course was well evaluated, with emphasis on methodologies, trainers, and structure, but with some criticisms on logistics.

94. Headquartered in Nigeria, in operation since the 1970s, the institute's goal is the long-term conservation of plant and animal genetic resources in Sub-Saharan Africa. The Institute has a Genetic Resources Center (Genbank) with over 30 thousand germplasm admissions under the sponsorship of the United Nations. In addition, the IITA has the West Africa regional center, with units in Benin, Burkina Faso, Ghana, Liberia, Nigeria, and Sierra Leone

PROJECT S007 COTTON VICTORIA: The project had the lowest budget execution of all subprojects, having disbursed only 38% of the total (USD 5,367,796.66). The low level of disbursement may be attributed to a number of factors: re-planning of resources due to a change in strategy; delays in disbursements due to bureaucratic processes on the Brazilian side and in partner countries (especially in the opening of a specific account for the project); delays in the detailed development of the Works Project and Investment Plan; lack of clarity about budgetary responsibilities among partner institutions; lack of local resources to support the actions of rural extension workers while project resources were not disbursed;[95] high learning curve to overcome bureaucratic-customs barriers (tax exemption, etc.). Still regarding the implementation of the Works Plan, further difficulties came with the COVID-19 *lockdown* rules; low level of participation of local companies in public notices and, in the case of Burundi, implementation was hindered by the floods that affected the demonstration units.

Advances in the project management include: (i) more frequent meetings between the ABC analysts and UNDP technicians for promoting constant monitoring and accountability. (ii) improved execution of resources for simpler procedures, such as travel and lodging expenses; (iii) hiring local people for physical and financial monitoring of the subprojects, which in some cases contributed to a higher quality of the technical component given their knowledge of the language and local context.

Previously identified facilitators in the Cotton-4 evaluation reappear homogeneously among the analyzed subprojects: the attitude of the ABC and the implementing agencies, consistent with the CSS guidelines, promote dialogue, horizontality, and participatory management and contribute to the interest and involvement of partner countries, whether institutionally or personally; and the direct action of the embassy and diplomatic corps.[96]

95. In Kenya, the *Agriculture and Food Authority* (AFA) sought to make up for the delays with its own resources, but was advised by the institution's comptroller to put an end to this practice.

96. Partner countries interview.

97. Interviews Brazil.

However, the difficulty in carrying out the purchase processes for building infrastructure had already been identified as a major obstacle for the CTSS in cotton in the 2015 Cotton-4 evaluation.

Data collection from completed or more advanced projects shows the impact of this difficulty on the results supported by the BRA 12/002 alongside its partners, as these depend on the agricultural calendar. Among the impediments for achieving greater efficiency, we list the following:[97]

- The current procedures, particularly the FACE (Funding Authorization and Certificate of Expenditure), impose a schedule for requesting resources and rendering of accounts that does not match the institutional reality of the ABC and partner countries, given that the system imposes a 90-day cycle for the release and execution of resources, as well as rendering of accounts, and sometimes the resource authorization process alone can take 30 days, as it involves the ABC, local and Brazilian UNDP, and embassies;
- The ABC's own responsiveness has been limited, as all approvals must go through management, which occurs weekly, albeit with little time for all the necessary deliberations;
- The processes involve different areas, both technical and administrative at the ABC, such as the UNDP. There has been lack of clarity and communication between the different areas about the progress of the processes;
- The dimensioning of budget processes in the workplans of the different subprojects can still be better adjusted to better suit current requirements.

Delays imply having to wait for the next year or not having satisfactory production results, in addition to endangering the partner institutions' engagement with the project.

Delays caused by restrictions imposed by the pandemic also impacted the overall efficiency of the projects. Interviewees identified an important adaptation in the schedules of ongoing projects: planned purchases were made in advance while it was not possible to perform in-person visits. However, the decision to purchase laboratory equipment without prior planning on how to install and maintain is a risk identified previously in the Cotton-4 project and Cotton Victoria.[98]

The expansion of implementing agencies implies a learning curve – both on the principles and approaches of the SSC, as well as on administrative and bureaucratic procedures – which also impacted efficiency, as seen in Cotton Victoria.

Lastly, for a more accurate measure of efficiency, it would be advisable to compare metrics from the projects hereby evaluated with other similar projects. Cost-benefit analysis or other quantitative indicators indicate whether results were satisfactory given the amount spent. In this case, it would also be important to consider unexpected results, in addition to the transfer of cotton technology, considering them as co-benefits, for a more accurate evaluation of the overall efficiency of the projects.

6. The project has been successful in its technology transfer strategies, with results in their assimilation and replication

DIMENSIONS: Technology transfer

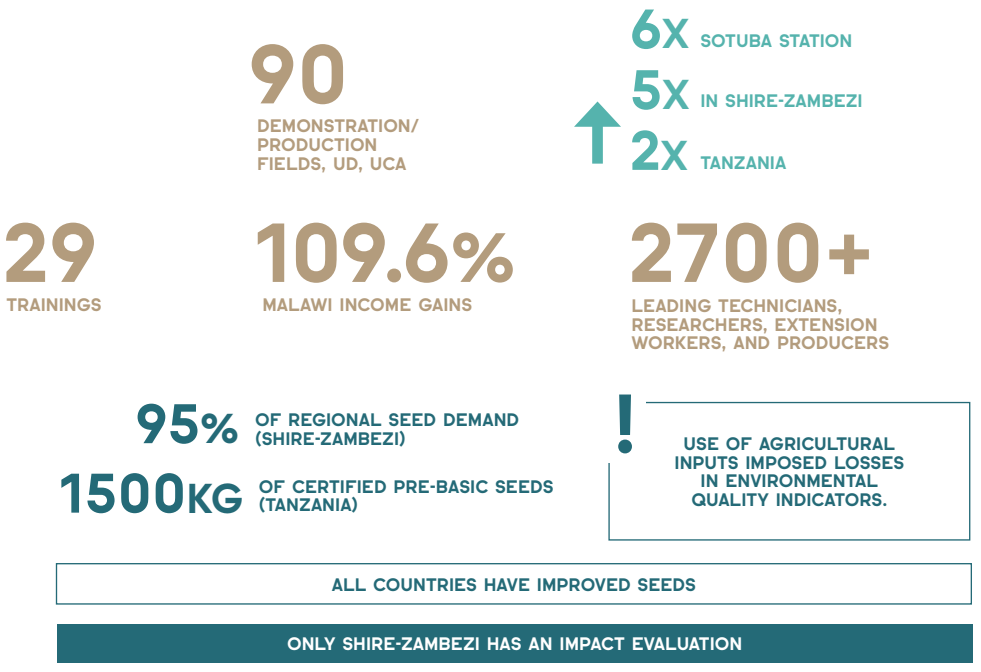
The BRA 12/002 benefited from the good results achieved by the Cotton-4 Project, which served as a 'showcase' of Brazilian technologies and cooperation with other cotton producing countries on the African continent.

If we exclude the Subprojects in the initial phase (S008, S009, S010, S011) and analyze the most advanced or completed Subprojects (S003, S005. S006 and S007), the TT component was very successful. Figure 10 summarizes, in quantitative terms, the results and impacts of the 4 most advanced projects. However, only the S003 had an impact evaluation, whereas information from other subprojects came from interviews or internal reports and should be further triangulated by specific evaluations. Furthermore, the lack of a baseline for the subprojects is an impediment to data triangulation.

98. According to the Cotton-4 evaluation, in 2015, none of the top 20 equipment purchased for the laboratory was in use. (p52]. At Cotton Victoria, according to the interviewees, the laboratory equipment arrived before the construction of the facilities, which resulted in storage difficulties for the partners. In addition, the equipment lacked installation manuals or had only untranslated manuals

99. The detailed results mapped within the scope of each subproject, and their respective sources, are in Annex 6. However, when reading the data, one must consider the aforementioned fragility of the BRA 12/002 monitoring system.

FIGURE 10 Summary results BRA 12/002[99]



In qualitative terms, the BRA 12/002 contributed with innovative methodological proposals suited to the African productive system:

- Learning Units to allow producers to see the results of proposed techniques;
- Training technicians and researchers to be knowledge-replicating agents;

- Inviting researchers and technicians to Brazil, whether to attend training courses, participate in congresses, or visit producers;
- Sending tools suited to the conditions of the producers;
- Submission of genetic material of Brazilian cotton varieties and cover crops for evaluation and reproduction based on local needs.

The fact that the shared technologies are technically simple, with low cost and high impact, facilitates the adoption and replication of the proposed techniques, among which:

- the adoption of soil and water conservation techniques with the teaching of planting techniques in contour lines, using simple instruments such as a hose level and measuring tape;
- use of ropes for measuring planting stands, and thus ensure an adequate population of cotton plants;
- use of biopesticides and homemade syrups for pest control; use of cover crops and green manures;
- sending manual machines such as the wheelbarrow sprayer;
- No-tillage system for soil conservation.

Therefore, the Technology Transfer process brought tangible results in terms of acquired capabilities. Technicians and researchers trained in Brazil, both in specific activities and in the Courses of Subproject 006, were able to apply their knowledge in the field and bring improvements not only in production systems but also in terms of productive gains. Likewise, the training carried out in loco in the Learning Units had similar effects.

> ""In Tanzania some properties participating in the project are yielding 2,600-2,700 kilos per hectare. The farmer was very pleased because this is more than three times of what was harvested before the project."[100]

Another effect of capacity development is sustainability, as the lessons learned remain with the professional who may then apply it beyond the project framework.

100. Partner country interview.

101. Partner country interview.

> "The best strategy to ensure continuity is to invest in human resources. All technicians from national agencies who participated in training under the Project today disseminate their knowledge, not only in the project areas but in all areas where cotton is produced in the country."[101]

7. The project is successful in strengthening individual capacities, but with different results in terms of institutional capacities, compromising the scale potential and the sustainability of the initiatives

DIMENSIONS: Performance, Capacity development (individual and institutional), Long-term results (Productivity and competitiveness, Economic sustainability, Social and environmental sustainability)

The BRA 12/002 excels for its good results in technology transfer, with a good performance in strengthening individual capacities (training of technicians and producers), the creation of learning units, and technology transfer. The training of technical staff in partner countries has contributed to the effective assimilation of relevant knowledge suited to local realities. The shared knowledge and techniques were not restricted to trained technicians and producers, as there was an increasingly clear strategy to strengthen multiplication. Furthermore, the good results of technology transfer have also contributed to greater compliance to the techniques, as in the case of Tanzania and the demand for training replication to regions not covered by the project.

Regarding the development of individual capacities, the lowest result point was the inclusion of women in capacity development. The subprojects have not incorporated a gender perspective. One exception is Cotton Victoria, in which the participation of women in

project activities rate circa 25% (despite being below the 30% target), while this value is greater for field activities and lower among technicians.

However, regarding institutional capacities, the subprojects have mixed results. We identified two contributing dimensions regarding the development of institutional capacities for the scale results and sustainability of initiatives, which are not treated homogeneously in the subprojects:

7.1 IMPROVEMENTS IN INFRASTRUCTURE AND EQUIPMENT CAPACITIES ARE IMPORTANT FOR STRENGTHENING AND EXPANDING THE DEMONSTRATION CAPACITY OF THE UNITS, SUPPORTING EXTENSION WORKERS, AND ENABLING THE SCALE AND SUSTAINABILITY OF TECHNOLOGY TRANSFER RESULTS

The subprojects accomplished significant changes in the methodological tools for rural extension. The Technical Assistance and Rural Extension (ATER) organizations began to serve more farmers with the adoption of the Learning Units (UAs) approach, field activities, and other resources to assist groups. However, challenges in executing resources for infrastructure or purchasing equipment also characterized the implementation of subprojects, which reduces the effectiveness of the subprojects, both in terms of their scope and strengthening partner institutions.

In the case of Cotton-4+Togo, after the revitalization of the Cotton-4 complex[102] inside the Sotuba Station, carried out in the first phase of the subproject, the second phase made progress with the fencing of the Learning Units inside the Experimental Stations in other countries and specific structure improvements in Chad.[103] TVehicles and motorcycles were purchased for the five experimental stations in the partner countries and for monitoring activities at the UCAS. However, results regarding the improvement of the stations' structures in other countries' has not been achieved.[104]

In the case of Shire-Zambezi, infrastructure delays in seed processing directly impacted the financial sustainability of the project. Proceeds from seed sales would be invested in project activities, mostly to finance the scalability of rural extension services and the acquisition and distribution of inputs at the beginning of harvests. Without this "input kit", the most vulnerable producers would be unable to apply good management practices for handling diseases and pests within the scope of the subproject. In this regard, delays in seed processing also impacts institutional capacities, as analyzed below.

102. Construction of infrastructure for offices, meeting room, a Trichogramma laboratory, services, installation of a power generator.

103. Acquisition of office furniture and installation of Satellite Internet, computers, and scanners.

104. According to a Brazilian informant, the schedule was impacted due to the delayed release of resources required from the IBA to the ABC.

105. According to information provided by the ABC, workshops were held in partner countries to discuss project sustainability. The project's financial costs and resource management models were presented, and the gradual transition of ABC management responsibilities was discussed considering the administrative, technical, and financial axes; the role of the main national and international actors regarded as strategic for the maintenance of project activities after departure from the ABC was mapped. The workshops brought together policymakers from each country; - Representatives from the Ministries of Agriculture, Economy, Planning and Environment of each country; - Direct project beneficiaries (directors of agricultural research institutes, focal points, researchers, entomologists, institute technicians and cotton-producing leaders); and indirect beneficiaries (representatives of cotton associations, representatives of ministries linked to livestock and, leaders in animal breeding).

INSTITUTIONALIZATION OF TECHNOLOGY TRANSFER RESULTS TO ENSURE THE SUSTAINABILITY OF RESULTS

In the case of Cotton-4 + Togo, there was a discussion with partners regarding the ABC exit strategy, for devising planning actions and including strategic actors for preserving resources and investments in the project.[105] There is evidence that the Institute of Rural Economy (IER) continues to cover the operating costs of the C-4 structure at the Sotuba Station and the two cotton companies continue to promote the dissemination of techniques through the UCAs in the operating zones.

The Shire-Zambezi, in turn, presents a series of advances in institutionalization. Since its inception, the subproject envisions results through the consolidation of regulations for the production of certified cotton seeds, based on the respective operating systems in Malawi (Seed Act) and Mozambique (Ministerial Diploma No. 184/2001). Institutional capacities were strengthened and standardized, facilitating the assimilation and dissemination of technology transfer within and outside the project's territorial scope. These include:

- The publication of the Cotton Seed Production Manual: reference paper for the production of certified cotton seeds under the project adopted by the Regional Cotton Seed Committee, granting official status for the production and distribution protocol of seeds in the project's region;
- The institutional consolidation of the Cotton Technology Transfer Center/Mozambique Cotton Institute (CRETTA/IAM) and hiring of the technical staff (Mozambique); the

Mozambique Cotton Institute reviewed its internal regulations ensuring that all institute's delegations have a CRETTA in their organic structure;

- Inclusion in the National Seed Program (Malawi): The Cotton Council in Malawi included the project's seeds into the Regional Plan for Production and Trade of Cotton Seeds, including the distribution of seeds on a national scale.

However, the financial sustainability strategy based on the sale of seeds did not materialize, impacting the institutions' capacity to ensure resources for the scale of the transfer. This exit strategy is based, on the one hand, on the institutional strengthening of rural extension services, aiming at self-sufficiency and sustainability of field activities and, on the other hand, on the achievement of results from the technology transfer within the scope of certified seeds production. It is important to emphasize that the resource allocation for covering operating costs (or their costs) should be progressively reduced during the subproject implementation, aiming towards self-sufficiency of the extension services, with feedback from the sale of certified seeds.

At Cotton Victoria, the project's implementation strategy was successful in articulating and involving the anchor institutions, with capillarity and capacity for dialogue with different actors in the production chain at national and local levels. The knowledge generated by technology transfer was assimilated by the institutions and is being disseminated in the project territories and other regions of the respective countries. In Kenya, the strategic technology transfer element resides in the articulation of technical demonstration units and knowledge transfer units installed in the communities. In addition, the subproject ensured that government actors (at national and local levels) participated in training to facilitate the dissemination of knowledge, including to other regions of the country. In Tanzania, the 60X30 spacing is an integral part of the Tanzania Cotton Council's (TCB) Dissemination Campaign, which is distributing specific ropes to help growers determine the proper spacing for more effective seeding, helping to spread the technology application generated in the scope of the project on a national scale.

106. According to the PRODOC (Revision C), the product 2.2 (p. 17) "Conceived and institutionalized Demonstrative Technical Units UTDs" is divided into two actions, aiming to "Maintain and operate the UTDs for a 33-month period, regarding the necessary inputs and labor" and "Perform UTD monitoring visits".

107. Partner country interview.

108. Partner country interview.

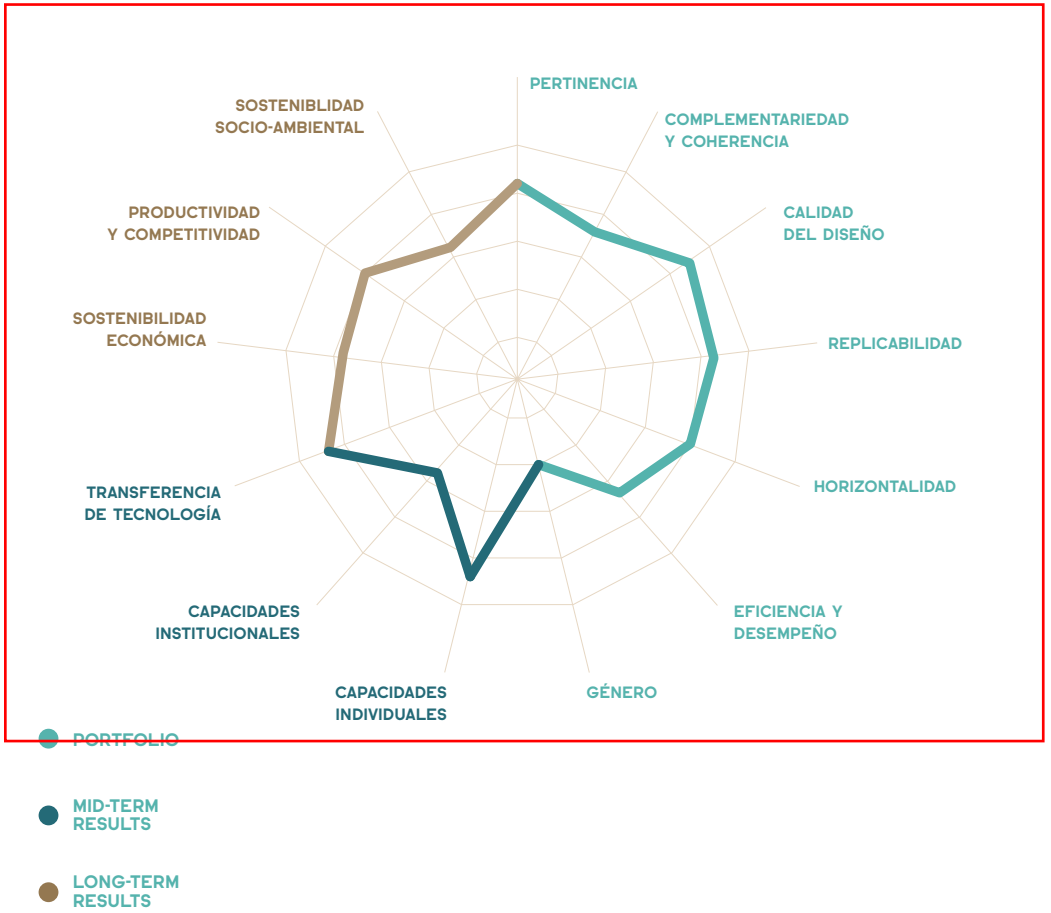
However, it is important to mention that the subproject planned to finance the operation of the UTDs (Demonstrative Technical Units) for a 33-month period, regarding the necessary inputs and labor.[106] These investments were important for obtaining results, but they do not ensure continuity, as there was no new formal hiring of extension workers.[107] In Kenya, for example, not only is the hiring of new civil servants frozen, but the teams are aging. It is therefore unclear how the results obtained will be continued and scaled at the end of the project. Informants suggested three possible approaches: a) institutionalization of internal training procedures to ensure the transfer of knowledge and content produced under the project; b) production of publications, manuals, and guides to facilitate the institutional dissemination process; c) opening of new work fronts with universities and technical institutes to train future generations of extension workers, including the hiring of trainees for increasing the future base of extension workers.[108]

The fact that the subprojects have different strategies and results in terms of consolidating institutional capacities does not allow us to evaluate to what extent the subprojects are properly dialoguing with the structuring of the cotton sector in each of the partner countries for greater success of sustainability strategies, replicability, and scalability of the results achieved. It is worth noting that the ABC itself does not have clear guidelines on the exit strategies for the Brazilian SSC with its partners, which contributes to the fragility of this dimension within the scope of the BRA 12/002.

4

SUMMARY OF THE EVALUATION CRITERIA

The quantitative summary[109] of each of the criteria proposed by the evaluation matrix reinforces the main findings detailed in this report and draws attention to certain dimensions, which may be analyzed by the partners involved, both regarding the enhancement of good practices and general improvements.



109. The data comes from the instrument analysis that supported the consistency of judgments in each of the case studies. The scores for each case study were consolidated from the evidence collected through document reviews, interviews, and surveys (in the case of S006). The most recent subprojects were evaluated only by portfolio-related criteria, while the projects with advanced implementation were also evaluated by criteria regarding mid-term results, and the completed projects were evaluated by all criteria.

In this regard, the following stand out **positively: (i)** the **relevance** of the project (findings 1 and 2); (ii) the improvement in the **design** of its subprojects, based on what was learned (finding 4), (iii) results related to **individual capacities, technology transfer, and productivity** (findings 6 and 7).

On the other hand, the following deserve **attention : (i)** the **complementarity** between cotton-financed TCSS initiatives, especially regarding coordination with trilateral projects (finding 3), **(ii)** the inclusion of a **gender** perspective in project actions; **(iii) efficiency**, which, despite showing improvements, still presents challenges related to the allocation of resources and compliance with schedules (finding 5); **(iv)** the strengthening of institutional capacities, given that **infrastructure investments and the scalability** of technology transfer results present challenges (finding 7).

5

CONCLUSIONS

C1

BASED ON FINDINGS 1, 2, 3 AND 4

The project is relevant and appropriate to the contexts in which it operates, but needs more clarity regarding strategies and intended results, including explanations for expected mutual benefits and their link to the development agendas

The project has responded to the demands of its partners, in areas where the cotton sector holds strategic importance for local development. As for technology transfer, the BRA 12/002 has advanced by incorporating diversified and complementary approaches for better adapting the technologies transferred to local production contexts.

Within the scope of the inside the gate, the BRA 12/002 has addressed different dimensions, such as: good agronomic practices, rural extension, production and improvement of seed quality, and institutional strengthening. Outside the gate, the BRA 12/002 has incorporated a multi-sector approach, with the inclusion of actors from different links of the production chain in the design and implementation of subprojects, which has the potential to expand the scale of transferred technologies. More recently, the BRA 12/002 has addressed cross-cutting development agendas, such as health and food security in cotton-producing territories.

These approaches stem from an identification, alongside partners, of actions to strengthen the countries' cotton sector. However, these approaches are not expressly articulated from the perspective of an explicit Theory of Change. In this regard, the umbrella project does not provide adequate guidelines on how the subprojects should address, in their objectives and expected results, the multidimensionality, multi-sectorality, and transversality of the cotton chain.

The absence of a Theory of Change unfolds in the lack of strategic guidelines for planning complementary actions between subprojects, between projects of the Brazilian Cotton Initiative, and strategic exchanges between the various partners. Furthermore, the BRA 12/002 does not explicitly articulate in its PRODOC the mutual benefits expected by Brazil and its implementing agencies. In addition to the creation of the Diffusion Center in Catuti, the mutual benefits identified are very generic or at the individual level of the technicians participating in the project. Lastly, the BRA 12/002 did not undergo a revision to adapt the project to the South-South Technical Cooperation Manual, nor does it make explicit its link with cross-cutting international agendas, such as the Sustainable Development Goals and the 2030 Agenda, which includes a sensitive approach to gender, for example.

C2

BASED ON FINDINGS 1, 2, 3 AND 4

The subprojects under the BRA 12/002 are coherent and complementary and have shown improvements in design quality based on lessons learned, but these are not systematized

The quality of the subproject design has shown significant improvements both in its formal aspects (problem tree, logical matrix) and in its substantive aspects through complementary approaches (incorporation of multidimensional productive dimensions, multi-sector approaches, and transversal agendas). The quality derives from well-planned prospecting missions, from the participatory problem tree construction methodology; from the convening of relevant stakeholders to discuss the project and facilitation and translation experienced during the design process. This set of elements has contributed to the adaptation of technologies to the scale of production in partner countries, as well as to advance the inclusion of the most vulnerable producers in technology transfer processes.

Based on Cotton-4's learning and experience, the BRA 12/002 advanced in consolidating its main technology transfer strategies promoting, at the same time, the multiplication of technologies, with a greater focus on the producer. As a result of existing partnerships, a third generation of projects is devoted to more focused dimensions through bilateral projects. Lastly, under the BRA 12/002 portfolio, other strategic initiatives aim to complement and strengthen results in partner countries, such as courses in Brazil and the Catuti Diffusion Center.

BRA 12/002 consolidated new partnerships with Brazilian implementing agencies, thus expanding its capacity to serve a greater number of countries and diversifying the Brazilian repertoire available to support partner countries. The diversification of the profile of Brazilian implementing agencies also allows for a broader dialogue with the different actors in the cotton chains in partner countries.

However, the experience of the BRA 12/002 – from its approach rooted in the principles of the SSC to its strategies, results, and administrative management practices – has not been systematized or made available, which implies a greater learning curve for Brazilian and African partners and negatively impacts the efficiency of the BRA 12/002 as a whole.

Although the subprojects under the BRA 12/002 follow the guidelines of the South-South Technical Cooperation Management Manual regarding the instruments for monitoring implementation, there is no greater detail on the regularity, flows, and uses of information or, in other words, a follow-up and monitoring system. In the case of subprojects on cotton, which involve complex management processes linked to the agricultural calendar, this system proves to be necessary, given that its absence has shown to undermined the scope of the results: the ability to respond to strategic questions for a smoother flow of the subprojects is slower and often impacts the alignment of actions with the agricultural calendar; the dependence on annual or biannual reports generates a considerable delay in the reading and evaluative interpretation of technology transfer; reports are not standardized, making shared interpretation of results difficult.

C3

BASED ON FINDINGS 5, 6 AND 7

The project presents excellent results but faces important challenges to promote the sustainability of the results in the long term

The project has been successful in its technology transfer strategies, with results in terms of their assimilation and replication. BRA 12/002 contributed with innovative methodological proposals suitable for the African productive system, such as the Learning Units, the training of technicians and researchers to act as agents for replicating knowledge; sending tools suited to the conditions of producers; and sharing genetic material from Brazilian cotton varieties and cover crops to be evaluated and reproduced based on local needs. The fact that shared technologies are technically simple, having a low cost and a high impact, is considered to facilitate the adoption and replication of the proposed techniques. The shared knowledge was replicated, as there was an increasingly explicit strategy to strengthen multiplication.

However, with regard to institutional capacities, the subprojects have mixed results. The challenges in executing resources related to infrastructure or purchasing equipment reduced the effectiveness of subprojects, both in terms of their scope and of strengthening partner institutions. Furthermore, projects with completed or advanced implementation presented different strategies and results with regard to the institutionalization of technology transfer results, which does not allow us to assess to what extent the set of subprojects is being guided by robust strategies aimed at sustainability.

C4

BASED ON FINDINGS 5, 6 AND 7

The project showed gains in efficiency, but its performance still faces obstacles, including on aspects whose performance is exclusive to ABC

The project showed gains in efficiency, albeit still insufficient to mitigate procedural challenges that impact the final results. Within the subprojects, there is still great difficulty in allocating resources in a timely manner for implementation within the subprojects' timetables, which directly impacts the results of the subprojects.

The most latent challenges are delays due to obstacles in the procurement processes: sizing of the project's disbursement planning, technical specifications and reference terms, customs clearance, procedures for disbursements and accountability, delays in the approval of disbursements within the ABC, lack of clarity and communication between the different areas of the ABC and UNDP on ongoing processes.

In addition to the performance within the scope of the subprojects, the BRA 12/002 has available and planned resources for actions under its exclusive governance with minor progress, such as promoting the systematization and sharing of good practices or the elaboration of a common monitoring and evaluation strategy that would effectively guide the M&E of subprojects as well as the PRODOC umbrella. Finally, coordination between the different projects under the Brazilian Cotton Initiative is small, considering its reach and budgetary relevance for the ABC portfolio. Although these are admittedly the most fragile areas of the SSC, the BRA 12/002 is able – both technically and financially – to invest in cutting-edge solutions to provide lessons promoting the consolidation of Brazil's SSC.

6

RECOMMENDATIONS

The recommendations are interdependent. As an overarching guideline across all recommendations, we suggest that they be implemented through participatory, horizontal processes, based on the knowledge acquired by the BRA 12/002 staff. To speed up the implementation of some recommendations, the suggestion is to evaluate the possibility of hiring external support, with explicit guidance that they should act as process facilitators and promote ownership of the results among the participants.

R1

A substantial review of the PRODOC BRA 12/002, explaining its Theory of Change

ANSWER TO CONCLUSIONS
C1 AND C2

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
IMMEDIATE

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM in consultation with project partners

The elaboration of the Theory of Change in the BRA 12/002 must be broad enough and adaptable to different contexts in which the project operates, while also clarifying how the strategies and approaches promoted by the project contribute to each type of change in the various links of the cotton chain.

In this regard, it should incorporate multidimensional, multisectoral, and transversal dimensions already promoted by the subprojects, clarify how the desired increased productivity by technology transfer contributes to development results, and explain the project's contribution to international and regional development agendas. Furthermore, it should detail the premises of the SSC, including strategies to promote results by way of mutual benefits. Finally, it should provide clarity about the expected results in the promotion of actions/subprojects for courses, participation in congresses, or systematization of good practices (product 2.2.)

We recommend that the review of the PRODOC BRA 12/002 should be sensitive to gender approaches, inclusion of vulnerable producers, and environmental sustainability. The Theory of Change must unfold into planning with concrete goals. For the elaboration of the Theory of Change of the PRODOC BRA 12/002, we recommend a structured prior consultation alongside all project partners, including partner countries, other projects under the Brazilian Cotton Initiative, Brazilian implementing agencies, the IBA, and the UNDP.

R2

Design and implement a Monitoring and Evaluation strategy to increase project effectiveness and support the communication of results

ANSWER TO CONCLUSIONS
C2 AND C4

BUDGETARY IMPLICATION
– MEDIUM

DEADLINE
2022

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM in coordination with other areas of the ABC

Within the scope of the PRODOC 12/002, we recommend the use of indicators aligned with the Project's Theory of Change, including indicators that can be translated for all subprojects. The indicators should also envision mutual benefits and other dimensions related to the SSC principles. Thus, akin to the TOC, the indicators building process will benefit from the involvement of the main project stakeholders, particularly the Brazilian implementing agencies and partner countries.

Within the scope of the subproject, we recommend that all subprojects include evaluability studies, mid-term evaluation, and final evaluations. Ex-post evaluations should be considered in countries that cooperated with Brazil in consecutive subprojects. The evaluability studies aim to provide the subprojects with solid, viable, and timely M&E strategies and systems that are appropriate to the contexts and, at the same time, aligned with the M&E needs within the scope of the BRA 12/002.

The implementation of a solid monitoring strategy in these two areas aims to provide timely information for the implementation of the PRODOC BRA 12/002 and its subprojects; support the systematization and communication of results and lessons learned (see R3); support future evaluations and promote transparency and communication about the results of the Brazilian SSC to domestic and partner country constituencies, as well as to the international community.

The efforts of the BRA 12/002 should align with and feedback the initiatives to strengthen the ABC's M&E of the SSC. However, given the relevance of the budget allocated to the BRA 12/002, we recommend that the project team should lead the efforts under the Project to ensure the implementation of monitoring and evaluation before its conclusion (expected in 2026).

*This recommendation is aligned with recommendations made under the mid-term evaluation of the PRODOC 13/008

R3

Design and implement a knowledge management strategy that strengthens capacity development within the Project and the communication of results

ANSWER TO CONCLUSIONS
C2 AND C4

BUDGETARY IMPLICATION
– MEDIUM

DEADLINE
2022 -2023

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM in consultation with project partners

To progress with product 2.2 of the PRODOC 12/002 on the dissemination of good practices, we recommend to develop a knowledge management strategy with objectives, target audience, products, activity planning, and concrete goals. The systematization of results, good practices, and lessons learned from the subprojects aims to provide feedback to the process of capacity development and learning among partners, as well as to communicate its results more precisely and explicitly.

Further specific possibilities include:

- Good practices and lessons learned on agronomic dimensions;
- Experiences related to strengthening the cotton chain;
- Management-related experiences and initiative policies for sustainable and autonomous development of the cotton sector;
- Publicizing the results of the subproject evaluations.

R4

Building strategies, alongside partners, for the sustainability of results and options for continued cooperation

ANSWER TO CONCLUSIONS
C3

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
2023

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
PROJECT TEAM in consultation with project partners

To promote strategic dialogues with partners, based on lessons learned and systematized results, on possible alternatives for ending support for the BRA 12/002.

On the one hand, to consider strategies designed along with countries towards the institutionalization of national results and investments so that they are permanent and may grow in scale. In order to ensure greater tangibility to the agreements, it is recommended to translate them into expected results, products, and activities to be included in subproject reviews.

Further specific possibilities include:

- Review the mode of allocation of resources for operating costs, even during the implementation stage of the subproject, to promote a constant appropriation of results;
- Explore the possibility of expanding the profile of project partners in partner countries, including universities, to ensure the multiplication of knowledge in a sustainable manner for new generations of technicians and researchers or other development partners. Partnerships with universities may expand possibilities for the systematization of good practices and the production of joint knowledge, and potentially include scholarship holders to support subprojects;
- Explore the possibility of consolidating Catuti as a Training Center for new generations of African technicians and researchers, with funding from other national and international sources;
- Consider arrangements to promote the contribution of further international actors, such as development partners.

R5

Build strategies to improve the efficiency of subprojects*

ANSWER TO CONCLUSIONS
C3 AND C4

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
IMMEDIATE

PRIORITY
↑ HIGH

RESPONSIBLE ACTORS
Directorate of the ABC, CGAA, CGAO, and PNUD

*This recommendation is aligned with recommendations made under the mid-term evaluation of the PRODOC 13/008

We recommend to map and analyze the quality of flows, deadlines, and responsibilities of the most common administrative processes or those that consistently present hindrances. Based on this mapping, to promote meetings between the UNDP and responsible areas of the ABC (General Coordination of Technical Cooperation – Africa, Asia and Oceania, General Coordination of Administration and Budget, Management) to prioritize urgent improvements and changes (greater bottlenecks that prevent further effectiveness) and agree on joint solutions for improvement.

Further specific possibilities include:

- Promote exchanges between the BRA 12/002 staff for sharing lessons learned and elaborate a detailed checklist for the planning stage of the subprojects;
- Map the main management responsibilities for the smooth running of the partner countries subprojects, and structuring the profile of required professionals, whether local coordinators hired for the project and potential professionals hired by African partner institutions;
- Map the main management responsibilities for a smooth flow of the partner countries subprojects, and structure the profile of required professionals, whether local coordinators hired for the project and potential professionals hired by partner African institutions;

- Evaluate, together with partners, the possibility of creating a fund for operating costs within the scope of subprojects;
- Share monitoring mechanisms for each subproject with all institutions involved to promote greater co-responsibility among parties;
- Explore existing low-cost online tools that meet requirements for communication and sharing among subproject partners.

R6

Invest in mechanisms and coordinating processes of the Brazilian Cotton Initiative

ANSWER TO CONCLUSIONS
C4

BUDGETARY IMPLICATION
↓ LOW

DEADLINE
2022

PRIORITY
– MEDIUM

RESPONSIBLE ACTORS
THE ABC AND COTTON PROJECT TEAMS

To promote a structured dialogues between the ABC teams and international organizations involved in the Brazilian Cotton Initiative projects in order to: identify areas of synergy and feedback between projects; define processes, mechanisms, frequency and responsibilities for communication and constant sharing of information between technical teams. This practice may, in the future, expand its scope and coordinate broader efforts with good ABC practices in other sectors, aiming to ensure communication between the results of different projects and, ultimately, strengthen productivity gains in local and regional contexts and improve the well-being of populations in cotton-producing territories.

Further specific possibilities include:

- Explore existing low-cost online tools that meet requirements for communication among subproject partners.

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