Food and Agriculture Organization of the United Nations

Programme Evaluation Series
02/2022

Evaluation of the third project cycle of the Benefit-sharing Fund of the International Treaty on the Plant Genetic Resources for Food and Agriculture

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MTF/INT/019/MUL and GCP/GLO/407/EC

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2022

Required citation:
FAO. 2022. *Evaluation of the third project cycle of the Benefit-sharing Fund of the International Treaty on the Plant Genetic Resources for Food and Agriculture (ITPGRFA)*. Programme Evaluation Series, 02/2022. Rome.

ISBN 978-92-5-135755-2

Abstract

In 2020, the FAO Office of Evaluation (OED) launched the evaluation of the third project cycle of the Benefit-sharing Fund (BSF). The evaluation assessed the extent to which planned collective objectives set out in the third project cycle of the BSF 3 have been met and also provided lessons learned and recommendations to inform the further development of the BSF programme and its future project cycles.

The Benefit-sharing Fund was established in 2009 by the Contracting Parties of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in the spirit of multilateralism to fund projects in developing countries to increase crop diversity and enable a dynamic exchange of plant genetic material for increased adaptation, agricultural diversification and food security. Since its inception, a total of USD 26 million has been invested in four project cycles, involving 67 developing countries in the implementation of 80 projects for the conservation and sustainable use of crop diversity as well as the development and transfer of relevant PGRFA technologies.

Overall, the evaluation found that the BSF was highly relevant in filling gaps and adding value in the management and conservation of plant genetic resources for food and agriculture. BSF specifically facilitated a likely unprecedented number of PGRFA materials to be accessed, tested and developed with farmers in multiple locations of highly diverse agroecologies and cultures. The evaluation concludes that the niche and added value of the BSF (past and present cycles) are due to a combination of traits: i) unique and unequivocal mandate in which 148 signatory countries and the European Union committed to the Multilateral System of Access and Benefit-sharing; ii) works with the entire array of PGRFA needed to address the immense challenges brought about by climate change; iii) representation of all stakeholders in the entire spectrum of *in situ* and *ex situ* PGRFA; iv) synergistic and mutually reinforcing Multilateral System of Access and Benefit-sharing; and v) integrates research for development with marginalized and vulnerable communities through participatory selection, development, conservation and sustainable use of PGRFA as an integral part of climate-resilient strategies.

Nine recommendations emerge from this evaluation. These include the need to capitalize on BSF achievements by highlighting PGRFA as an indispensable element of farmers' food and nutrition security while building on the biodiversity and climate change nexus to further advance the BSF's alignments with SDG 2 (end hunger), SDG 13 (climate action) and the Paris Agreement on enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change by further sharpening, illustrating and concretizing the strategic importance of PGRFA to a resilient food and nutrition security in the context of climate change.

Contents

Box, figures and tables

Box

Figures

Tables

Acknowledgements

The FAO Office of Evaluation (OED) would like to thank everyone who contributed to the first and second phase of the evaluation. The evaluation team was led by Ms Gigi Manicad (Team Leader) with support from Ms Maame Duah (OED Evaluation Manager). Mr Rodrigo Paz and Ms Ellen Woodley contributed as team members in the first phase of the evaluation. The country case studies in the second phase were conducted by Mr Witness Kozanayi (Zimbabwe) and Ms Bernadette Wanjala (Kenya). The evaluation report benefited from comments and guidance from Mr Olivier Cossee (OED Senior Evaluation Officer). Ms Sarah Jaff from OED provided administrative support.

The Office is grateful for the insights and support provided by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and Benefit-sharing Fund (BSF) partners. OED would like to specifically acknowledge Mr Kent Nnadozie (Secretary), Mr Alvaro Toledo (Deputy Secretary), Ms Rodica Leahu (Treaty Technical Officer), and Ms Annamaria Ausania (BSF Consultant) from the ITPGRFA Secretariat for their strong engagement and cooperation throughout the evaluation process. Special thanks to Mr Geoff Hawtin and Mr Rene Salazar for reviewing the draft evaluation report and sharing their insights.

The team would also like to thank the staff of the FAO country offices of Indonesia, Kenya and Zimbabwe for their invaluable assistance.

Finally, sincere gratitude is extended to the numerous government representatives, resources partners, development workers, farmers, private sector and FAO staff who responded to inquiries during this exercise. Their contributions were critical to the team's work and are deeply appreciated.

Abbreviations and acronyms

BSF	Benefit-sharing Fund
BSF 3	Third Project Cycle of the Benefit-sharing Fund
CTDT	Community Technology Development Trust
DOI	Digital object identifiers
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer field school
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
MLS	Multilateral System of Access and Benefit-sharing
PGRFA	Plant genetic resources for food and agriculture
SDG	Sustainable Development Goal

Executive summary

Introduction

1. This report outlines the main findings, conclusions and recommendations of the independent evaluation of the third project cycle of the Benefit-sharing Fund (BSF 3) of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The purpose of this evaluation was "to provide an independent assessment of the extent to which planned collective objectives set out in the third project cycle of the Benefit-sharing Fund (BSF 3) have been met. It also aimed at drawing lessons learned and recommendations that could inform the further development of the BSF programme and its future project cycles". The evaluation assessed the third project cycle as a whole; it covered the entire 20 operational projects implemented from 2014 to 2020. Given the large geographical scope of the BSF 3, the evaluation focused on a selected number of projects for the in-depth assessments. The evaluation focused on all the key activities undertaken within the BSF 3 framework covering both Window 2 (Immediate action) and Window 3 (Co-development and technology transfer) projects.

2. The specific objectives of this evaluation are to: i) assess the relevance and scope of the projects as well as the quality of their design in responding to identified needs and priorities; ii) assess whether the planned project results have been realized, and whether the gaps, challenges and risks in achieving BSF 3 intended results have been overcome; and iii) identify good practices and lessons learned from the programme level and project level implementation that could feed into and enhance the further development of the BSF programme.

3. The evaluation was conducted in accordance with the following evaluation questions:

   i. EQ 1. Relevance. To what extent is the BSF third project cycle relevant, filling a gap and adding value in the management and conservation of plant genetic resources for food and agriculture at national and regional level?
   ii. EQ 2. Effectiveness and Contribution to Results. To what extent have BSF 3 programme and project objectives been achieved and were there any unintended results? To what extent can the attainment of results be attributed to the BSF 3 projects? How have the results demonstrated the catalytic role of the BSF in international cooperation in the conservation and use of PGRFA?
   iii. EQ 3. Partnership. To what extent have the BSF governance and partnership arrangements been appropriate and effective in fostering the conservation and sustainable use of PGRFA at different levels (global, regional, national)? How are these partnerships influencing (positively or negatively) the achievements and sustainability of the projects' expected results?
   iv. EQ 4. Efficiency. How efficient was the institutional and implementation set up? How efficient was the implementation set up at the national and regional level?
   v. EQ 5. Knowledge management. To what extent has the BSF 3 been able to contribute to knowledge management and sharing of experiences to inform PGRFA consultations worldwide?
   vi. EQ 6. Sustainability. What are the prospects for sustaining the results beyond projects' closure? In particular, the systems in place after projects' closure to sustain key activities. What are the prospects for scaling-up the activities? To what degree is the national policy context favorable to a sustainable use of the rich diversity of PGRFA?
   vii. EQ 7. Cross-cutting issues. To what extent have cross-cutting issues such as gender, fai rness and equity[1] considerations been taken into account in the BSF projects?

[1] The 'fair and equitable sharing of the benefits arising out of the utilization of genetic resources' is one of three objectives of the Convention on Biological Diversity (CBD).

Background to the BSF-3

4. The Benefit-sharing Fund was established in 2009 by the Treaty's Contracting Parties of the International Treaty on Plant Genetic Resources for Food and Agriculture in the spirit of multilateralism, to fund projects in developing countries to increase crop diversity and enable a dynamic exchange of plant genetic material for increased adaptation, agricultural diversification and food security.

5. The 20 projects of BSF 3 covered 45 developing countries across Africa, Asia, Europe, Group of Latin America and Caribbean Countries (GRULAC), Near East and North Africa, and South-West Pacific. The BSF 3 projects contribute to seven priority results areas:

   i. **Result area 1.** Locally adapted varieties or other genetic material successfully conserved and used.
   ii. **Result area 2.** Technologies for the conservation and sustainable use of PGRFA co-developed by and/or transferred to selected developing country PGRFA institutions.
   iii. **Result area 3.** Information created, disseminated and accessed by lead institutions on scientific, technical and environmental matters related to PGRFA, including genotypic and phenotypic data.
   iv. **Result area 4.** Increased capacity of resource-poor farmers to conserve and manage PGRFA in specific areas vulnerable to climate change.
   v. **Result area 5.** Increased capacity of PGRFA institutions and researchers to conserve and manage PGRFA.
   vi. **Result area 6.** Evidence-based plans and priorities to help resource-poor farmers adapt to climate change, developed by consortia of PGRFA institutions as building blocks for future policy development and investment
   vii. **Result area 7.** Awareness on the ITPGRFA and value of plant genetic resources for food and agriculture (PGRFA) to meet future challenges is raised at the national, regional and international level.

Methodology

6. Due to COVID-19 restrictions, the evaluation was conducted in two phases. Phase 1 involved extensive desk review, portfolio analysis and (virtual) semi-structure interviews focusing on 11 BSF 3 projects. Phase 2 involved two country case studies in Kenya and Zimbabwe with field visits to farmers. Lastly, a survey was conducted covering all 20 project and their co-implementers.

Findings

Relevance

Finding 1. The BSF 3 was, to a great extent, relevant in filling gaps and adding value in the management and conservation of plant genetic resources for food and agriculture. Both the Immediate Action projects (Window 2) and the Co-development and transfer of technology Projects (Window 3) were well aligned to relevant international agreements and goals of the United Nations, primarily the Sustainable Development Goals (SDGs). The BSF 3 was also highly aligned and strategically linked with the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (GPA), the Convention on Biological Diversity (CBD) and the various articles of the International Treaty, including its updated Funding Strategy.

Finding 2. The projects of both Windows were targeted to meet the needs of men and women farmers who live in poverty and are highly vulnerable to the impacts of climate change. Window 2 created added value to the climate adaptation strategies of men and women farmers, while Window 3 created added

value information for the development of climate-ready traits and plant varieties potentially for the benefit of farmers.

Finding 3. At global level, the geographical distribution of the projects in the six regions was proportional to the regional allocation of eligible Contracting Parties and the regional distribution of eligible pre-proposals. However, there were marked imbalances in the number of approved projects within both the African and Asian regions. Indonesia led three out of the five projects in Asia, whilst Francophone sub-Saharan Africa was absent in BSF 3 since none of the submitted full project proposals (six) were selected for funding.

Effectiveness

Finding 4. To a large extent, the evidence collected shows that the BSF 3 has contributed to strengthening capacities at national and regional levels for improved conservation and management of PGRFA. The capacity development and the co-development of technologies under Window 3 facilitated the cooperation of national PGRFA institutions within and between countries. This enabled projects in the South [developing countries] to access technologies from the North [developed countries] or from international research organizations and adapt such technologies to their own context and priorities.

Finding 5. To a large extent, the BSF 3 enabled the co-development and adaptation of technologies amongst developing countries. The outputs in terms of identified and developed PGRFA materials and software were significant. In addition, software and knowledge platforms were developed to ease access to and sharing of databases. However, planning for project uptake after the funding period had not been done or made explicit for most of the proposals and reporting of Window 3.

Finding 6. The BSF reached a significant number of farmers. A major focus of the BSF 3 projects was on capacity building, with good indicators of farmers' empowerment enabling them to conserve and use PGRFA tailored to their highly diverse agroecologies and socio-cultural needs. On the policy level, the Seed Fairs and Farmer Field Days enabled farmers to substantially dialogue with policymakers and stakeholders.

Finding 7. The BSF 3 facilitated a likely unprecedented number of PGRFA materials to be accessed, tested and developed with farmers in multiple locations of highly diverse agroecologies and cultures. These resulted in the participatory development and adoption of climate-resilient strategies that included both farmers' landraces and improved cultivars, contributing to the food security and improved livelihoods of men and women farmers. However, the likely strategic contribution to the broadening of the genetic base or diversity of crops has yet to be studied.

Finding 8. The multi-stakeholder engagement provided a good basis for numerous policy dialogues. Many Window 2 projects contributed to policy engagement at national level, while the Window 3 projects did not have an explicit policy agenda. However, regional level policy linkages and awareness raising were not part of the objectives of the multi-country projects. The multi-country projects could have provided inputs and linkages at regional level. Another missed opportunity is with multi-country projects whereby the oversight of the National Focal Points is limited to their respective country and is not informed of the project activities in other participating countries.

Finding 9. Two countries within one project aimed for and succeeded in concretely contributing to national level plans to help farmers adapt to climate change. This achievement is an important step in institutionalizing the contribution of the BSF project in PGRFA conservation and sustainable use.

Finding 10. The results of the three to four-year project cycle of the BSF 3 can be broken down into immediate and medium-term results, which need to be linked to long-term outcomes. The various interventions of the BSF 3 projects, when collectively analysed, constituted the various elements of a PGRFA community-based adaptation and disaster risk reduction (DRR) strategy that contributes towards long-term resilience of farming communities.

Partnerships

Finding 11. The multi-stakeholder and multi-country partnership arrangements in the BSF 3 significantly contributed to the achievements of the projects. The BSF 3 played a catalytic role linking in situ and ex situ PGRFA management, concretely manifested in: i) the iterative flow of PGRFA materials; ii) an active exchange of scientific and local knowledge; iii) as an intergovernmental undertaking, the active engagement and ownership of national institutions of the Contracting Parties was highly decisive in facilitating the wide access and use of PGRFA as well as dealing with transboundary pest and diseases.

Finding 12. The BSF 3 demonstrated a viable model of the Multilateral System of Access and Benefit-sharing (MLS) through the access and use of existing plant genetic materials, which in turn generated new materials for the farmers and the MLS. The collaboration generated significant goodwill, which was consistently expressed, not only among the projects but also among the Treaty stakeholders who were not part of the projects. However, these stakeholders and project partners also expressed the need to re-consider the roles of key stakeholders in relation to the focus of the BSF.

Efficiency

Finding 13. The BSF has been dynamically evolving for greater efficiency. The third project cycle of the BSF was efficiently designed and executed. The checks and balances of project selection and approval were rigorous. The evaluation found that the Secretariat provided highly competent support to the process and was responsive in applying lessons learned from previous project cycles. However, the management of rejected proposals and the selected proposals with no funding allocations need to be reconsidered.

Finding 14. Overall, the contract management was complicated due to its institutional set up. Despite complications, directly contracting the implementing partners was a good practice. With regard to project planning and monitoring, a good system for monitoring was used. However, there were some weaknesses in project planning and risk management due to the lack of systematic updates, which affected the overall efficiency of project management. This included the lack of the technical expertise to support the Secretariat in project management.

Finding 15. The size and length of the projects were sufficient to deliver significant results. The three-to-four-year length of the projects was consistent with the project cycles of most donors. The most successful projects had realistic planning, with linkages to programmes that can potentially phase the BSF project's immediate and medium-term milestones, linking these to long-term goals (see Figure 3, Finding 10).

Knowledge management

Finding 16. The effective knowledge management at project level resulted in actionable climate adaptation strategies, with potentially promising outcomes as described in EQ 2 (Effectiveness). However, the lack of a strategic knowledge management strategy at the BSF programme level limited the benefits mainly to BSF-funded projects. BSF benefits in the form of knowledge products, PGRFA materials and lessons have not yet been further shared, improved and adapted by the wider stakeholders, and particularly by the Contracting Parties of the Treaty. In this regard, the leveraging of the knowledge generated by the BSF has so far been limited.

Finding 17. At project level, there have been numerous initiatives for awareness raising, which have helped to generate awareness and goodwill. However, at global level, awareness on the collective achievements of the BSF 3 has not been translated into a compelling narrative to relate the significance of PGRFA's conservation and sustainable use for food security in the context of climate change. The major gaps in communications in terms of quality, accessibility and frequency, were consistently expressed by all stakeholders interviewed.

Sustainability

Finding 18. For the immediate and medium-term, the BSF remains dependent on voluntary contributions. The prospects of securing funding are dependent on a more strategic, innovative and competitive programme. At project level, it is still too early to assess its sustainability, though there are promising indications. There were also risks as most Window 3 projects had no provisions for project uptake. In addition, the operations and sustainability of some community seed banks are at risk.

Cross-cutting

Finding 19. Most of the projects, especially Window 2, considered fairness and equity primarily by choosing to work in areas with high levels of poverty, including indigenous communities that were vulnerable to climate change**.** However, gender and social inclusion varied amongst projects. In addition, the project design did not specifically target the youth. With regard to the balance between rights and obligations of the Contracting Parties, much of the discussions are understandably around access and benefit-sharing. However, a number of respondents also pointed to the corresponding obligations of Contracting Parties to promote fair and equitable benefit-sharing. The obligations seem to receive less attention.

Conclusions

7. **Overall conclusion.** The evaluation concludes that the niche and added value of the BSF (past and present cycles) are due to a combination of traits: i) unique and unequivocal mandate in which 148 signatory countries and the European Union committed to the Multilateral System of Access and Benefit-sharing; ii) works with the entire array of PGRFA needed to address the immense challenges brought about by climate change; iii) representation of all stakeholders in the entire spectrum of *in situ* and *ex situ* PGRFA; iv) synergistic and mutually reinforcing Multilateral System of Access and Benefit-sharing; and v) integrated research for development with marginalized and vulnerable communities through participatory selection, development, conservation and sustainable use of PGRFA as an integral part of climate-resilient strategies.

8. **Conclusion 1. Relevance.** The BSF 3 was highly relevant in leveraging PGRFA as an indispensable element of farmers' food security and adaptation strategy for climate change. The BSF 3 was relevant and aligned at various levels linking PGRFA interventions from local, national to major international agreements, primarily with the SDGs, the Paris Agreement, the Convention on Biological Diversity and the Second Global Plan of Action.

9. **Conclusion 2. Effectiveness.** For a relatively small amount of money, the BSF 3 significantly contributed to the overall objectives of the Benefit-sharing Fund. For USD 9.7 million, the BSF 3 enabled the formation of 270 partnerships to implement 20 projects in 43 participating countries. The multi-stakeholders and multi-country collaboration and capacity building delivered a likely unprecedented number of PGRFA materials to be accessed by farmers. 20,706 varieties were characterized and/or tested for the development and adaptation in multiple locations around the world, 298 new varieties were selected and developed and 5 933 accessions were planned for inclusion into the MLS.

10. **Conclusion 3. Partnerships.** The intergovernmental mechanism of the Treaty and the partnerships within the multi-stakeholder and multi-country arrangements in the BSF 3 significantly contributed to the achievements of the projects. The partnerships generated and/or reinforced PGRFA innovations and capacity building, which otherwise were highly unlikely to be achieved by a single institution on its own. Through partnerships, the BSF 3 played a catalytic role in linking *in situ* and *ex situ* PGRFA management.

11. **Conclusion 4. Efficiency.** As the operational arm of the Treaty's Multilateral System of Access and Benefit-sharing, and by constantly evolving, the BSF 3 provided an effective and reasonably efficient funding modality. In effect, the BSF 3 enabled the funding and implementation of a number of relatively small and diverse but critical PGRFA interventions, which otherwise would not have been possible to be funded individually by major donors.

12. **Conclusion 5. Efficiency.** The third project cycle of the BSF was efficiently designed and well executed from the call for proposals, selection and approval processes. The checks and balances in project selection and approval process were rigorous. The Secretariat provided highly competent support to the selection and approval processes, and the help desk function. A good system for project cycle management is operational and the reporting and monitoring is more systematically addressed in the newly-approved Operations Manual of the BSF. However, the planning, monitoring and reporting for the BSF 3 was not consistently efficient. Lessons learned from the previous cycles have not yet been reflected on the mechanisms to help ensure greater outcomes such as linkages with other projects and partnerships, and the need for planning from the outset for the dissemination of results has yet to been included.

13. **Conclusion 6. Knowledge management.** The BSF generated rich and tangible data and knowledge on the still-developing field of PGRFA management for food security in the context of climate change. The effective knowledge management at the project level resulted in actionable climate adaptation strategies, with potentially promising outcomes. However, at the programme level, the leveraging of the knowledge generated by the BSF has so far been limited.

14. **Conclusion 7. Sustainability.** It is too early to assess the sustainability of the individual projects' activities and outcomes. Nevertheless, there were promising indications: i) many of the BSF 3 projects were linked to other programmes and plans, which could help in the uptake of the activities and results; ii) a number of projects made provisions to help ensure project continuity; iii) the results in capacity building could help sustain key project activities; iv) changes in policy and practice with a number of projects indicating intentions to pursue the collaboration with partner institutions and continue to engage farmers. However, there were also risks, given that a number of projects, particularly Window 3 projects, had not made provisions for project uptake. In addition, the operations and sustainability of some community seed banks were at risk.

15. **Conclusion 8. Cross-cutting.** Most of the projects, especially for Window 2, considered gender, fairness and equity through working with communities with high levels of poverty and vulnerability to climate change. However, the projects generally targeted individual farmers, rather than household members. This may not reflect the nature of family farming, the diversification of crops and varietal preferences between men, women and youth.

Recommendations

16. **Recommendation 1. To the Governing Body - Relevance.** To capitalize on the BSF's achievements in highlighting PGRFA as an indispensable element of farmers' food and nutrition security and climate adaptation strategy; and in line with the call of ITPGRFA's Funding Strategy, to support the nexus between biodiversity and climate change; the Governing Body should further advance the BSF's alignments with SDG 2 (end hunger), SDG 13 (climate action) and the Paris Agreement on enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change[2] by further sharpening, illustrating and concretizing the strategic importance of PGRFA for a resilient food and nutrition security in the context of climate change.

[2] Article 7, Paris Climate Agreement.

17. **Recommendation 2. To the Funding Committee - Effectiveness.** In line with the ITPGRFA Funding Strategy for the programmatic implementation of the BSF in a long-term, coordinated, synergistic and effective manner, and to further leverage the significant achievements of the BSF 3, the evaluation recommends that the Funding Committee commissions the development of the BSF multi-year programme framework, that is both strategic and operational, as well as technical and political, visionary and results oriented.

18. **Recommendation 3. To the Secretariat - Partnership.** In line with the Funding Strategy's objective to strengthen partnerships and to leverage the significant contribution of the multi-stakeholder partnerships to the BSF 3, the evaluation recommends that the Secretariat map out institutions and programmes to define synergies and further define the programmatic approach of the BSF.

19. **Recommendation 4. To the Funding Committee - Efficiency.** To improve the technical efficiency of the complex, multi-country and interdisciplinary PGRFA programme, consistent technical support for the BSF Secretariat is needed. The Funding Committee should consider extending the support of a broad range of experts not only in the selection process but also in the planning, monitoring, evaluation and learning process.

20. **Recommendation 5. To the Secretariat - Efficiency.** To ensure a more efficient project management, the BFS Secretariat needs to improve its planning, monitoring, evaluation and learning (MEL) by: i) ensuring the integration of a responsive and periodically updated plan, budget and risk management; ii) get expert support to establish the technical feasibility of the project; and iii) establish coherence in reporting.

21. **Recommendation 6. To the Secretariat - Efficiency.** To improve efficiency and transparency in contract management and reporting, the Secretariat should regularly submit and distribute the BSF's annual progress and financial reports to all the donors, the Funding Committee, the Contracting Parties and the project holders. This should be also posted on the ITPGRFA's website. This report should serve as a common template used for all donor requirements as much as possible, and it should be adjusted to specific donor requirements as needed.

22. **Recommendation 7. To the Funding Committee - Knowledge management and communications.** In line with the statement of the funding strategy on knowledge management and investing in communications, the strategic programme framework referred to in Recommendation 2 should include the development and budget allocation of a corresponding knowledge management and communication strategy. The Secretariat can formulate the design so that the BSF's contribution to the conservation and sustainable use of PGRFA is leveraged for greater reach, impact and visibility.

23. **Recommendation 8. To the Funding Committee and the Secretariat - Sustainability.** For greater reach and sustainability of the BSF projects, put emphasis on the efficiency in capacity building methods, impact pathways with clear entry and exit strategies, and extend investments to further optimize results of very well performing projects from previous project cycles.

24. **Recommendation 9. To the Secretariat - Cross-cutting.** To improve the reach to more farmers and to improve gender and social inclusion, the Secretariat should guide projects for more coherent ways of calculating the numbers of farmers reached, formalizing women's role and leadership as a project selection criterion. In the context of family farming, consider working with household as a unit rather than individual farmers.

1. Introduction

1.1 Purpose of the evaluation

25. This evaluation report presents the findings, conclusion and recommendations of the evaluation of the third project cycle of the Benefit-sharing Fund (BSF 3) of the International Treaty on the Plant Genetic Resources for Food and Agriculture (ITPGRFA).

26. The purpose of this evaluation was "to provide an independent assessment of the extent to which planned collective objectives set out in the third project cycle of the Benefit-sharing Fund (BSF 3) have been met. It also aimed at drawing lessons learned and recommendations that could inform the further development of the BSF programme and its future project cycles".

27. The evaluation was originally planned to take place from March to September 2020, but the evaluation timeline had to be adjusted due to the COVID-19 pandemic and country visits have been put on hold. The evaluation was conducted in a mixed modality: a first phase was conducted remotely and a second phase took place between April and August 2021.

28. This report accounts for the integration of the first and second phases of the evaluation.

1.2 Scope and objective of the evaluation

29. The evaluation covers the entire implementation period of the third project cycle, from 2014 to 2020. The evaluation covered the 20 operational projects.[1] The evaluation assessed the third project cycle as a whole. Given the large geographical scope of the BSF 3, the evaluation focused on a selected number of projects for the in-depth assessments. The evaluation focused on all the key activities undertaken within the BSF 3 framework covering both Window 2 (Immediate action) and Window 3 (Co-development and technology transfer) projects.

30. The specific objectives of this evaluation are to:

i. assess the relevance and scope of the projects as well as the quality of their design in responding to identified needs and priorities;
ii. assess whether the planned project results have been realized, and whether the gaps, challenges and risks in achieving the BSF 3 intended results have been overcome;
iii. identify good practices and lessons learned from the programme level and project level implementation that could feed into and enhance the further development of the BSF programme.

31. To achieve the evaluation objectives, the overarching evaluation questions, as defined in the evaluation's terms of reference (TOR), guided the assessment (see Box 1.)

[1] The total number of projects approved for funding in the third call for proposals was 22.

Box 1. Evaluation questions

EQ 1. Relevance. To what extent is the BSF third project cycle relevant, filling a gap and adding value in the management and conservation of plant genetic resources for food and agriculture at national and regional level?

EQ 2. Effectiveness and contribution to results. To what extent have BSF 3 programme and project objectives been achieved and were there any unintended results? To what extent can the attainment of results be attributed to the BSF 3 projects? How have the results demonstrated the catalytic role of the BSF in international cooperation in the conservation and use of PGRFA?

EQ 3. Partnership. To what extent have the BSF governance and partnership arrangements been appropriate and effective in fostering the conservation and sustainable use of PGRFA at different levels (global, regional, national)? How are these partnerships influencing (positively or negatively) the achievements and sustainability of the projects' expected results?

EQ 4. Efficiency. How efficient was the institutional and implementation set up? How efficient was the implementation set up at the national and regional level?

EQ 5. Knowledge management. To what extent has the BSF 3 been able to contribute to knowledge management and sharing of experiences to inform PGRFA consultations worldwide?

EQ 6. Sustainability. What are the prospects for sustaining the results beyond projects' closure? In particular, the systems in place after projects' closure to sustain key activities. What are the prospects for scaling-up the activities? To what degree is the national policy context favourable to a sustainable use of the rich diversity of PGRFA?

EQ 7. Cross-cutting issues. To what extent have cross-cutting issues such as gender, fairness and equity considerations been taken into account in the BSF projects?

1.3 Methodology

32. Adjusting to the global pandemic, the evaluation was conducted in a mixed modality: a first phase of the extensive data collection was conducted remotely, and a second phase consisting of face-to-face interviews took place between April and August 2021, when local situation and travel restrictions eased up.

33. The first phase of the evaluation relied on the following methods:

i. **Extensive desk review** of the selection and approval methodology of the BSF 3 projects, project documents (such as the call for proposals, project proposals, interim, annual and final progress and financial reports, farmer field schools (FFS) curriculum, training approaches, policy documents) as well as articles and relevant literature on PGRFA. A list of the external documents consulted is presented in the Bibliography.

ii. A portfolio analysis of the 20 operational projects to: i) present size and geographical distribution of the BSF 3 projects; ii) identify priority countries and donors' priority areas; and iii) shortlist potential countries for remote data collection as well as in-country consultations.

iii. **Semi-structured interviews** were conducted with project participants, donors, the ITPGRFA Secretariat, and relevant stakeholders as part of the methods discussed above. The evaluation team interviewed over 79 people, most of whom are experts from the partner institutions, the Food and Agriculture Organization of the United Nations (FAO), CGIAR and experts external to the projects.

iv. **Time ordered matrixes and milestones**. From 2009 to 2020 key operational changes were traced within the four project cycles of the BSF. Data collection involved operations from the design and management of each step of the BSF project cycle, helpdesk function, screening, appraisal and project selection to monitoring, evaluation and learning (MEL), as well as size and scope of operations.

34. For the first phase, the evaluation proceeded to identify a sample of projects as case studies for remote data collection. Table 1 presents the shortlisted projects for phase 1, in accordance with the following criteria:

i. Geographical balance: good representation of regions where the projects were implemented.
ii. Good balance of Window 2 and 3 single and multi-country projects.
iii. Priority for regions with plants providing around 90 percent of the average human diet (Africa and Asia).
iv. Project type: covering the different types of projects in terms of crops addressed and executing institutions.

Table 1. Shortlisted projects for phase 1 (remote data collection)

Region	Targeted countries	Project ID	Project Title
Africa	**Ghana**	W2A-PR-35-Ghana	Sustainable utilization of cowpea genetic resources for enhanced food security and poverty alleviation in the dry savannah northern regions
	Kenya (L), United Republic of Tanzania (P) and Uganda (P)	W2B-PR-26-Kenya	Promoting open-source seed systems for beans, forage legumes, millet and sorghum for climate change adaptation in Kenya, Uganda and United Republic of Tanzania
	United Republic of Tanzania (L) and **Kenya** (P)	W3B-PR-37-United Republic of Tanzania	Marker assisted selection of useful cassava germplasm adapted to biotic and abiotic stresses caused by global climate change
	Zimbabwe	W2A-PR-60-Zimbabwe	Community-based conservation, utilization and management of climate adapted Sorghum, Pearl-Millet, Cowpea and Bambara nuts in Matebeleland South Province of Zimbabwe
	Zimbabwe (L), Malawi (P); Zambia (P);	W2B-PR-42-Zimbabwe	Policies and practices to facilitate the implementation of developed Strategic Action Plans for Plant Genetic Resources conservation and use for the improvement of food and nutrition security under changing climatic conditions
Asia	**Indonesia**	W3A-PR-07-Indonesia	Development of Biomarkers Tools for Improved Production and Climate Change Resistance in Indonesian Rice
	Indonesia (L), Rwanda (P), India (P) and Brazil (P)	W3B-PR-29-Indonesia	Multi-country construction of a test platform for the development and allocation of globally-unique identifiers for rice germplasm, linking the MLS information infrastructure and the DivSeek repository
	Indonesia(L), Malaysia, Lao People's Democratic Republic and Philippines	W3B-PR-08-Indonesia	Co-Development and transfer of Rice Technologies
GRULAC	**Peru** (L), Bhutan (P), Nepal (P)	W2B-PR-23-Peru	Exchanging and Developing Biodiverse Potato Varieties in Peru, Nepal and Bhutan
	Peru (L), Ecuador (P) and Venezuela (P)	W3B-PR-05-Peru	Marker-assisted selection for potato germplasm adapted to biotic and abiotic stresses caused by global climate change
MENA	**Turkey (L), Islamic Republic of Iran (P) and Morocco (P)**	W3B PR-18	Addressing the challenges of climate change for sustainable food security in Turkey, Islamic Republic of Iran and Morocco, through the creation and dissemination of an international database to promote the use of wheat genetic resources and increase genetic gains

35. For the second phase two country case studies were launched in Kenya and Zimbabwe The country case studies were conducted by national consultants in the two countries under the

supervision of the evaluation manager and evaluation team leader. Phase 2 largely focused on farmers' perspectives on the projects for farmers' PGRFA conservation and sustainable use; and potential contributory outcomes related to climate adaptation strategies, seeds and food security. This involved participatory and gender inclusive methods to verify and expand on the findings of Phase 1. In addition, interviews were conducted with PGRFA institutions.

36. For the Zimbabwe country study, four districts were selected for the field visits. Mtoko and Murehwa Districts were selected for the Community Technology Development Trust (CTDT) project (W2B PR 42), while Gwanda and Matobo Districts were selected for Practical Action project (W2A-PR-60). A total of 162 informants (71.6 percent women and 29.4 percent men) drawn from 12 farmer groups (three per district) and other stakeholders at local, district and national level participated in the evaluation. Participants represented different group interests, for example, farmer field school participants, farmers who produced seeds, farmer leader groups, farmers who participated in community seed banks, private companies, government departments, and the FAO country office. Due to COVID-19 restrictions, a maximum of 30 people attended each community meeting. In addition to directly soliciting the perspectives of the farmers, the findings from the Zimbabwe country case study provided further evidence to confirm and substantiate the findings from the first phase of the evaluation.

37. The country case study for Kenya covered a Window 2 (W2B-PR-26-Kenya) and a Window 3 (WB3-PR-37) project. Interviews with key stakeholders (beneficiaries, executing partners, the government, resource partners, among others) were conducted face-to-face. For Window 2 (W2B-PR-26-Kenya), field visits were undertaken in two BSF sites: lower Nyando, upper Nyando. Field visits were also undertaken in Kakamega and Vihiga, where BSF approaches were further adapted. For each project site, one focus group discussion with both male and female farmers, individual interviews with two farmers (including a visit to their farms) and a seed fair were held. In addition to directly soliciting the perspectives of farmers, the findings from the country case study provided further evidence to confirm and substantiate the findings from the Phase 1 evaluation.

38. Furthermore, the evaluation also benefitted from an online survey with all the BSF 3 project partners, either as lead or co-implementing organizations during the second phase. The objective of the online survey was to further validate the first phase evaluation findings and conclusions. There was a 50 percent response rate and the survey brought in additional perspectives either from projects or project co-implementers who were not interviewed in Phase 2. Unless otherwise stated, the survey results confirmed the findings of the evaluation.

1.4 Limitations

39. A major limitation to Phase 1 evaluation were the delays to carry out field visits and farmer interviews due to COVID-19 restrictions to movement and gatherings. In the absence of direct consultations with the farmers for the first phase of the evaluation, the findings and evidence presented on effectiveness and contribution to results from the farmers' perspectives are based on triangulations of interviews with the project stakeholders and extrapolation from project documentation. This limitation was addressed during the second phase of the evaluation, where field visits and face-to-face interviews with the farmers were conducted.

40. Indonesia was also chosen as the third country case study. However, due to a series of complications, the country case study could not be completed and was not included in this report.

1.5 Structure of the report

41. Following this introduction, section 2 presents the background and context of the third project cycle of the BSF. Section 3 presents the main findings based on the evaluation questions, followed by conclusions and recommendations in section 4.

2. Background and context

2.1 Context of the project

42. The International Treaty on Plant Genetic Resources for Food and Agriculture was adopted by the FAO Conference in 2001, under Article XIV of the Organization's Constitution, and came into force in 2004. The Treaty is a binding international agreement that provides for the conservation and sustainable use of plant genetic resources for food and agriculture (PGRFA) and facilitates the fair and equitable sharing of benefits arising out of their use in harmony with the Convention on Biological Diversity (CBD).

43. The Treaty falls under Article 14 of the FAO Constitution. Article 14 bodies operate under the general institutional framework of FAO, whilst having a measure of functional and operational autonomy, to allow Article 14 bodies to attain their statutory objectives (FAO, 2016d). The Governing Body of the Treaty is composed of the Treaty's Contracting Parties (FAO, 2009).

44. As of January 2020, the Treaty has 148 countries and the European Union, working together as Contracting Parties to respond to the challenges of agro-biodiversity conservation, global food insecurity and climate change. The overall objective of the ITPGRFA is to ensure the continued existence, conservation and availability of crop genetic diversity to enhance food security around the world by using, among other mechanisms, its Multilateral System of Access and Benefit-sharing (MLS). Through its Multilateral System, the ITPGRFA facilitates access to a global gene pool of more than 2.3 million accessions of 64 crops (FAO, n.d.) – *which constitute the basis of over 80 percent of the world's plant-based foods* (FAO, 2009) – for agricultural research and breeding of new crop varieties to achieve higher yields and nutritional values that are adapted to emerging climate conditions.

45. The Benefit-sharing Fund was established in 2009 by the Treaty's Contracting Parties in the spirit of multilateralism to fund projects in developing countries to increase crop diversity and enable a dynamic exchange of plant genetic material for increased adaptation, agricultural diversification and food security. The BSF is an essential element of the ITPGRFA's Funding Strategy and facilitates the implementation of the various Treaty, enabling mechanisms such as the Multilateral System, through the conservation, use and inclusion of materials, and the Global Information System (GLIS).

46. BSF is the operational mechanism for receiving, utilizing and sharing the monetary benefits arising from Multilateral System at field level, as specified in Article 19.3.f of the Treaty. The BSF is under the direct control of the Governing Body. Since the launch of the BSF in 2009, a total of USD 26 million has been invested in four project cycles, involving 67 developing countries in the implementation of 80 projects for the conservation and sustainable use of crop diversity as well as the development and transfer of relevant PGRFA technologies. The third project cycle (BSF 3) contributes to the overall objective of the BSF: *to increase crop diversity and enable a dynamic exchange of plant genetic material for increased adaptation; agricultural diversification and food security*.

2.2 Evolution of BSF

47. Since its first pilot cycle in 2009, the BSF has evolved to the fourth cycle, which was initiated in 2017. Table 2 presents the evolution of the BSF mechanism, capturing the major changes on the project selection criteria, operational process, selected countries, average project duration, and

main funding source of the four project cycles of the BSF (findings on the evolution of the BSF are under EQ 4 on Efficiency, Finding 13).

Table 2. Evolution of the BSF-major changes

Major changes	BSF 1 (year 2009–2012)	BSF 2 (year 2012–2016[2])	BSF 3 (year 2015–2020)	BSF 4 (2017)
Thematic Windows	No Windows	W1 and W2	W2 and W3	Transition to a programmatic approach
Project Selection Criteria and Support	Pilot phase	Help desk set up prioritizing underrepresented regions Two meetings of the Panel of Experts to shortlist best projects	Comprehensive package of documents made available to applicants, including the selection criteria three regional workshops were conducted to support full proposal preparation Screening and appraisal conducted remotely by Panel of Experts	The Panel strongly emphasized that applicants should articulate more substantially their gender approach Workshop organised for joint development of BSF-4 programme with selected partners
Operational Process	Pilot phase	Set up of Panel of Experts for proposal selection carried throughout BSF The budget allocated for the call for proposals was higher than actual budget, raising false expectations	Report on lessons learned in the management of BSF prepared by the Secretariat and applied to BSF operations Policy on conflict of interest approved at Governing Body session (GB-5) and applied to the screening and appraisal conducted by the experts	Methodology followed the BSF 3 (fixed assumptions, mathematical calculations, regional distribution of eligible pre-proposals, regional distribution of eligible Contracting Parties, funds available, etc.) to estimate the numbers of proposals to be funded
Selected Countries	Africa 27% Near East 18.2% Asia 9.1% GRULAC 45.5% SWP 0 ERG 0	Africa 29% Near East 18% Asia 25% GRULAC 25% SWP 4% ERG 0	Africa 27% Near East 18% Asia 23% GRULAC 23% SWP 4.5% ERG 4.5%	Africa 49% Near East 12% Asia 14% GRULAC 21% SWP 1% ERG 3%
Average Duration per Project	two years	Min one year Max two years	Min one year Max four years	Min 18 months Max four years
Average Funding per Project	50 000	Min 200 000 Max 400 000	Min 150 000 Max 800 000	Min 250 000 Max 450 000
No. of New Materials Deposited to MLS	1 776	2 000	7 000[3]	TB
Main Funding Source[4]	Italy, Norway, Spain, Switzerland	Spain, Italy, Ireland, Australia, IFAD, Norway	Norway, European Union, Italy	Norway, Italy, Australia, Sweden, ISF, ESA and GNIS
Total Budget per Cycle	500 000	9 059 933	10 078 580	6 000 000

[2] The projects that became operational in 2014 concluded in 2016.
[3] According to preliminary plans of inclusion, to be monitored after the closure of portfolio. The number has been calculated based on the plans of inclusion on material in MLS submitted by the implementing partners. According to the conditions set out in the Letter of Agreement (paragraph 6.w), material will be included in the MLS within one year after the completion of project activities.
[4] Voluntary and user-based payments from donors and private sector.

2.3 Overview of the BSF 3

48. The third call for proposals was launched in 2014 and more than 394 pre-proposals were received. After several stages of screening, a total of 64 full project proposals were submitted to an Independent Panel of Experts for further appraisal and a total of 22 project proposals were approved for funding by the Bureau of the Sixth Session of the Governing Body of ITPGRFA. However, due to specific contract constraints in two countries, only 20 projects were operational. The overall outcome of the BSF 3 is to improve adaptation to climate change and enhance the food security of resource-poor farmers in selected developing countries by strengthening the sustainable management of plant genetic resources for food and agriculture.

49. The BSF 3 has two thematic Windows for funding projects: Window 2 (Immediate action projects) and Window 3 (Co-development and technology transfer). The BSF 3 portfolio consists of 20 operational projects for both Window 2 and Window 3:

i. ***Window 2 - Immediate action projects.*** Support activities that ensure that local and improved crop varieties of importance for food security are conserved, (re)introduced, developed and maintained in farmers' fields through on-farm conservation and management of plant genetic resources primarily at farm and community levels. Window 2 includes four single country projects (with a duration of two years and budget ranging from USD 150 000–300 000) and five multi-country projects of four years and budget of USD 800 000.

ii. ***Window 3 - Co-development and technology transfer projects.*** Aim to enable the exchange of value-added information about PGRFA through scientific research and study and identify specific traits that tolerate climate-induced stresses. Window 3 includes two single country projects (with an average budget of USD 150 000 and an implementation duration of 12 to 24 months) and nine multi-country projects and an average budget of USD 500 000 with a three-year implementation duration.

50. The 20 operational BSF 3 projects had an estimated total budget of USD 9 778 864. Table 2 presents the distribution of projects by Window and project type.

Table 3. Overview of the BSF 3 operational projects

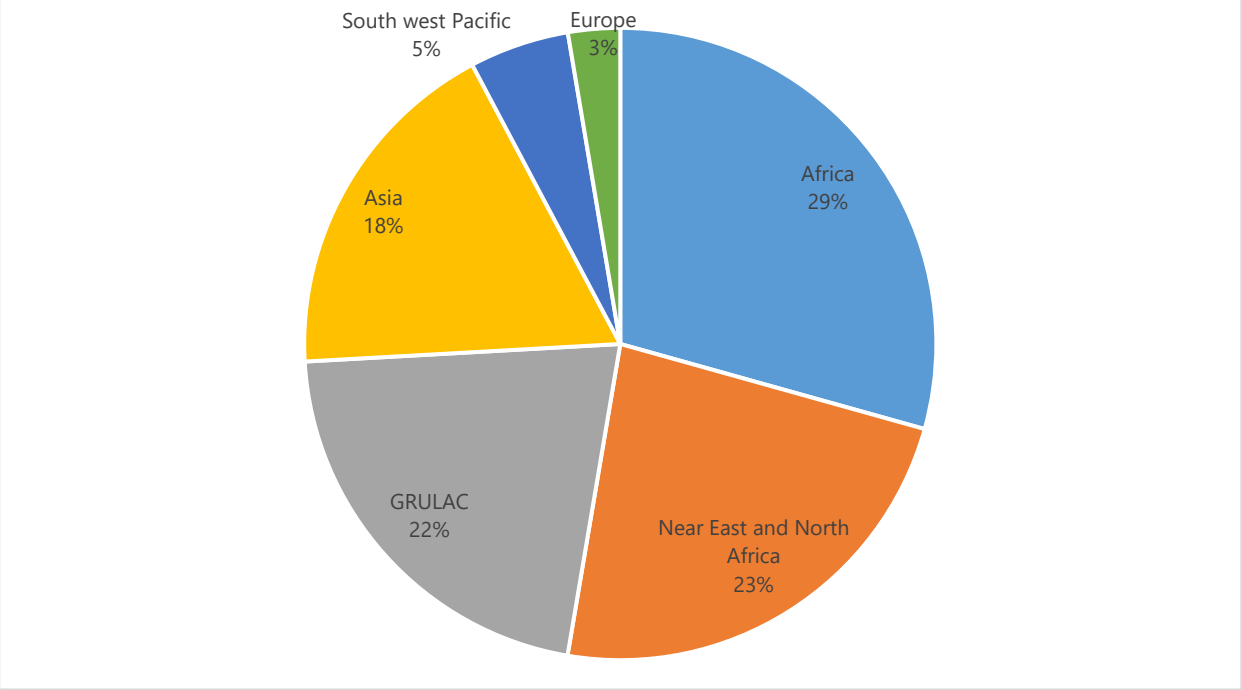
Window	Project Type	No. of projects	Total Budget (USD)	Regions *(with number of. projects per region)*
Window 2	Single country	4	1 206 609	Africa (3), and Europe (1)
	Multi-country	5	3 984 108	Africa (2), GRULAC (2) and Europe (1)
Window 3	Single country	2	437 269	Asia (2)
	Multi-country	9	4 450 594	Africa (1), Asia (3), Europe (1), Middle East (2), GRULAC (1) and SWP (1)
BSF 3 Total		20	9 778 864	

Source: BSF 3 database, 2020.

51. The implementation arrangement for the BSF 3 was mainly through the FAO Letters of Agreement (LOA), with a wide range of executing agencies including government agencies, national and international research institutes, universities, non-governmental organizations (NGOs), community-based organizations and genebank. The 20 projects cover 45 developing countries across Africa, Asia, Europe, GRULAC, Near East and North Africa, and South-West Pacific. Figure 1 presents the geographical distribution of projects by region. The final beneficiaries of the BSF 3

projects are vulnerable communities in the target countries that aim to improve resilience and food security through the management and conservation of PGRFA. Based on BSF 3 projects' statistics, there are 97 837 direct beneficiaries (including farmers, researches, breeders, genebank curators, governmental officials and students) and more than 856 711 indirect beneficiaries.

Figure 1. Geographical distribution of BSF 3 operational projects (number of projects)



Source: BSF 3 database, 2020.

52. The overall BSF 3 Logical framework developed by the Secretariat outlines the intervention logic of the BSF 3 programme and provides an overview of how the outputs/activities of the BSF 3 projects contribute to seven priority results areas. The seven results areas are:

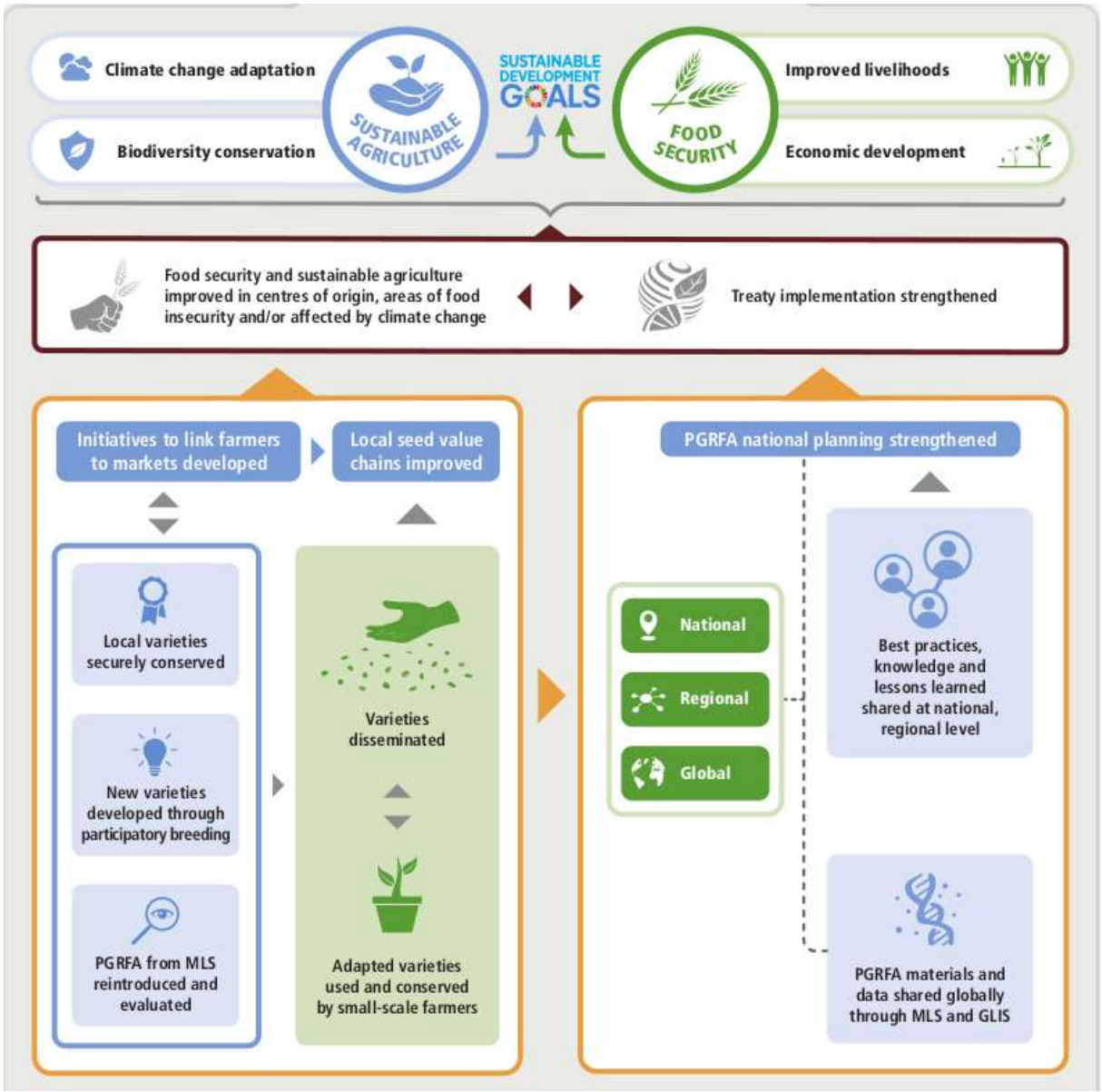
i. **Result area 1.** Locally adapted varieties or other genetic material successfully conserved and used.
ii. **Result area 2.** Technologies for the conservation and sustainable use of PGRFA co-developed by and/or transferred to selected developing country PGRFA institutions.
iii. **Result area 3.** Information created, disseminated and accessed by lead institutions on scientific, technical and environmental matters related to PGRFA, including genotypic and phenotypic data.
iv. **Result area 4.** Increased capacity of resource-poor farmers to conserve and manage PGRFA in specific areas vulnerable to climate change.
v. **Result area 5.** Increased capacity of PGRFA institutions and researchers to conserve and manage PGRFA.
vi. **Result area 6.** Evidence-based plans and priorities to help resource-poor farmers adapt to climate change, developed by consortia of PGRFA institutions as building blocks for future policy development and investment.
vii. **Result area 7.** Awareness on the ITPGRFA and value of PGRFA to meet future challenges is raised at the national, regional and international levels.

2.4 Theory of change

53. The BSF is an essential element of the ITPGRFA's Funding Strategy. Figure 2 shows the theory of change of the Benefit-sharing Fund as presented in the *Funding Strategy of the International*

Treaty on Plant Genetic Resources for Food and Agriculture 2020–2025 (FAO, 2019c). In summary, the BSF contributes to the SDGs by providing farmers access to a wide range of PGRFA materials that are suitable for their needs for food security and climate change adaptation. As stated in the new Operations Manual for the Benefit-sharing Fund the "Benefit-sharing Fund enables small-scale farmers, scientists and breeders to tap into the Treaty's global gene pool of millions of different genetic materials to undertake research and develop new crop varieties. (…) Plant breeding efforts with the participation of farmers are supported and the capacity to develop quality varieties particularly adapted to socio-environmental conditions and of high quality are being strengthened. Lessons learned from actions funded help to inform national planning and decision-making on PGRFA. (…) The Benefit-sharing Fund transcends the divide that is often seen between in-situ/on-farm and ex-situ conservation, and shows how different initiatives from farming communities through national and international genebanks are linked together through the International Treaty. Knowledge, information and germplasm generated through the Benefit-sharing Fund feeds back into the Treaty enabling mechanisms, expanding the resources available all over the world to improve food security and sustainable agriculture" (FAO, 2019).

Figure 2. BSF theory of change



Source: Funding Strategy of the International Treaty on Plant Genetic Resources for Food and Agriculture 2020–2025.

54. The evaluation made the following observations, that could be integrated into the story line for the review of the BSF's theory of change:

i. PGRFA is an indispensable asset for climate change adaptation and mitigation, and related disaster risk reduction. At the same time, climate change is a major cause for the erosion of PGRFA. The increasingly erratic seasonal variations, extreme weather events, multiple and protracted climate shocks are compounding the severity of abiotic and biotic stresses of crops, including more virulent and new transboundary plant pests and diseases. Threats to PGRFA correspondingly put local and global food systems at risk. The ITPGRFA's Multilateral System of Access and Benefit-sharing catalyses multiple stakeholders in multiple countries to access, exchange, conserve and sustainably use PGRFA. This is done through innovation in the co-creation of a diversity of locally-adapted climate-resilient crops, varieties, and the identification of multiple traits variations. In addition, knowledge management such as technologies and software sharing platforms facilitate international cooperation for more effective PGRFA management and sharing of information that are responsive to the interdependence of countries on PGRFA for their national food systems.

ii. Whilst men and women farmers continue to adapt and develop PGRFA in highly diverse agroecologies, they are very vulnerable to the impacts of climate change. These impacts result in crop failures, food crises, economic shocks and conflicts. The continuous access to, exchange and development of, and the conservation through the use of PGRFA are an important contributory factor in reducing climate vulnerabilities and building capacities for resilient livelihoods. With only 10 percent of smallholder farmers worldwide who are able to access seeds from formal institutions (ISF, 2021), only a limited number of public and private institutions have been able to effectively and sustainably respond to the PGRFA requirements of the highly diverse agroecologies of smallholder farmers, especially for women and the most vulnerable groups. For instance, 80 percent of farmers in Africa rely on farm-saved seeds and the local informal markets (FAO, 2016b). The BSF enhances the international cooperation of PGRFA institutions to work with and support farmers' access and use of PGRFA, as part of their climate adaptation strategies for food and nutrition security.

iii. Technology innovations (such as the outputs of BSF 3) can only be sustained and scaled up and out with the accompanying institutional innovations (changing the rules of the game) and the related policies. The continuous flow of PGRFA for conservation and sustainable use depends on good governance enabling functional complementarities between technology innovations and institutional innovations from a local to a global level. Intergovernmental cooperation and partnerships are essential to facilitate the flow of materials through the gene pool of the Treaty's MLS that in turn generate innovations such as new materials for the farmers and eventually for the MLS.

3. Findings

3.1 Relevance

EQ 1. To what extent is the BSF third project cycle relevant, filling a gap and adding value in the management and conservation of plant genetic resources for food and agriculture at national and regional level?

Finding 1. The BSF 3 was, to a great extent, relevant in filling gaps and adding value in the management and conservation of plant genetic resources for food and agriculture. Both the Immediate Action projects (Window 2) and the Co-development and transfer of technology projects (Window 3) were well aligned to relevant international agreements and goals of the United Nations, primarily the Sustainable Development Goals (SDGs). The BSF 3 was also highly aligned and strategically linked with the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (GPA), the Convention on Biological Diversity (CBD) and the various articles of the International Treaty, including its updated Funding Strategy.

3.1.1 Alignment with relevant international agreements and goals of the United Nations

55. The BSF 3 was well aligned to the following Sustainable Development Goals: 1 (No Poverty), 2 (Zero Hunger), 12 (Responsible Production and Consumption), 13 (Climate Action), 15 (Life on Land) and 17 (Partnerships for the Goals). More specifically, BSF was aligned to the following targets of the SDGs:

    i. SDG 2.5: "By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed."
    ii. SDG 2.a: "Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock genebanks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries."
    iii. SDG 13.1: "Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries."
    iv. SDG 15.6: "Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed."
    v. SDG 17.16: "Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries."
    vi. SDG 17.17: "Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships."

56. BSF 3 was also highly aligned and strategically linked to the following international agreements and frameworks:

    i. **The Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC),** particularly Article 7: "Enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response."

ii. **The Convention on Biological Diversity (CBD):** "Strategic Plan for Biodiversity for the period 2011–2020", particularly Target 13 of the Aichi Biodiversity Targets: "By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity." A number of CBD targets also relates to the BSF's focus on the conservation and sustainable use of PGRFA.

iii. **The Second Global Plan of Action (GPA)** on the conservation and sustainable use of PGRFA, including through national actions and international cooperation to provide a coherent framework, for capacity building, technology transfer and exchange of information, taking into account the provisions of the Treaty's benefit-sharing (Article 13) in the Multi-Lateral System (Article 12). The priorities of the third project cycle of the BSF aimed to catalyse the conservation (Article 5) and sustainable use (Article 6) of PGRFA reflecting the core priorities of the second GPA.

iv. **The ITPGRFA Funding Strategy and the Multilateral System of Access and Benefit-sharing:** The BSF is the operational mechanism for receiving, utilizing and sharing the monetary benefits arising from the Multilateral System, as specified in Article 19.3.f of the Treaty. The third cycle of the BSF was developed with the aim of integrating into and contributing to the development of the programmatic approach of the Funding Strategy. "The Benefit-sharing Fund supports *in situ* and on-farm management and improvement and creates linkages with broader *ex situ* conservation efforts." (FAO, 2019c). It facilitates both farmer to farmer exchanges of seed and enables the exchange of PGRFA materials between farmers and with the *ex situ* collections.

3.1.2 Alignment with national and regional priorities and policies on food security, climate change and agro-biodiversity

57. The BSF 3 projects were relevant and aligned to national and regional priorities/programmes on food security, climate change and agro-biodiversity. For example, the projects in Eastern and Southern Africa were respectively aligned to the Eastern Africa Plant Genetic Resources Network (EAPGREN) and the Southern African Development Community (SADC) Plant Genetic Resources Network's priorities. The BSF 3 projects focused on Annex 1 crops that are of vital importance to national and regional food security in the context of climate change. The evaluation found that, although the links between nutrition and agriculture were not openly expressed in the BSF 3 call for proposals, a number of projects took into account the connection to nutrition and food security.

i. As part of the Southern Africa's priority focus on crop diversification, the projects in Malawi, Zambia and Zimbabwe (W2B-PR-42 and W2A-PR-60) focused on drought resilient and nutritious small grains such as millet (*Panicum miliaceum)* and sorghum *(Sorghum bicolor*), as well as pigeon pea *(Cajanus cajan)* and cowpea (*Vigna unguiculata)*. In Zambia, for example, the project is aligned with national policies, strategies and plans such as the National Agriculture Policy, National Climate Change Management Policy, National Food Security and Nutrition Policy, as well as the National Gender Policy.

ii. Cassava (*Manihot esculenta*) is important to the National Food Plans of Kenya and United Republic of Tanzania (W3B-PR-37). Cassava is adapted to nutrient-poor soils and low rainfall. It is perennial, with a wide harvesting window, which can be a buffer and reserve food source during food shortages. It is also valuable in managing labour schedules. The effects of global climate change such as increased heat or cold, drought or flooding, and widening pathogen spectrums are threatening cassava cultivation. Given the crop's significance, especially in sub-Saharan Africa, strengthening the capacities and cooperation of a fragmented cassava breeding system in the region is highly relevant.

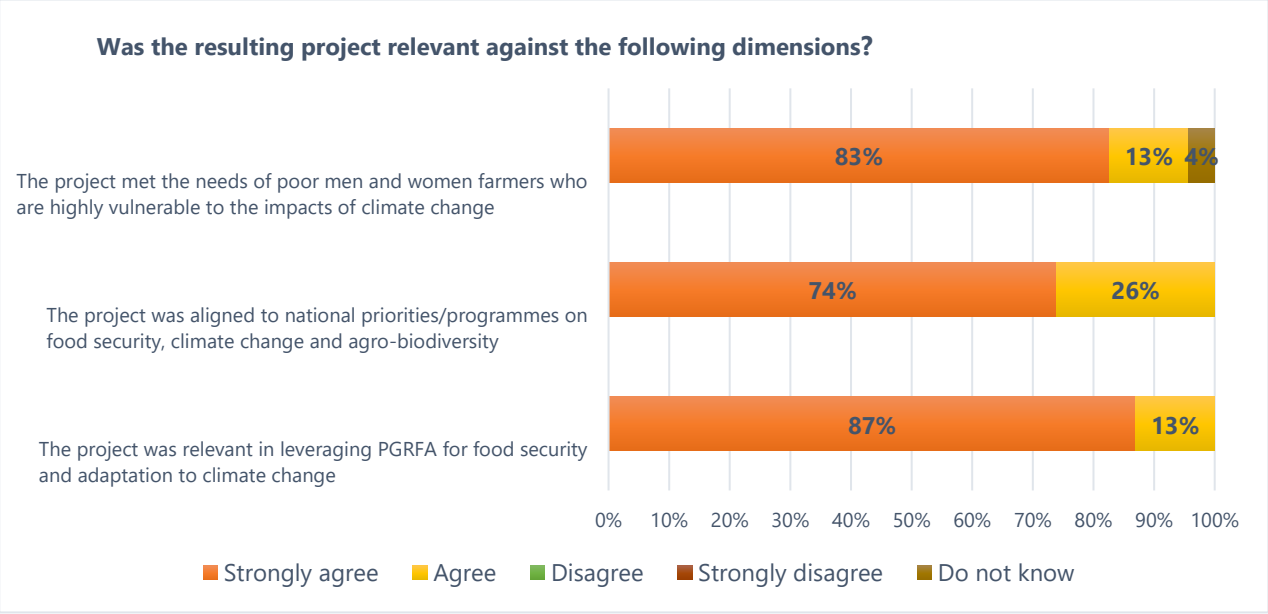
iii. In Ghana (W2A-PR-35), the project focused on striga-resistant, drought-tolerant, early-maturing, high-yielding and nutritious cowpea varieties. Striga affects about 40 percent of the agricultural lands in Ghana, where farmers suffer serious yield losses of 80 percent to 100 percent. This project is aligned with the Government of Ghana's strategic initiative "Planting for Foods and Jobs", where cowpea is a priority crop to ensure food security and poverty reduction.

iv. In Asia, the projects led by Indonesia (W3A-PR-07, W3B-PR-29) worked on rice *(Oryza sativa)*, which is the staple food for nearly one-half of the world's population, and is a priority crop for food security in many Asian countries. Rice contributes to and is impacted by climate change. Strengthening the capacities and coordination of a fragmented rice breeding system is important for more sustainable production in the face of extreme weather events such as prolonged drought, flooding, as well as other factors such as soil salinity and more virulent pests and diseases.

v. The Islamic Republic of Iran, Morocco and Turkey (W3-PR-18) were aligned to regional and national priorities and policies. Wheat is the principal crop in the region and climate change will affect food security. The introduction of new wheat varieties adapted to low rainfall and terminal heat, with increased water use efficiency, is vital to mitigate the impact of these potential changes on food security while ensuring sustainability.

58. These findings were also confirmed by the survey results. As shown in Figure 3, all respondents agreed that the BSF 3 projects were relevant in leveraging PGRFA for security and adaptation to climate change, with 87 percent who strongly agreed. With regard to the alignment to national priorities/programmes on food security, climate change and agro-biodiversity, all respondents agreed that the BSF 3 projects were aligned.

Figure 3. Survey respondents' rating of the relevance of the BSF 3 project



Source: Evaluation team BSF3 partner survey.

3.1.3 Responding to the needs of the beneficiaries (men and women farmers)

Finding 2. The projects of both Windows were targeted to meet the needs of men and women farmers who live in poverty and are highly vulnerable to the impacts of climate change. Window 2 created added value to the climate adaptation strategies of men and women farmers, while Window 3 created added value information for the development of climate-ready traits and plant varieties potentially for the benefit of farmers.

59. The design and expected results of the case study projects for both Windows were highly relevant and generally appropriate in meeting the needs of the final beneficiaries (i.e. men and women farmers). Window 2 projects were designed to directly support farmers with on-farm conservation and use. The crop focus, the participatory process of access to and selection of the diversity of PGRFA, and the capacity building approaches in engaging and enhancing farmers' knowledge and skills were highly relevant. Most of the case studies aimed at women's participation. Window 3 aimed at building capacities and promoting South-South cooperation of PGRFA institutions. By design, the relevance of Window 3 projects to farmers were strategic and indirect. The co-development of technology was designed to access and adapt technologies to the needs of PGRFA institutions in developing countries and emerging economies. Capacity development of Window 3 projects aimed to speed up the identification and creation of new gene pools, including genome wide scans for complex traits, which were potentially relevant to farmers. For both Windows 2 and 3, the broadening of the genetic base of crops is especially needed to respond and adapt to climate change impacts. The adaptability of crops is dependent on the existence and use of genetic diversity (Cooper and Spillane and Charles and Hodgkin, 2001).

60. The targeted areas/sites of all the selected projects were represented by farming communities living in poverty and being highly vulnerable to climate change impacts. All project sites reported direct experience of climate change, including severe and erratic weather patterns, drought, flooding and an increase in frequency and/or virulence of pests and diseases. These farmers were marginalized with very little access to weather information, extension services and seeds. In Africa, about 80 percent of farmers rely on farm-saved seeds, seed exchange with other farmers and the local markets (FAO, 2016b). While their landraces were generally resilient, changing conditions require broader climate-resilient PGRFA. In addition, mainstream plant breeding generally does not cater to the needs of these smallholder farmers in highly-diverse agroecologies and socio-economic conditions. With a constantly changing environment and market conditions, the lack of access to climate-resilient PGRFA further threatens the food security and livelihood of these highly vulnerable communities. For example:

    i. The project led by Peru (W2B-PR-23) identified resource-poor, potato-consuming communities with high levels of poverty and food insecurity in the districts of Dolakha and Jumla in Nepal, Bumthang and Tashigang in Bhutan, and the region of Cajamarca and the districts of Pataz, Quilcas, and Yauli in Peru. Farming communities in the Himalayan and Andean high mountain environments are among those disproportionately affected by the changing climate.
    ii. Most of the targeted project areas in Malawi, Zambia and Zimbabwe (W2A PR 60, W2B PR 42) had a poverty level of up to 72 percent and constituted agrarian areas with the lowest rainfall in the country. The region suffered from highly erratic weather patterns, with the worst drought in 20 years followed by flooding. Most of the formal sector breeding focused on maize. However, maize in Zimbabwe suffered from crop failures as a result of the recurring drought and it was infested by the fall armyworm. Both projects focused on drought resilient and nutritious crops such as millet and sorghum, as well as legumes for added soil nitrogen fixation.
    iii. The project in Kenya, Uganda and United Republic of Tanzania (W2B PR 26) was implemented in four locations with various climate profiles ranging from hot and humid to dry semi-arid. All of the sites experienced various climate-related challenges including shifting and shortening of the growing seasons, shorter and poor distribution of rainfall, higher temperatures, drought, and in some instances, flooding.

61. These findings were confirmed by the survey results. As shown in Figure 3, about 83 percent strongly agreed that the projects met the needs of poor men and women farmers, who are highly vulnerable to the impacts of climate change.

3.1.4 Regional balance in the geographical distribution of projects

62. **Finding 3.** At global level, the geographical distribution of the projects in the six regions was proportional to the regional allocation of eligible Contracting Parties and the regional distribution of eligible pre-proposals. However, there were marked imbalances in the number of approved projects within both the African and Asian regions. Indonesia led three out of the five projects in Asia, whilst Francophone sub-Saharan Africa was absent in BSF 3 since none of the submitted full project proposals (six) were selected for funding.

63. Table 3 presents the geographical distribution of the approved BSF 3 projects in the six regions. Within the Africa region, Francophone sub-Saharan Africa was absent in BSF 3. Despite the relatively high number of pre-proposals submitted, only six proposals from Francophone sub-Saharan Africa made it to the list of the total of 57 full project proposals that were assessed by the Panel of Experts. However, none of these six project proposals made it to the final selection. The absence of Francophone sub-Saharan Africa was not discussed at the Bureau level, where the final decision was made. The Bureau looked at regional representation, but not at the balance within regions. Neither was this discussed at the regional level amongst the African Contracting Parties. According to a respondent from West Africa, despite their request, the reason(s) for the rejection of their proposal was not communicated to them. According to the Secretariat, they only provide the reason(s) for the rejection of proposal upon request of the applicant. The evaluation team reviewed a sample of the rejection correspondence and observed that the lack of a clear process in communicating the reason(s) could be subject to some misinterpretation. For instance, there is no standard template, for example with a two-sentence summary of the reason(s) in the rejection letter. Upon request of a rejected applicant, the scores of the proposal were sent by the Secretariat, with an explanation that the proposal was scored relatively high but ranked low. However, the applicant was not provided with information as to where the proposal was strong and where it was weak.

64. In the case of Asia, the evaluation observed a high concentration of projects in Indonesia. Out of the five projects implemented in Asia, three were led by Indonesian institutions (see Table 1 and Appendix 1). Overall, the Asian region submitted very few eligible pre-proposals for Window 3. As for the eight proposals from Asia that made it to the selection by the Panel of Experts, four proposals were from Indonesia, thus increasing their chance of being selected. Like all selected projects, the Indonesian projects were subject to the same selection methodology and criteria. The Indonesian proposals were of high quality and accordingly received high scores from the Panel of Experts.

65. While the intraregional distribution of projects was not a BSF 3 criterion, a number of experts from Africa stated that the call for proposals was at times difficult to interpret and adapt to their regional needs. They thought that the inclusion of their regional context and priorities could guide proposal development, help desk support and the selection process for the Panel of Experts. In terms of the selection process, the evaluation found that at the technical level, in the Panel for project selection, there were limitations to the number of experts who had both French language proficiency and knowledge of the context of the Francophone sub-Saharan Africa region. In addition, as there were more proposals from Africa, the number of experts from the region was not proportionate to the number of proposals that needed to be assessed and scored.

Table 4. Geographical distribution of the BSF 3 projects

Region	Regional representation of eligible Contracting Parties (%)	Number of eligible pre-proposals submitted	Number of proposals in shortlist A after the second step appraisal by experts	Number of full project proposals received	Shortlisted by experts based on the cut-off established in the methodology	Approved by Bureau
Africa	39.5	75	37	18	6	6
Anglophone Africa		*50*	*28*	*12*	*6*	*6*
Francophone Africa		*25*	*9*	*6*	*0*	*0*
Near East	18.70	49	26	14	4	4
Asia	14.30	26	12	8	5	5
GRULAC	15.40	33	19	14	5	5
SWP	4.40	3	2	2	1	1
Europe	7.60	2	2	1	1	1
Total	100	188	98	57	22	22

3.2 Effectiveness and contribution to results

EQ 2. To what extent have BSF 3 programme and project objectives been achieved and were there any unintended results? To what extent can the attainment of results be attributed to the BSF 3 projects? How have the results demonstrated the catalytic role of the BSF in international cooperation in the conservation and use of PGRFA?

3.2.1 Strengthened capacities at national and regional levels for improved conservation and management of PGRFA

66. **Finding 4.** To a large extent, the evidence collected shows that the BSF 3 has contributed to strengthening capacities at national and regional levels for improved conservation and management of PGRFA. The capacity development and the co-development of technologies under Window 3 facilitated the cooperation of national PGRFA institutions within and between countries. This enabled projects in the South [developing countries] to access technologies from the North [developed countries] or from international research organizations, and adapt such technologies to their own context and priorities.

67. The capacity of more than 270 local and national institutions was strengthened with the objectives to conserve, manage, improve and disseminate plant genetic resources. This included more than 4 000 researchers and breeders with strengthened capacities in participatory breeding, genomic sequence and phenotypic data. In addition, 5 000 students, both MSc and PhD, were trained in participatory methods of plant breeding and the practical application of genomics, phenotyping and molecular techniques. This was achieved through a combination of training, mentoring and active learning-by-doing. In total, about 30 percent of researchers, breeders and students were women. A number of trainings resulted in publications, participation in related projects and conferences. The technological outputs such as PGRFA characterization and materials, software for information exchange and tools correlate to the quality of the capacity building.

68. BSF 3 responded to both the challenges and opportunities in PGRFA management and conservation that are being faced by developing countries and emerging economies. On the one hand, the challenge is that a changing climate contributes to the increasing severity of crop abiotic and biotic stresses. The consequences may include crop failure and an increased virulence of pest and diseases. For the BSF 3 projects, climate change adaptation required sustainable agronomic practices that employed a combination of crop and varietal diversification as well as breeding for climate-resilient traits. On the other hand, there are potential opportunities in the vast

technological advancement in, for example, gene mapping and marker-assisted breeding coupled with the potential use of over 2.3 million accessions under the Multilateral System (MLS), as well as the materials managed *in situ* by smallholder farmers.

i. Window 3 facilitated the cooperation of national PGRFA institutions mostly within and between countries. This contributed to their capacity building and the co-development of technologies, which had three inter-connected results: i) enabling projects in the South to access technologies from the North or from international research organizations and adapt such technologies to their own context and priorities; ii) South-South capacity building through co-development of technologies that could potentially facilitate germplasm exchange and related information; iii) pooling of expertise and knowledge sharing towards addressing the fragmented research and development in rice, cassava, wheat and potato, etc.. For example: the Indonesian-led multi-country project (W3B PR 29) involved 13 countries mainly from Asia, two countries from Africa, and the Netherlands, who jointly developed a Test Platform for the Development and Allocation of a digital object identifier (DOI) for rice. The project is a follow-up on DOIs for rice pioneered by the International Rice Research Institute (IRRI). Each of the participating countries provided inputs based on their needs and expertise and adopted common DOIs for rice. The capacity building was not only at the technical level. Countries also benefitted from the direct interactions with each other. They also learned to cooperate with other countries and support each other. In addition, while the DOIs were developed for rice, this project was important for the whole functioning of the Treaty. DOIs is an international standard adapted to identify plant germplasm worldwide. It allows for a common system of identification for registration and access to the accessions. The project suffered from implementation delays and, due to Indonesian law, it was not possible to extend the period of project implementation. Further refinement and full uptake of project results are still pending.
ii. Kenya and United Republic of Tanzania (W3B-PR-37), which were led by the Mikocheni Agricultural Research Institute, cooperated to further enhance their previous experiences in field and laboratory research on the use of molecular techniques to identify and characterize largely unexplored cassava germplasm for East Africa. They collaborated with NEIKER (Basque Institute for Agricultural Research and Development in Spain), who provided the training on advanced molecular tools to identify multiple candidate genes and combined multiple traits through model building for assigning parental breeding values and to predict progeny performances. The project reached out to genebanks and breeders in Kenya and United Republic of Tanzania with a set of molecular markers and predictive models, which were useful for assessing adaptation to abiotic stresses in germplasm, progenitors and breeding clones. The models can be used to develop novel Cassava varieties with improved stress adaptation. The applied concept, using Cassava as a model species of the genus *Manihot,* can be potentially applied to other related species and crops. Farmers accessed and tested cassava materials, and thereby also provided a model of upstream research collaboration with farmers in cassava PGRFA management.
iii. NEIKER played a similar role in the potato project with Ecuador and Peru (W3B PR 05). Led by the Universidad Nacional Agraria La Molina, Instituto de Biotecnología (UNALM-IBT) In Peru, NEIKER provided the molecular analysis, the association mapping and the software for the statistical analysis, including the corresponding capacity building. For the partners in Ecuador and Peru, this was a good opportunity to use new technologies to accelerate and improve potato breeding processes at a lower cost. It was the first time that this approach was used in Ecuador. However, the project design did not include specific plans for project uptake with plant breeding in the countries.

iv. The joint project in the Islamic Republic of Iran, Morocco and Turkey (W3B-PR-18) provided capacity building of young scientists in the collaborating countries to characterize and design breeding strategies of winter wheat for low rainfall areas. The technology transfer, which was led by the International Maize and Wheat Improvement Center (CIMMYT), focused on initiating the use of DNA markers, on the strategic planning of crosses by using superior parental wheat lines, and on the sharing of the data base of the project to identify genetic resources adapted to drought and high temperature conditions. Although the project suffered from high staff turnover and project delays from the three countries, it facilitated the development of successful proposals with partner institutions in the Islamic Republic of Iran, Morocco and Turkey. The data from the project also provided the opportunity to publish and link with the scientific community all over the world. It is yet to be seen if the participating countries will further develop and take the lead in new collaborative efforts in the future.

69. The survey results confirmed the above findings, where all respondents agreed that the project contributed to increased capacities of PGRFA institutions. About 91 percent of the respondents agreed that the projects led to stronger political will in support of PGRFA collaboration. Furthermore, 74 percent of the respondents made use of South-South cooperation. While 95 percent of the respondents agreed that the project enabled access to useful technologies for developed countries or from internal organizations.

70. Window 2 projects have also engaged in capacity development for PGRFA institutions, although they put greater emphasis on building capacities of men and women farmers.

i. In Kenya, Uganda and United Republic of Tanzania (W2B-PR-26), training was conducted for young and mid-career professionals in Africa on resilient seeds and climate change. All participants worked in the fields of breeding and genetics, genebank management and conservation, climate change adaptation, seed systems, research and extension with a background and/or practical knowledge of genetic resources management and conservation, climate change adaptation, as well as global and national policy frameworks for access and benefit-sharing. In addition, the project invited CTDT BSF 3 project partner from Zimbabwe (W2B PR 42), who provided a course on resilient seed systems for climate change adaptation for government staff working in national genebanks and plant certification bodies. A workshop on scaling community seed banks (CSB) was held in Uganda, which also targeted national genebanks of Kenya, Uganda and United Republic of Tanzania together with other actors in the seed system. In addition, technical staff from national genebanks, plant breeders and the Agricultural Research and Development Institute in Uganda, were trained in crowdsourcing methodology and participatory varietal testing and selection.

ii. Multi-stakeholder workshops on the Multilateral System of Access and Benefit-sharing, were held in Malawi, Zambia and Zimbabwe (W2B-PR-42). These were conducted by the BSF partners with the national genebanks of the countries. Training workshops contributed to the knowledge sharing on Access and Benefit-sharing and documentation of accessions, that the three partners compiled for potential inclusion for the MLS. Additional training workshops were organized to enhance the institutional capacities of partners and collaborating institutions to work on seed-related policies and legislations.

3.2.2 Co-developed and/or transferred technologies for the conservation and sustainable use of PGRFA

71. **Finding 5.** To a large extent, the BSF 3 enabled the co-development and adaptation of technologies amongst developing countries. The outputs in terms of identified and developed

PGRFA materials and software were significant. In addition, software and knowledge platforms were developed to ease access to and sharing of databases. However, planning for project uptake after the funding period had not been done or made explicit for most of the proposals and reporting of Window 3.

72. Annex 2 provides a list of Window 3 outputs of technologies for conservation and sustainable use of PGRFA co-developed by and/or transferred to selected developing countries. The technologies produced a wide range of PGRFA that were genotyped and phenotyped for biotic and abiotic resistance, resulting in the identification of a vast array of candidate genes, allele effects for trait variations, and use of molecular markers and specific primers designed for more efficient and faster plant breeding, including pre-breeding. In addition, software and knowledge platforms were developed to ease access to and sharing of databases. Another significant aspect was that, although they were developed for specific crops, the models and software can potentially be adapted to other crops for their characterization and breeding. However, planning for project uptake after the funding period had not been done or made explicit for most of the Window 3 evaluated projects, with the exception of Kenya and United Republic of Tanzania (W3B- PR-27).

73. The Indonesian Centre for Agricultural Biotechnology and Genetic Resources Research and Development (ICABIOGRAD), led a 13-country project for the construction of a test platform for the development and allocation of DOIs for rice germplasm (W2B-PR-29). The consortium created a system to accommodate the diversity of naming systems used by different stakeholders, without imposing one common naming system. A central registry was developed to enable each country to collect and maintain their own data within their own data management systems. The central registry will enable the rational integration and analysis of data from different databases for the identification of rice accessions and the development of a platform to establish automatized system-to-system connections to add value, such as pre and advanced plant breeding, to the materials being transferred within and from the MLS. The project finished the prototype, which needed further fine tuning. However, there were no concrete plans for the project uptake and use of DOIs, for example in plant breeding.

74. In Indonesia (W2A-PR-07), ICABIOGRAD characterized 467 rice germplasm collections, including landraces, released varieties, improved lines and wild species. The landrace accessions were selected to represent the range of Indonesian geographical areas. The other accessions were chosen to build upon several previous studies and related breeding programmes. A web-based rice science toolkit was designed and implemented. The toolkit includes the datasets (genetics, phenotype and climate) and the models. The user may run the models on the data and view the results (significant genetic and field effects) online. The toolkit will also serve as a model platform for agro-genomics research on other plant crops facing similar climate change challenges as rice. However, project uptake such as concrete use of the technologies, for example for downstream breeding was not planned.

75. In Kenya and United Republic of Tanzania (W3B-PR-37) useful candidate genes for different biotic and abiotic stresses for cassava were identified using various molecular tools, to characterize the allelic variation of the germplasm and the markers and models used in marker-assisted breeding in order to speed up the development of improved varieties. At the time of the evaluation, pre-breeding for about ten improved materials was in the process of completion with the selection based on field trials using the developed makers and breeding models. These will be made available publicly through the Tanzania Agricultural Research Institute (TARI) and the National Root and Tuber Crop centre for further breeding and eventual dissemination. In addition, the project also made links to another project, resulting in farmers' increased access to disease-free cassava plantlets, which farmers multiplied and sold.

76. In the Islamic Republic of Iran, Morocco and Turkey (W3B PR 18), the project developed a regional database to help identify genetic resources adapted to drought and high temperature conditions. The potential of this technology to accelerate and improve national breeding programmes in the Middle East and North Africa / West Asia and North Africa region is good. However, further support is still needed to make it functional and available.

3.2.3 Increased capacity of men and women smallholder farmers for PGRFA conservation and use

77. **Finding 6.** The BSF reached a significant number of farmers. A major focus of the BSF 3 projects was on capacity building, with good indicators of farmers' empowerment enabling them to conserve and use PGRFA tailored to their highly diverse agroecologies and socio-cultural needs. On the policy level, the Seed Fairs and Farmer Field Days enabled farmers to substantially dialogue with policymakers and stakeholders.

78. The BSF reported 670 training events with a total of 65 842 people trained, most of them farmers. A review of a sample of training materials, capacity building approaches, reports and interviews with project holders indicated a major focus of capacity building amongst the BSF 3 projects. These were good indicators of farmers' empowerment, which enabled them to conserve and use PGRFA according to their highly-diverse agroecologies and socio-cultural needs. These potentially enabled farmers to: i) enhance their knowledge, skills and attitude to individually and jointly assess problems, identify solutions, define their plant breeding objectives and trait preferences; ii) select, enhance or develop, multiply, distribute, use and, in some cases, sell climate-resilient PGRFA; and iii) engage in policy dialogue in support of farmer seed systems.

79. The capacity building of farmers included participatory diagnosis and problem solving related to farmers' perceptions on how climate change affects agricultural cycles and crops. For example, the diagnoses were conducted jointly, analysing results of baseline surveys and/or in the 160 farmer field schools in Malawi, Zambia and Zimbabwe (W2B-PR-42). As part of the problem-solving approach, most projects conducted trainings on one or a combination of crop diversity measurement, seed management including selection and multiplication, participatory varietal selection (PVS), including crowd sourcing trials (in Kenya, Uganda and United Republic of Tanzania, W2B-PR-26) as well as participatory plant breeding (PPB) in some projects for climate-resilient crops and crop varieties. In Zimbabwe, farmers also conducted participatory varietal enhancement (PVE) for their favourite sorghum landrace for increased yield and early flowering. The capacity building in PGRFA management was accompanied by related ecologically sound agronomy in Zimbabwe (W2A-PR-60 and W2B-PR-42), including Malawi, Zambia, and Kenya, Uganda and United Republic of Tanzania (W2B-PR-26), as well as Ghana (W2A-PR-35).

80. Planning for seasonal cropping periods was conducted to support farmers in decision making on when and what to plant, given the highly erratic seasonal variation. To complement farmers' traditional knowledge on weather indicators, the farmers jointly analysed meteorological data combined with farmers' field data, on rainfall and temperature (Zimbabwe W2B-PR-42), etc.. This practice has been used since 2012 in CTDT's previous projects and was applied and further refined in the BSF 3 projects areas.[5] Capacity building was conducted for community seed bank

[5] IFAD and Oxfam Novib jointly funded a programme and implemented it with ANDES, CTDT and SEARICE on "Putting Lessons into Practice: Scaling up peoples' biodiversity management for food security" (2012–2015).

governance, management and linking CSB with national genebanks (Zimbabwe W2A-PR-60, Zimbabwe W2B-PR-42, Kenya W2B-PR-26).

81. For income generation and market linkages in Kenya and Uganda (W2B-PR-26), farmers were trained in seed business management as cooperatives operating the community seed banks. In Uganda, the seed certification unit of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) conducted the training on seed quality management. Farmers were also introduced to the requirement of quality declared seeds (QDS). The evidence collected showed that, so far, farmers were able to only sell grains at local markets. The aim of the project was that farmers would eventually be able to sell the varieties selected from the projects as seeds. However, feasibility studies along with business plans had not been developed.

82. Gender inclusion was a key focus for most Window 2 projects. This was done through a combination of: i) targeting of 30–70 percent women's participation and women's leadership in, e.g. FFS, Seed Fairs and Community Seed Banks (Zimbabwe W2A-PR-60 W2B-PR-42, Kenya W2B-PR-26); and ii) training in gender awareness as well as gender-sensitive courses, for example, Hivos, together with Bioversity International and PELUM Uganda (W2B-PR-26), conducted training using the methodology of Gender Action Learning System (GALS) (Oxfam Novib, 2014). The training included household plans for economic stability that is inclusive of women's aspirations and leadership. Also, the participants shared their lessons with the wider community; and iii) ensuring that women's crop breeding objectives and trait preferences were measured and specifically addressed in the FFS in Malawi, Zambia and Zimbabwe (W2B-PR-42).

83. The evidence collected so far from the interviews and project documentations showed that the seed Fairs and Farmer Field Days were important platforms for sharing knowledge and seeds among farmers, and also enabled farmers to dialogue with policymakers and different stakeholders. Policy engagement involved training farmers on issues related to farmers' seed systems and farmer's rights. This resulted in enabling farmers to relate their BSF project experiences in evidence-based policy dialogues. In Malawi, Zambia and Zimbabwe (W2B-PR-42), the FFS approach contributed to the empowerment of farmers by helping them analyse their problems and be able to address root causes in a sustainable and experiential manner, thus leading to more farmers being aware of their rights and better empowered to engage in policy dialogue.

84. The BSF 3 reported 89 639 farmers directly reached, 38 percent of which were women. Indirectly-reached farmers were reported at 856 711, 30% of which were women. Calculating the number of farmers reached is often difficult, especially for multi-country projects, where different organizations tend to use different systems of measurement. The Secretariat opted for more conservative calculations and had often advised projects to be conservative in their calculations. Caution is important as it is often too easy to overstate the reach. Nevertheless, the actual number of farmers reached and women's participation may be a bit lower than reported. As a programme, the BSF lacks a coherent articulation on the assumptions for counting the farmers reached by the projects. Furthermore, the impact pathway was not clear as to how men, women and vulnerable groups would be reached and further scaled out throughout the course of and after the project.

85. In addition, it was acknowledged that reaching a greater number of farmers requires time. For this reason, some projects reported a low number of farmers reached and low women's participation. Their activities did not allow them to reach high numbers of farmers during the project period (for example, Bhutan, Nepal and Peru, W2B-W 2B PR- 23; and Ghana W2A- PR- 35), but if there had been more time, more farmers could have been involved.

3.2.4 Locally adapted varieties or other genetic materials as part of farmers' climate adaptation strategy and improved yields and livelihoods

86. **Finding 7.** The BSF 3 facilitated a likely unprecedented number of PGRFA materials to be accessed, tested and developed with farmers in multiple locations of highly diverse agroecologies and cultures. These resulted in the participatory development and adoption of climate-resilient strategies that included both farmers' landraces and improved cultivars, contributing to the food security and improved livelihoods of men and women farmers. However, the likely strategic contribution to the broadening of the genetic base or diversity of crops has yet to be studied.

87. The BSF 3 delivered a significant number of locally adapted varieties and other genetic materials of both farmer varieties and/or landraces and improved modern cultivars (see Annex 2). These were relevant in enabling farmers to adapt to climate change through crop and varietal diversification and through the access and use of PGRFA with improved resistance to biotic and abiotic stresses. The projects also enabled farmers' access to landraces from other countries in the region, such as the exchange between Kenya, Uganda and United Republic of Tanzania (W2B PR 26). For example, a farmer in Kenya stated that "*the new sorghum varieties perform better and attract the attention of neighbours who are eager to learn and take up the new sorghum varieties. The farmers facilitate the access to the various seed varieties by the neighbours, and this enhances sharing of knowledge and enables more project uptake by farmers.*" Other projects took landraces that had been lost back to local communities, as in Zimbabwe (W2A PR 60, W2B PR 42). Most of the Window 2 projects aimed for the dynamic combination of farmers' access and selection of landraces and/or improved materials, e.g. Zimbabwe (W2A PR60), Bhutan, Nepal and Peru, (W2B PR 23) and Ghana (W2A PR35). A number of projects aimed for the field testing and registration of new varieties as part of participatory varietal selection in Ghana (W2A PR35) and in participatory plant breeding in Zimbabwe. In addition to landraces, improved varieties, advanced breeding lines and hybrids were used in Malawi, Zambia and Zimbabwe, (W2B PR 42).

88. Overall, the relevant PGRFA materials were subject to multi-location participatory testing. The multi-location testing of materials was mutually beneficial for the farmers and the research organizations. On the one hand, for the farmers, it helped ensure that the materials were robust, adapted to diverse agroecologies and preferred by smallholder farmers. On the other hand, for the plant breeders and research organizations, the multi-location testing provided valuable feedback on a greater number of potentially climate-resilient materials, which otherwise would have been costly and complicated to obtain. This BSF 3 undertaking required considerable orchestration of multiple stakeholders to match PGRFA materials with the diverse needs of smallholder farmers (see Finding 5.1). The targeted and increased access to plant materials and the corresponding capacity building (described in 3.2.3) contributed towards supporting farmers' climate adaptation strategies, with indications of improved seed and food security.

89. In support to farmers' climate adaptation strategies, it is notable that all of the projects focused on building plant genetic diversity at the crop and varietal levels rather than on the breeding of one or few superior varieties. The projects employed a combination of PGRFA in support of farmers' climate adaptation strategies. First, resilience at the crop level was enhanced through the breeding and selection of crops and crop varieties with tolerance to severe abiotic and abiotic stressors. Second, resilience was built by strengthening the capacity of farmers in accessing, evaluating, improving and adapting different cultivars, and by establishing strong linkages of farmers' communities with research institutions and scientific centres. Increased on-farm and on-crop diversity potentially provided farmers with an array of options to better manage changing temperatures, variable rainfall and more virulent or new types of diseases. As a farmer in Kenya

(W2B-PR-26) stated: "*So we came with ten varieties from there which were the good ones, we saw they can do well in this area. We looked at the ones that are drought-resistant and disease-resistant. The ten that we picked are the ones that we kept on the seed bank and are the ones that we always give out to the farmers to plant, harvest and repay back.*". In addition, PGRFA management was coupled with sustainable agronomic and seed management practices.

90. Most of the BSF 3 projects conducted participatory assessments to define the status of genetic diversity and to enable farmers to define their trait preferences. In total, 45 percent of the 20 BSF projects conducted vulnerability assessments. After these assessments, the projects facilitated farmers' access to a wide range of potential climate-resilient plant materials. For example, through its crowd-sourcing methodology,[6] Bioversity International (W2B-PR-26) enabled farmers' selection from 329 landraces of beans, sorghum and millet from national genebanks. The country case study in Kenya confirmed that farmers greatly appreciated access to more diversity. In Zimbabwe, CTDT (W2B-PR-42) facilitated access to 253 accessions of landraces and improved materials from the national genebanks and additional advanced breeding lines for the national Crop Breeding Institute for sorghum, millets, beans and other legumes. Both projects reported high adoption rates of the materials selected by the farmers.

91. Farmers' trait preferences were derived through a highly participatory process. However, the rationale, breeding objectives and activities were not systematically presented in the design and implementation for the choices in: i) landraces and/or improved varieties; ii) project interventions for plant varietal selection, enhancement and breeding; iii) the corresponding decision-making process of the farmers differentiated by gender and youth; and iv) the link to current and future climate resilience. For example, CTDT worked on gender-differentiated breeding objectives. Each choice has important consequences, for example, plant breeding is more demanding. Participatory and evidence-based decision-making processes and trade-offs offer valuable insights and lessons in demand-driven and more inclusive PGRFA management. In this regard, the learning opportunities were not optimized.

92. BSF 3 statistics compiled from all 20 projects show a 49 percent increase in crop diversity at the household level. From the evaluation case studies, the actual figures were not available or were difficult to compare. Nevertheless, the projects in the case studies reported farmers' high adoption of climate-resilient crops and varieties with farmers' trait preferences. For example, farmers selected crops and crop varieties with climate-resilient traits such as drought and pest resistance, early maturing varieties and crops, and varieties that mature at different times. The early and varied stages of maturity help farmers manage climate change impacts such as erratic rainfall and changing insect population dynamics. Using a baseline survey and crop diversity measurement and seed source analysis, CTDT (W2B-PR-42) reported an average increase at the household level from three to four crops, to five to six different varieties by the end of the project period. They noted that the increase in varieties was due to the introduction of new crop varieties into the project communities, greater knowledge of seed management and seed exchanges that occurred during seed and food fairs. The yield of sorghum and pearl millet were reported to have increased substantially. In Chipinge, an area with extreme and recurring drought, farmers even managed to harvest a few tonnes of pearl millet. In addition, farmers were helped by choosing early maturing varieties and being able to re-sow when seeds failed to germinate due to erratic rainfall.

[6] A broad range of mother (research stations) and baby (on-farm crowdsourcing) trials, where large numbers of farmers carry out small and simple trials.

93. In Ghana (W2A-PR-35), the University of Cape Coast characterized the phenotype and genotype of 120 recombinant inbred lines of cowpea and a landrace (GH3684) for selection by farmers and consumers in the dry savannah northern region. The preferred traits were primarily for striga-resistance, drought-tolerance, disease-resistance, yield, nutrition and cooking quality. Aside from multi-location testing, the varieties were planted and evaluated at various stages of growth, from podding, vegetation to harvesting. The project resulted in seven varieties recommended by the National Seed Council for release. These cowpea varieties are resistant to the seven races of striga in West Africa. This is important as striga infestation is a persistent problem resulting in as much as 80 percent yield loss of cowpeas in the targeted regions (Asare and A.T.and Galyuon and Padi and Otwe and Takrama, 2013). In addition, cowpea has a high nutritional value and is an affordable source of protein. The seven cowpea varieties are now taken up by another project funded by the United States Agency for International Development (USAID).

94. Seed security is important to farmers' livelihoods and food security. Seed security is defined by FAO as "ready access by rural households, particularly farmers and farming communities, to adequate quantities of quality seed and planting materials of crop varieties, adapted to their agroecological conditions and socioeconomic needs, at planting time, under normal and abnormal weather conditions" (FAO, 2021a). The BSF 3 project contributed to farmers' seed security through the following:

i. Training in household level seed management including selection and multiplication for existing crops (crops grown prior to project intervention), new crops and crop varieties as a result of project intervention. As 80 percent of farmers in Africa rely on farm-saved seeds, farmers normally select seeds from their standing crops. Enhancing farmers' traditional knowledge on seed selection in Zimbabwe (W2A-PR-60, W2B-PR-42) offered immediate improvement in farmers' seed security, as practiced in the FFS, using their FFS curriculum of CTDT[7] in Zimbabwe (W2B-PR-42). As confirmed by a member of the FFS in the Murehwa district: *"The BSF project provided us with traditional seeds and also equipped us with knowledge on how to select, multiply and conserve seeds."*. The farmers' capacity to conduct participatory varietal enhancement also enabled stronger selection pressure that potentially helped to ensure superior populations in the next season.
ii. Increased access to disease-free seeds, especially for vegetatively propagated crops such as potatoes and cassava. In Kenya and United Republic of Tanzania (W3B-PR-37), farmers in the project areas were provided with improved cassava varieties and were trained in the multiplication of disease-free cassava seedlings. In Bhutan. Nepal and Peru (W2B-PR-23), biofortified clones of true potato seeds were multiplied as tubers and were propagated for a limited number of households in highland areas with acute iron deficiency. The multiplication and release of the potato tubers are anticipated in the future.
iii. Closer proximity and direct access by farmers to improved quality and quantity of seeds are the result of seed sharing and multiplication schemes. Seed multiplications were conducted at project level and at household level Seed sharing among farmers was conducted both traditionally among families and neighbours and through seed fairs conducted under BSF 3. In Malawi, Zambia and Zimbabwe (W2B-PR-42), 30 seed multiplication plots were established in each country. The seeds of sorghum, pearl millet, finger millet and cowpeas were regularly multiplied by farmers through a dedicated community seed management committee and distributed to other communities via seed

[7] Developed by CTDT under the SD=HS programme. CTDT, SD=HS (2018). Visser B., Salazar R., Oudenhoven, F., and Manicad, G. (eds). Facilitators' Field Guide for Farmer Field Schools on Participatory Plant Breeding. The Hague: Oxfam.

fairs. A "pass-on gift" scheme was initiated where seed growers multiplied the seed and passed it on (about 5 kg) to ten more farmers. In Kenya and Uganda (W2B-PR-26), community seed banks were registered as cooperatives and were engaged in seed multiplication.

iv. Closer proximity and direct access of farmers to improved quality and quantity of seeds and seed reserves resulted from the establishment of community seed banks, which often had more than one purpose: i) seed banks were used as a scheme for depositing and borrowing seeds for the wider communities. For example, a farmer could borrow 5 kilos of seeds and was required to return 10 kilos of seeds to the bank. Based on their lessons over many years, CTDT and their farmer beneficiaries (W2B-PR-42) know that community seed banks were a "lifeline" during periods of drought or erratic rainfall when farmers had to re-sow two to three times, or in sourcing reliable seeds when the seeds were lost due to crop failure from the previous season, the community seed bank provided this security. This was confirmed by a female member of the FFS in the Gwanda district: "*We are a seed bank of local seed. When drought hit the area, we have enough reserves to re-sow and also plant for the next season. We are even giving out seed to other communities.*"; ii) conservation where farmers store small quantities of their favourite varieties, or landraces that they no longer cultivate on farm. Farmers also store materials selected in cooperation with the National Genebank. In Zimbabwe (W2A-PR-60, W2B-PR-42) or in the case of Kenya and Uganda (W2B-PR-26), the community seed banks stored the landrace accessions from National Genebanks that were exchanged between the three project counties. As a Kenyan farmer stated: *"The seed bank will help us with access to the seeds."*; iii) an additional function is venues for community meetings, cultural cohesion and social gathering points (W2A-PR-60, W2B-PR-42), which tended to have the positive effect of wider community ownership and commitment to safeguard the community seed bank.

95. The evaluation found that the seed storage and access function of the community seed bank have likely provided clearer and more direct benefits to the farmers than the conservation function. The conservation function needs further discussion in terms of the rationale, long-term viability of the seeds, and the labour cost for the farmers. The conservation function may need more integration with national genebanks. The seed storage and access function of the community seed banks needs to be fully operational if the conservation function is to be appreciated and sustained at the community level. Farmers conserve PGR by using or planting these cultivars every season.

96. The BSF 3 project statistics based on project progress reports show a 33 percent average increase in yields for the farmer beneficiaries. For the case studies, the evaluation found that systematic data gathering on yields is lacking. However, there were good indications that the BSF projects contributed to increased income of farmers through the sale of seeds and produce. Two projects involved farmers' sale of seeds: Zimbabwe (W2B-PR-42), and Kenya and United Republic of Tanzania (W3B-PR-37). The sale of seeds was new to the BSF 3 project area interventions. These indicated promising added value as the sale of seeds in addition to produce potentially: i) adds income; ii) diversifies the sources of income at the household level; and iii) supplies farmers within and outside the project areas with reliable quality seeds.

97. In Kenya and United Republic of Tanzania (W3B-PR-37), improved cassava varieties (from another project, the Cassava Disease Diagnostic Project) that had increased resistance to cassava mosaic disease (CMD) and cassava brown streak virus (CBSV) were further subject to participatory varietal selection under the BSF 3 to select for climate-resilient traits such as tolerance to drought, heat, cold and the CMD and CBSV diseases. The cassava varieties were distributed to farmers for their own multiplication. The improved and virus-free materials resulted in increased yields from

5 tonnes/hectare to 35–40 tonnes/hectare. Women farmers were able to sell the cassava as seedlings for an income of about USD 200 per farmer.

98. In Uganda and United Republic of Tanzania (W3B-PR-26), the project reported that the selected sorghum and millet seeds from the projects were multiplied by the farmers on their farms. Some farmers in the United Republic of Tanzania are mass producing the selected sorghum varieties, which are sold as grains in the local markets. The project reported that these contributed to increasing household income; however, specific data were not provided.

99. In Zimbabwe, for the first time, CTDT (W2B-PR-42), was provided access to advance breeding lines from the National Crop Breeding Institute. Farmers in the FFS contributed to the participatory plant breeding and official release of two varieties of pearl millet and two varieties of sorghum. These were included in the crop portfolio for further multiplication by the Zimbabwe Champion Seeds, a farmer seed enterprise, which CTDT established under the Oxfam's SD=HS programme. The farmers in the BSF 3 project also produced officially-certified seeds of sorghum and cowpeas, and sold at volume for two consecutive seasons to the Zimbabwe Champion Seeds. In addition, in Murehwa district some of the FFS under the BSF 3 were contracted to multiply and sell groundnut seeds to the Zimbabwe Champion Seeds. The production and multiplication of certified seeds in Zimbabwe shows the ability of farmers to co-develop improved PGR materials, and sell them at scale and at quality standards.

100. Apart from their achievements, the two projects in Zimbabwe reported total or near total crop failure of the drought-tolerant pearl millet varieties (W2A-PR-60, W2B-PR-42) due to severe and recurrent drought, compounded by the increased infestation of fall armyworm (*Spodoptera frugiperda*). Crop failures are a reality in agriculture and certainly in the context of a changing climate. Reporting on crop failures should be encouraged as part of risk management on farm and at the project level. Farmers' assessments of crop performance are an important part of capacity building and knowledge management. For instance, CTDT noted the potential of the millet that partially survived and both projects reported that in the most severe cases, cowpeas survived.

101. The findings presented above are in line with the survey results, where 91 percent of respondents agreed that the projects contributed to the generation of seeds reserves for the farming communities, enabling greater access to seeds in times of risks. In addition, 96 percent agreed that the projects tested, disseminated or worked on landraces. While 92 percent of respondents agreed that projects enhanced farmers' access to climate-resilient varieties.

3.2.5 Policy engagement at national and regional level

102. **Finding 8.** The multi-stakeholder engagement provided a good basis for numerous policy dialogues. Many Window 2 projects contributed to policy engagement at national level, while the Window 3 projects did not have an explicit policy agenda. However, regional level policy linkages and awareness raising were not part of the objectives of the multi-country projects. The multi-country projects could have provided inputs and linkages at regional level. Another missed opportunity is with multi-country projects whereby the oversight of the National Focal Points is limited to their respective country, and is not informed of the project activities in other participating countries.

103. The evaluation found that, by design, Window 3 projects did not have an explicit policy engagement agenda. This is understandable considering that its upstream research still needed to be translated into practice and corresponding policy implications. A number of Window 2 projects engaged directly or indirectly in policy advocacy, including analysis and concrete policy

recommendations on national seed policies and laws related to Treaty implementation, specifically on sustainable use of PGRFA and Farmers' Rights. Policy engagement is important for sustaining and scaling up the work of the BSF 3 and other PGRFA-related initiatives. Effective policymaking, including implementation and reform, generally involve long-term engagement of multiple stakeholders. The participation of farmers in policy dialogues during seed fairs, for example, contributed to raising awareness on the need to support farmers' seed systems. However, as effective policymaking cannot take place in isolation, the absence of the private seed sector in the policy dialogues was a missed opportunity. Moreover, the regional and global policy linkages had been minimal.

104. Kenya, Uganda and United Republic of Tanzania (W2B-PR-26) organized a series of policy dialogues to "harmonize seed policies" that were proposed to ease the production, accessibility and utilization of seeds by farmers. Following a series of policy dialogues with key stakeholders, including national (agricultural) policymakers, genebank managers, national and international civil society organizations and farmers, key elements of the projects proposal were included in the revised Uganda National Seed Policy (2018). This was enacted in 2019, and the project stakeholders contributed to provisions aimed at developing and strengthening community seed banks, providing appropriate seed quality standards and mechanisms for the regulation, production and sale of quality declared seeds, including a provision for the national listing of traditional (farmer) varieties.

105. The rationale and feasibility of the open-source seed system (OSSS) implemented in Kenya, Uganda and United Republic of Tanzania's (W2B-PR-26) project are unclear. Some of the interviewed private seed sector and civil society organizations stakeholders expressed scepticism to the open source as a viable model. These civil society organizations pointed out that their own work is already an open source for PGRFA and the "branding" adds to the confusion of already very technical and political issues. Whilst the project achieved many results on capacity building, partnerships, crowdsourcing of landraces and the use of community seed banks, the evaluation questions if the BSF should invest in the open-source seed system component of the project. The added value of open-source seeds to the BSF, its compatibility and viability with the Treaty's Multilateral System of Access and Benefit-sharing are not supported by evidence.[8]

106. In Zimbabwe, the NGO Practical Action (W2A-PR-60), as part of the Zimbabwe Seed Sovereignty Consortium, was working on a draft framework for agricultural policy on resilience and sustainable agriculture and farmer-managed seed systems. They based their input on the BSF work.

107. The individual project partners and the National Focal Point in Zimbabwe (W2B PR 42) have good working relations with SADC. Similarly, the project partners and National Focal Points in Kenya and United Republic of Tanzania (W3B PR 37; W2B PR 26) have good working relations with EAPGREN. In this regard, the BSF projects could have further raised the BSF and the ITPGRFA profile in these regional bodies. The National Focal Points in multi-country projects noted the limitations of only being informed of the BSF project within their country and were not informed of the project activities in other participating countries.

[8] As innovation will not be protected under open-source seed systems (OSSS), it raises the question of cost recovery and profitability. In addition, the benefit-sharing with the farmers who provided the landraces is highly questionable, as OSSS does not allow any other obligations except keeping everything under open source. It is unclear how an OSSS can be implementable, enforceable and compatible with the Treaty's MLS and benefit-sharing.

3.2.6 National level plans to help farmers adapt to climate change

108. **Finding 9.** Two countries within one project aimed for and succeeded in concretely contributing to national level plans to help farmers adapt to climate change. This achievement is an important step in institutionalizing the contribution of the BSF project in PGRFA conservation and sustainable use.

109. Only two countries, Malawi and Zimbabwe, within one project (W2B-PR-42) aimed for and succeeded in translating local level community climate change assessments and actions into contributions to the national level evidence-based plans and priorities to help resource-poor farmers adapt to climate change. For a number of Window 2 projects, joint assessments and plans to help resource-poor farmers adapt to climate change were limited to project sites and were not translated as evidence for use at the national level. For Window 3, most of the results on capacity building and technology transfer formed the essential building blocks for coordination and knowledge management but not yet at the level of evidence-based plans and priorities. There are other possibilities for linking BSF projects to national level plans, which may be worth exploring. For example, establishing the important link of crop diversity as a priority area for climate adaption in nationally determined contribution and Integrating Agriculture in National Adaptation Plans (NAP-Ag)could provide a good opportunity.

110. In Zimbabwe (W2B-PR-42), CTDT and government partners employed a participatory baseline survey with the local communities.[9] The findings were further refined within the farmer field schools. Using the BSF 3 project results, CTDT formulated inputs for the Zimbabwe National Strategy and Action Plan for Plant Genetic Resources for Food and Agriculture (NSAP on PGRFA) (October 2019). Spearheaded by the Zimbabwe Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement, the National Strategy and Action Plan provides operational guidelines to promote conservation and sustainable use of PGRFA. Component 2 targets the establishment of an enabling legal and institutional framework for the management of PGRFA in line with the provisions of the International Treaty on Plant Genetic Resources for Food and Agriculture. The Strategy also refers to participatory approaches and inclusion of gender, youth and vulnerable groups. The Strategy document also specifically refers to the work of CTDT. The NSAP is in an advanced stage of deliberations with the Minister and cabinet members. While CTDT as an organization has been advocating for the provisions in the NSAP, they stated that being part of the BSF 3 has enhanced the profile of their work, further adding credibility for farmers' PGRFA management.

111. In Malawi (W2B-PR-42), the National Biodiversity Strategy Action Plan (NBSAP) (2015–2025) was passed with contributions and acknowledged participation from the BSF project partner, the Centre for Environmental Policy and Advocacy (CEPA). CEPA's contribution was partially based on their experiences in working with the BSF 3 project. The NBSAP was spearheaded by the Ministry of Natural Resources, Energy and Mining. It was written in compliance with the Convention on Biological Diversity and includes targets that are broadly in line with Farmers' Rights. Target 13 aims to maintain and safeguard wild and domesticated genetic diversity of plants and animals. The targets include the maintenance and promotion of local landraces by establishing local community and provincial genebanks, and to promote Farmers' Rights and collaboration on

[9] IFAD and Oxfam Novib jointly funded programme and implemented it with ANDES, CTDT and SEARICE on "Putting Lessons into Practice: Scaling up peoples' biodiversity management for food security" (2012–2015).

prioritization of related programmes. However, specific references and targets related to gender inclusion were absent.

112. Malawi, Zambia and Zimbabwe (W2B-PR-42) conducted effective policy engagement and advocacy, and encouraged the participation of other organizations calling for a more inclusive policy framework to support farmers' seed systems. The evidence generated from project implementation was leveraged in workshops, policy dialogues and in the formulation of draft inputs for related policies. The three main partners in the three countries contributed with technical information to national governments on PGR conservation and management. The project conducted policy review workshops with senior government officers, policymakers and relevant stakeholders. The workshops gave inputs into the national plant variety protection laws to strengthen community seed systems. Policy advocacy meetings on Farmers' Rights were also conducted in the three countries. In Malawi, the Seed Bill was reviewed by multiple stakeholders and it was concluded that the Seed Bill was aimed exclusively to the formal seed sector. CEPA, with the support of CTDT, drafted provisions on access and benefit-sharing measures to be considered in the Seed Bill. However, the draft provisions were not taken up. In response, recommendations to initiate a process to draft a separate bill covering farmers' seed systems was made by CEPA and partners. Overall, the projects succeeded in including Farmers' Rights in the development of the National Strategy and Action Plan on Plant Genetic Resources for Food and Agriculture (NSAP on PGRFA) in Malawi and Zimbabwe.

113. It should be noted that whilst it may not always be possible for projects to contribute to related national PGRFA plans, most developing countries put emphasis on the agricultural sector in the nationally determined contributions to the Paris Agreement. 97 percent of the 131 developing countries referred to crops as a priority area for adaptation related to the agriculture sector (FAO, 2016c). It may be worth exploring the BSF project linkages to the respective countries' National Adaptation Plan in Agriculture. In this regard, the ITPGRFA's collaboration with FAO and the United Nations Development Programme (UNDP)'s Scaling up Climate Ambition on Land Use and Agriculture through nationally determined contributions and National Adaptation Plans (SCALA)[10] is important.

3.2.7 Immediate and medium results and prospective links for long-term outcomes

114. **Finding 10.** The results of the three to four-year project cycle of the BSF 3 can be broken down into immediate and medium-term results, which need to be linked to long-term outcomes. The various interventions of the BSF 3 projects, when collectively analysed, constituted the various elements of a PGRFA community-based adaptation and disaster risk reduction (DRR) strategy that contributes towards long-term resilience of farming communities.

115. From a programmatic perspective and given the long-term nature of PGRFA conservation and sustainable use, especially in the context of climate change, the results of the three to four-year project cycle of the BSF 3 can be broken down into immediate and medium-term results, which need to be linked to long-term outcomes. Collectively, the project interventions were targeted for immediate (within the first year of project implementation), to medium-term outcomes (within three to four years of implementation), that can potentially contribute to long-term goals. Figure 4 summarizes how the BSF 3 immediate to medium-term milestones can potentially contribute to long-term outcomes. These milestones are important to ensure that farmers benefit immediately,

[10] NEW: Scaling up Climate Ambition on Land Use and Agriculture through nationally determined contributions and National Adaptation Plans (SCALA) |Climate Change| FAO.

while working towards the medium- and long-term outcomes. The milestones are also important for more realistic and efficient project planning (see EQ 4 on Efficiency). For example, from a medium-term perspective, the various interventions of the projects – when collectively analysed – constituted the various elements of community-based disaster risk reduction strategies, from diagnosis to planning, for increased plant diversity and for ensuring access to a reliable quantity and quality of seeds, inclusive of the agroecology and conservation agricultural practices. The disaster risk reduction and adaptation elements are important for the farmers' food and livelihoods resilience to climate change.

Figure 4. BSF 3 immediate and medium-term milestones and prospective contributions to long-term outcomes

Source: Evaluation team's construct, 2020.

3.3 Partnership

EQ 3. To what extent have the BSF governance and partnership arrangements been appropriate and effective in fostering the conservation and sustainable use of PGRFA at different levels (global, regional, national)? How are these partnerships influencing (positively or negatively) the achievements and sustainability of the projects' expected results?

116. **Finding 11.** The multi-stakeholder and multi-country partnership arrangements in the BSF 3 significantly contributed to the achievements of the projects. The BSF 3 played a catalytic role linking *in situ* and *ex situ* PGRFA management, concretely manifested in: i) the iterative flow of PGRFA materials; ii) an active exchange of scientific and local knowledge; iii) as an intergovernmental undertaking, the active engagement and ownership of national institutions of the Contracting Parties was highly decisive in facilitating the wide access and use of PGRFA as well as dealing with transboundary pest and diseases.

117. The 20 operational BSF 3 projects were implemented in 43 countries with 270 institutional partnerships reported. About 75 percent of the operational BSF 3 projects were part of existing programmes or had established linkages with other projects, programmes and plans related to biodiversity, food security and poverty alleviation. This indicates that the partnerships established went beyond the 270 institutions that were directly involved in the BSF 3. Considering the complexity and the roles and expertise of different stakeholders in PGRFA management, the partnerships are decisive elements in ensuring the attainment and sustainability of the results and outcomes of the BSF.

118. A number of the implementing organizations in the BSF 3 projects stated that whilst most of them have been working in PGRFA prior to BSF 3, and whilst many of the implementing organizations within the projects have a history of collaboration, the BSF 3 added value to their work and had a catalysing role. This is through:

i. First, raising the profile of local level PGRFA management and linking this to national and to some extent regional level policy engagement. The on-the-ground work with farmers enabled dialogues and concrete translation to drafting policies that "domesticated" the implementation of the International Treaty.
ii. Second, the BSF 3 project facilitated the access and use of a wide range of PGRFA materials, which were otherwise more difficult and time-consuming to access by civil society organizations. For example, CTDT in Zimbabwe (W2B-PR-42), stated that whilst they have already established relations with governments and the CGIAR, being part of the BSF 3 enabled far greater and faster access to PGRFA from these institutions and, for the first time, CTDT was able to access breeding lines.
iii. Third, the BSF enabled greater awareness of the Treaty and enhanced its implementation. Amongst PGRFA institutions within Contracting Parties, BSF created greater understanding on the countries' interdependence on PGRFA and the need for collaboration (e.g. in Indonesia). Within countries, this created more awareness on Farmers' Rights and the links to food security.

119. The BSF 3 played a catalytic role linking *in situ* and *ex situ* PGRFA management. For Window 2, about 1 516 accessions were collected from farmers' fields, community seed banks and national genebanks. These accessions were placed in community seed banks and national genebanks, where the accessions were either new or requested. 20 706 varieties were characterized and evaluated in laboratories and largely in farmers' fields. The 20 706 varieties evaluated were MLS materials and farmers' landraces, also including many of the 1 516 accession collected. From these evaluated varieties, 298 new varieties were selected and/or developed as part of the participatory varietal selection, participatory varietal enhancement and participatory plant breeding materials. 5 933 accessions are planned for inclusion into the MLS, which would likely include the 298 new varieties developed and the unique materials from the 1 516 materials collected. The partnerships enabled the flow of PGRFA and knowledge sharing, which resulted in capacity building and the co-development of technologies and PGRFA materials, which contributed to the farmers' adaptation strategies and corresponding policy advocacy described under Question 2. For Window 3, about 4 390 PGRFA were genotyped to identify candidate genes for potential uptake and use in plant breeding programmes. These materials have the potential to be part of the linkages between the *in situ* and *ex situ* management described for Window 2.

120. Within BSF 3, most of the 79 established or strengthened community seed banks have facilitated the links with the national and international genebanks, including the crop breeding institutes. This is a clear example of the link between the *in situ* and *ex situ* PGRFA management illustrating strengthened partnerships. The national genebanks helped restore materials that were lost but

deemed important by the communities. The national genebanks also provide technical assistance and training on seeds management. In Zimbabwe, the national genebank provided materials and services to the two BSF projects (W2A-PR-60 and W2B-PR-42) charging minimal operations costs. The government can foresee increased linkages between national PGRFA institutions and a greater role of decentralized community seed banks as part of risk and disaster management especially due to changing climate. Another example is in Kenya (W2B PR 26), where two community seed banks were established in collaboration with the national genebanks, which were also involved in training and capacity development on conservation. In Uganda, the national genebank is developing a database of the community seed bank to track the diversity of germplasm that is conserved *in situ*.

121. The partnership and cooperation between Kenya and United Republic of Tanzania (W3B PR 37) enabled the two countries to tackle cassava mosaic disease and cassava brown streak virus. Similar cooperation could have been done for the fall armyworm, which is devasting farmer's crops in many countries.

122. **Finding 12.** The BSF 3 demonstrated a viable model of the Multilateral System of Access and Benefit-sharing (MLS) through the access and use of existing plant genetic materials, which in turn generated new materials for the farmers and the MLS. The collaboration generated significant goodwill, which was consistently expressed, not only among the projects but also among the Treaty stakeholders who were not part of the projects. However, these stakeholders and project partners also expressed the need to re-consider the roles of key stakeholders in relation to the focus of the BSF.

123. As also confirmed by the survey results, for Window 3, the partnerships mobilized considerable expertise and were comprised of national organizations, such as genebanks, universities, national agriculture research organizations as well as international organizations, such as the CGIAR and NEIKER. The partnerships enabled the transfer of technologies from international organizations and enabled the co-development of technologies among national organizations. The collaboration, especially with multi-country projects, supported national organizations to adapt the technologies to their own needs and agenda, enhancing capacities, ownerships and cohesion in otherwise fragmented PGRFA research management. Particularly remarkable was the collaboration in rice DOIs and the web-based information platform among the Asian countries (W2B-PR-29), which broke some barriers, considering that the countries tend to be protective of their national rice germplasm. Though not quantifiable, solidarity and trust building are important assets in PGRFA governance and management.

124. As also confirmed by the survey results, for Window 2, the partnerships mobilized considerable expertise and were comprised of national organizations, such as genebanks, universities, national agriculture research organizations, CGIAR centres, government extension services and civil society organizations that have expertise in one or more PGRFA management, policy advocacy and capacity building. The different partnerships enabled the access to and distribution of a wide range of PGRFA materials from the formal seed sector to the so-called informal seed sector, or the farmer seed systems or the local seed value chain. This also enabled participatory action research and knowledge management resulting in the use of PGRFA as a key element in farmers' food security and climate adaptation strategies. In return, the formal sector benefitted from the multi-location tests of PGRFA and from linking their work to developmental relevance. The partnerships enabled the effective targeting of the marginalized and climate-vulnerable farmers, who often tend to be ignored or not reached by the public and private breeding sectors on their own, demonstrating the catalytic role of the BSF.

125. Among the interviewed stakeholders who were not directly part of the BSF 3 projects but were actively engaged with the ITPGRFA, such as past and present Bureau members, Contracting Parties, private seed sector, civil society organizations, international research and conservation organizations, and actual and potential BSF donors, there is a general consensus on the importance of the Benefit-sharing Fund. Most of the interviewed stakeholders stated that, in principle, the BSF complements their work. There is an overwhelming appreciation of the system for access and benefit-sharing. For example, the International Seed Federation (ISF, 2012) took the position that they prefer a single regime on the governance of PGRFA. The Treaty is their preferred system of access and benefit-sharing. Most of the stakeholders stated their satisfaction with how the BSF is managed in terms of the process and experts involved in the project appraisal. In general, they think the projects are effective and reflect the principle of benefit-sharing and the operations of the Treaty on the conservation and sustainable use of PGRFA. At the same time, there is a broad consensus among all interviewed stakeholders that the BSF is far from reaching its full potential. This was largely perceived to be due to the fact that the funds generated for the BSF has been far below expectations. However, there are vastly differing opinions as to who should shoulder the obligations of providing the additional funds.

126. Among the stakeholders who were not directly part of the BSF 3 projects but were actively engaged with the ITPGRFA, there is a difference of opinion regarding the BSF's priority focus. According to most stakeholders interviewed, the BSF should primarily be beneficial to the farmers and support local seed value chains, while, according to others, there should be more focus on outputs that generate new materials for the MLS and for further conservation in genebanks. However, these differing views are not mutually exclusive. In fact, most of the interviewed stakeholders appreciate the links made by the BSF on the complementarities between *in situ* and *ex situ* PGRFA conservation and management. A few commented that the BSF should be more strategic and focus on breeding new and more climate-resilient materials by combining materials from *in situ* and *ex situ* collections. They further added that the BSF should "attract more breeders so that the Treaty is more about plants and less about genebanks.". They commented that there should be closer cooperation between plant breeders, private sector and farmers to produce more climate-resilient plants that can help farmers with their food security within changing markets and climate. The differences in priority focus contributed to the common perception that the BSF has yet to achieve a critical mass that could influence policy and practice of PGRFA conservation and use, and its vital contribution to food security in the context of climate change. Furthermore, all stakeholders identified the lack BSF's programme definition as an impediment for effective fundraising and communication.

127. Despite the BSF being in its third cycle of operations, most stakeholders interviewed were of the opinion that the BSF has yet to demonstrate critical mass. They perceived the critical mass as the minimum number of institutions and people that can effectively put forward the PGRFA agenda in the SDGs, including climate action. Despite the BSF impressive achievements, the lack of the critical mass is likely influenced by the following factors: i) the gaps in the budget expectations amongst BSF stakeholders tend to overshadow BSF 3 results and value for money; ii) as the BSF is still in the process of defining a concrete programmatic approach, and considering the lack of a well-defined communication strategy, the BSF 3 had not yet managed to weave the elements of the BSF 3 achievements into a compelling story (see section 3.5 on Knowledge management); and iii) the significance of PGRFA has yet to be fully mainstreamed and popularized into the local to global food security and climate change discussions and agendas.

128. There are a few stakeholders who expressed a sense of being left out of the discussions and benefits of the BSF. These stakeholders perceived that their expertise and opinions were excluded in the processes of defining the call for proposals, providing technical monitoring support to the

projects and by the lack of access to the information and knowledge products of the BSF. A few stakeholders expressed frustration in being outcompeted in the selection process, not necessarily in terms of substance and expertise but in the ability to craft competitive proposals. This is further discussed in the section on Knowledge management.

129. The CGIAR has a long history of collaboration with the Treaty in general, and the BSF in particular. The CGIAR considers the Treaty as essential to their work. Under Article 15 of the Treaty, over 730 000 accessions in CGIAR genebanks are made available under the terms and conditions of the Multilateral System of Access and Benefit-sharing. CGIAR centres have transferred almost 4 million samples under the System. Many activities of CGIAR centres and their genebanks (such as crop enhancement, improved agronomic methods, seed system strengthening and capacity building) are supported by, and promote, the Treaty's objectives. The BSF enabled the participatory and multi-location testing of CGIAR and NARS materials. These are highly valuable for the CGIAR and the NARS. The CGIAR has been active in the BSF since its first cycle. With a few exceptions, the CGIAR was active in most of the projects and played various roles, such as providing technical and PGRFA material support, and, in some cases, it provided leadership and project management. Within the BSF 3, the budget allocation of the various centres of the CGIAR varied. For example, some centres only charge a minimal cost of materials, while come centres take a substantial portion of the budget. The participation and contribution of the CGIAR to the BSF are highly appreciated by a wide range of stakeholders, and these stakeholders hope that the CGIAR will remain active in the BSF. A number of stakeholders and project partners raised two points for consideration and discussion: i) in support of South-South cooperation, the CGIAR could potentially refrain from taking the lead as project holder and instead support Southern organizations to take the leadership role; ii) the CGIAR could consider consistently charging minimal cost to the BSF projects, so that the BSF budget is mainly allocated for the operations of organizations from developing countries. The CGIAR expressed openness to discuss this mode of operation.

130. Aside from a number of voluntary contributions to the BSF, and from some participation in policy consultations, e.g. Malawi and Zambia (W2B PR42), the private seed sector had limited programme involvement, for example in the design, capacity building and market operations of the BSF 3. There were some instances where the private seed sector provided capacity building to organizations that were coincidentally part of the BSF 3. For instance, a number of seed companies provide technical assistance in plant breeding and characterization and maintenance of accessions in national genebanks and funding support to international genebanks. A number of private seed companies regard this as a form of non-monetary benefit-sharing. These could complement, but not replace, monetary contributions and obligations. The new funding strategy could do more to define a role and/or areas where a public-private partnership can be of strategic importance to the Treaty and the BSF.

131. At the project level, some private sector engagement was initiated. In Kenya (W2B PR 26), some private companies contributed to train farmers and partners on how to strengthen points in market channels. Farmers participated in learning sessions on the financial aspect of agri-business together with micro-finance institutions and local banks. Seed companies participated in guiding the quality production of agricultural produce targeting bigger markets. Dash crop, a company that produces sorghum and millet flour, participated in the training. However, aside from farmers selling their grains to the local market, the actual commercialization of seeds did not take place.

132. The evaluation noted the lack of participation of plant breeders and climate change experts within the project partners. These experts could provide relevant and practical inputs for the climate resilience of the farmers.

133. Most of these findings were echoed by the survey results, where all respondents agreed that there was a strong multi-stakeholder engagement in the project and that the partnerships significantly contributed to the results, which were unlikely to be achieved by a single institution on its own. A survey respondent highlighted that: *"the project targeted Peruvian underutilized potato native cultivars, many of which are probably not available in known germplasm banks. As such, the knowledge and molecular data generated by the project were useful to increase the information about the entries, which will be integrated in the passport data."*.

3.4 Efficiency

EQ 4. How efficient was the institutional and implementation set up? How efficient was the implementation set up at the national and regional level?

3.4.1 Managing the call for proposals, project selection and approval

134. **Finding 13.** The BSF has been dynamically evolving for greater efficiency. The third project cycle of the BSF was efficiently designed and executed. The checks and balances of project selection and approval were rigorous. The evaluation found that the Secretariat provided highly competent support to the process and was responsive in applying lessons learned from previous project cycles. However, the management of rejected proposals and the selected proposals with no funding allocations need to be reconsidered.

135. The major changes on the BSF evolution are along the lines of constantly reflecting and applying lessons learned towards: i) robust selection process; ii) improvements in the project cycle management; iii) check and balances in the governance, in the design for the call of proposals, and in the decision-making process for project selection and approval; and iv) the design of the call for proposals reflecting three thematic Windows, with the fourth cycle bridging towards a programmatic approach of the BSF in line with of the implementation of the International Treaty on a long-term, coordinated, synergistic and effective manner. The reflections and lessons were for more efficient operations. However, mechanisms to help ensure greater outcomes such as linkages with other projects and partnerships, and the need for planning from the outset for the dissemination of results have yet to be included.

136. The BSF is to be commended for the documentation, approval and application of lessons learned from past cycles, not only aiming for better efficiency but also towards greater service, for example through the establishment and continued practice of the help desk function. A new Operations Manual for the BSF; which integrated the lessons learned from previous project cycles has been approved by the Governing Body[11]. The new manual brings together resource mobilization, allocation and disbursement in an integrated manner, and is incorporated into the overall Funding Strategy for 2020–2025. This includes a transparent and effective policy on managing potential conflict of interest.

137. On the evolving thematic focus of the BSF (see Table 2), the second cycle included Window 1, which was the development of the Strategic Action Plans to support the adaptation of PGRFA to climate change at regional and subregional levels. However, only a number of plans were able to secure partial funding, resulting in only partial implementation of the Plans (FAO, 2017b). Window 3 was included in the third cycle and it targeted the co-development and technology transfer for PGRFA institutions. The primary beneficiaries of the BSF Window 2, Immediate Action Projects,

[11] Annex 2 of Resolution 3/2019: Implementation of the Updated Funding Strategy of the International Treaty 2020–2025 available at https://www.fao.org/3/nb780en/nb780en.pdf**.**

are smallholder men and women farmers. The farmers remain the primary focus of the BSF through all its cycles. In the fourth cycle, the overarching goal is "to enable farmers around the world to use and conserve adapted varieties, leading to increased productivity, on-farm incomes and nutrient-rich food, as well as enhanced resilience to production shocks and reduced adverse impacts to the environment." The fourth cycle emphasized new partnerships, including bringing technology and knowledge to the community and farm levels, and highlighting the important role of women in biodiversity management, farming and rural development.

138. Specifically, for the BSF 3, the Secretariat provided a well-planned and well-executed support system, from the design and the call for proposals to helpdesk services and the Panel of Experts selection process as well as the final approval by the Bureau. The call for proposals and the selection process was based on a rigorous and efficient model. The process had evolved throughout the BSF cycles, with the Secretariat analysing lessons learned and consistently improving the process. The selection criteria and the policy of conflict of interest were transparent and accountable. The evidence collected showed that the checks and balances and the division of roles between the technical assessment and selection process by the Panel of Experts on the one hand, and the approval by the Bureau on the other hand, were well-designed and executed accordingly.

139. The call for proposals was drafted by the Secretariat, following broad guidelines from the Governing Body and the Bureau. The call was further discussed and approved at the Bureau level. However, systematic and evidence-based inputs to the call from technical experts such as climate-resilience breeding and seed marketing, as well as regional inputs and assessments of their needs and priorities, lacked a more focused and targeted call.

140. An independent panel of 14 experts screened and appraised the project proposals. Each region nominated two members of the Panel of Experts. The composition of the Panel of Experts was aimed at balancing technical and regional expertise with project management. A good balance of experts were present since the second project cycle, but there were also new members. Each proposal was assessed by three experts, ensuring that each proposal was assessed by at least one expert from the respective region. In general, the Panel of Experts functioned well, except for the need to address the additional expertise to cover the volume of proposals in sub-Saharan Africa, especially in Francophone countries.

141. The proposals that were selected by the Panel of Experts but were not approved for funding by the Bureau, due to lack of budget, were provided with a Certificate of Excellence. However, the certificates did not translate to donors' uptake. The evaluation questions the effectiveness of the certificates. First, donors are not likely to be attracted by proposals that had not been prioritized to begin with. Second, receiving a certificate instead of the funds appears to be more like a consolation and it is likely to frustrate the proposal holders. Third, it may diminish the branding of the BSF, whose certificate may be seen as not adding/having value.

142. Whilst the Panel of Experts has a systematic process and documentation of scoring and selection, the procedure for communicating the reasons for the rejection of proposals were not systematic and could be subject to misinterpretation. The lack of immediate feedback was frustrating to a number of those who did not succeed. Some felt discouraged by what may be perceived as a seemingly lack of transparency and useful feedback for improvement.

143. In terms of survey respondents' view on the BSF 3 proposal preparation and submission about 89 percent of the respondents viewed the process as straightforward and not complicated, while 81 percent of the respondents agreed that they received clear guidelines to develop the concept

note, full proposal and budget. About 87 percent of respondents agreed that the help desk was useful. A respondent mentioned that the proposal-writing workshop organized in Cairo (Egypt) was commendable. In terms of National Focal Points role during the concept note and proposal development process, 57 percent agreed that the National Focal Points were helpful, while 13 percent disagreed, 6 percent strongly disagreed and the remaining 25 percent did not know. One respondent who strongly disagreed indicated that the participation of the focal points was limited to endorsement notes.

144. When respondents were asked how they heard about the BSF 3 call for proposal, 59 percent indicated that they heard about it from communications within their respective organizations, while 23 percent mentioned communications from colleagues/networks, 14 percent mentioned the ITPGRFA/BSF website and the remaining four percent indicated ITPGRFA National Focal Points. The survey results show that the National Focal Points had a minimal role in spreading the call for proposals.

3.4.2 Contract management, planning and monitoring

145. **Finding 14.** Overall, the contract management was complicated due to its institutional set up. Despite complications, directly contracting the implementing partners was a good practice. With regard to project planning and monitoring, a good system for monitoring was used. However, there were some weaknesses in project planning and risk management due to the lack of systematic updates, which affected the overall efficiency of project management. This included the lack of the technical expertise to support the Secretariat in project management.

146. It should be noted that the requirements for managing the contracts of the relatively small projects are nearly the same as for big projects. With only minimal overhead, one full-time staff, supported by a senior technical officer, a finance officer and a consultant on a part-time basis, the BSF staff dealed with a complex process of contract management.

147. The BSF followed FAO's standard contract framework for the Letter of Agreement and procurement, plus additional contract conditions that were specific to the BSF. For example, the contract conditions have ad-hoc clauses such as the inclusion of material in the MLS, as specified by the Governing Body. This was efficient. However, contrary to standard FAO practice of issuing contracts through the FAO country offices, the BSF issues contracts (LOA) directly to the project holders (country implementing partners). In addition, the sub-contracting conducted by the contract holders was also not standard practice for FAO. The project holder received and disbursed BSF project funds, via subcontracting to other implementing partners. This is needed for the multi-stakeholder and multi-country projects of the BSF. Moreover, aside from the complications with FAO administrative requirements, the BSF staff also had to deal with the complications of various laws and procedures specific to the countries of the contract holder. For example, meeting the requirements of Indonesian law caused significant delays in the Letter of Agreement of the Indonesian projects. Complications in the specific country regulations also resulted in the cancellation of the project in Costa Rica and the change in the type of agreement for the project in Cuba. The evaluation noted that the FAO administration had exerted considerable flexibility in accommodating the complex administrative set up of the BSF.

148. The complications of contract requirements, were a contributing factor to several delays from all sides. A review of the BSF 3 Monitoring and Reporting Schedule showed that a significant number of projects (11) requested no-cost extensions. However, only seven no-cost extension requests were finalized/signed. Procurement, especially for Window 3, was a major cause of delays. The delays affected project implementation, especially given the seasonality of agriculture, so that if

the growing season is missed, then the project can be delayed up to one year until the next growing season.

149. The planning for the entire project cycle was based on the original schedule of activities presented in the project proposals. This was not adequate. There could be at least a year gap from the proposal writing to the contracting and funds transfer. Moreover, most of the projects conducted inception activities, and many conducted surveys or vulnerability assessments. The project plans were not systematically updated to coherently reflect changes in context, reassessment of risks especially given changing climate conditions, and adjust project activities as needed. The complications of procurement were not anticipated and integrated into the planning schedule. There were a number of weaknesses in the planning for some projects, which were not corrected. For instance, many of the Window 3 projects lack a plan for post-project uptake especially on plant breeding. Whilst significant results were achieved within the four-year project cycle, a number of Window 2 projects had unrealistic planning such as plant breeding from scratch for a four-year project. As successfully shown in Zimbabwe (W2B PR 42), the level of stability of the plant populations should match the project period, or should be tied up with other programmes/institutions with longer-term operations. In addition, some activities for marketing were not based on a business plan or feasibility studies.

150. From the sampled projects, there were regular changes in the scheduled activities between the work plan indicated in the project proposal and the progress reports. This is normal as changes occur in the course of project implementation. These changes can be caused by external factors (e.g. weather events, political context, market fluctuations), factors internal to the project (delay or progress in implementation), or a combination of both. Changes and risks are inherent to the context of the dynamics of agriculture and PGRFA management, which is now worsened by changing climate. Therefore, periodically updating plans and budgets is part of standard and/or good practice in project management. However, in the BSF, the approval for the next funds transfer were solely based on the technical and financial reports from the past period. The plan and budget for the next period were not required as a basis for approval of funds transfer. Hence, the monitoring was not informed by a: i) systematic update on project context; ii) an updated risk assessment and management matrix; iii) target outputs and budget for the next period and any re-direction/adjustment of plans.

151. The absence of systematically updated plans and budget in the BSF 3 hampered the monitoring of project delays, the management of risks and the necessary adjustments. For example, in the case of Zimbabwe (W2A PR60), all progress reports had major deviation from the work plan. The delays resulted in the four community seed banks being completed only at the end of the project. According to the project holder, the CSBs have not been operationalized and did not have community ownership. Contrary to the original work plan, the second progress report stated that no activities on the CSBs were conducted and, despite this, the risk was assessed as low. Further on, the third and fourth progress reports stated significant delays but with unrealistic low risk assessment and no plan and budget adjustments.

152. In the Islamic Republic of Iran, Morocco and Turkey (W3B PR 18), a key activity for the project outcome encountered persistent delays. This activity was the creation and dissemination of an international database to promote the use of wheat genetic resources and increase genetic base. The delays were aggravated by high staff turnover and sanctions in the Islamic Republic of Iran. Despite this, the plan was not systematically revised. Towards the end, a no-cost extension of the project was solicited by the project holder, but the request came in too late for the BSF Secretariat to process. The evaluation is of the opinion that a more regular revision of the planning activity

could have helped focus on the delivery of the database and could have at least anticipated that a no-cost extension was going to be needed.

153. The nature of PGRFA management often means a step-wise sequence of activities, whereby delay in one activity can cause significant delay in the succeeding activities and project outputs. In the case of Kenya, Uganda and United Republic of Tanzania (W2B PR 26), major delays occurred already at Year 1 for the exchange of landrace materials between the three countries. The materials were to be multiplied, distributed, tested and selected by farmers, and were to be the source of parent materials for participatory plant breeding. They were even planned for commercialization. The plan was already unrealistic to begin with and, with the major delays, the activities on participatory plant breeding, commercial seed production and marketing eventually did not take place. One of the planned community seed banks did not materialize. However, the annual reporting did not flag the risks, nor were changes in the plan reported. Furthermore, while key activities did not take place, such as participatory plant breeding and Crops Atlas, changes to these effects were agreed via email exchanges between the project holder and the BSF Secretariat. However, from the progress and financial reports, it is unclear how the budget for these activities was reallocated. Furthermore, the Kenya country case study highlighted the lack of clear roles and coordination amongst project partners, which affected their relations and project implementation.

154. The Secretariat set up the project reporting schedule with the Letter of Agreement. These generally involved five progress reports, both technical and financial. The first project report is received after about eight months. The log frame was updated from mid-term onwards. The risk assessment matrix was updated up to the fourth report. The reporting templates were comprehensive and accessible, and gender-disaggregated data were included. Projects also filled out a monitoring questionnaire throughout the reporting period, which was comprehensive. The Secretariat kept track of a set of indicators and statistics. However, many of the reports did not update the risk. In addition, the section on the impact pathway on the reporting template did not include report on outcomes and were missing data and/or causal links on improvements in food security and climate change adaptation. In addition, the budget report did not include a brief narrative on the budget spending in relation to the project implementation. The budget is not easy to assess and compare, it was neither summarized according to activities nor on institutional or country allocations. For multi-country projects, the Secretariat only communicated with the primary project holder, which is administratively efficient but missed information and monitoring per country.

155. The BSF technical officer and finance officer assessed the reports. Whilst the Secretariat was responsive and flexible to the communicated needs of the projects, changes in planning and budgets were communicated and agreed via email between the project holder and the BSF Secretariat. However, without a regularly updated plan and budget, decision-making may tend to be ad hoc and difficult to monitor in the narrative and financial reporting

156. Reporting to donors was in line with donor requirements. Other voluntary contributors, who did not specify reporting requirements, said they did not get regular information about the BSF. The BSF did not have a system for consistently reporting to all donors and to all project holders.

157. Within the Secretariat, the evaluation found that there was a lack of the broad range of technical expertise needed to support the planning and monitoring of the technical components of the projects. For instance, the involvement of the Panel of Experts was limited to the selection process but the more complex part of the project implementation and the cycle of project planning, monitoring and reporting, was entirely conducted by the BSF Secretariat. Given the complexity and diversity of the agroecologies, cultures and crops of the various projects, and given the

various thematic foci of the projects, ranging from plant breeding, disaster risk reduction, climate adaptation and marketing, the Secretariat could have benefited from more technical expertise. For example, the various knowledge products in terms of publications, research papers, training manuals and other methods employed and/or developed by the projects were not assessed and circulated to other BSF projects and to the Contracting Parties. The Secretariat stated that the technical assessment and dissemination of these knowledge products are not within their current mandate.

158. In terms of the survey respondents' perception on the efficiency of the BSF 3, all respondents agreed that the BSF has a good system for project cycle management. However, only 26 percent indicated that the funds were made available in a timely manner. This confirms the delays encountered as discussed above. While all respondents agreed that plans and budgets were regularly updated to reflect actual progress or delays and changes in project context, this was found to be contrary to the evidence collected and assessments of the evaluation team.

3.4.3 Size and length of the project

159. **Finding 15.** The size and length of the projects were sufficient to deliver significant results. The three-to-four-year length of the projects was consistent with the project cycles of most donors. The most successful projects had realistic planning, with linkages to programmes that can potentially phase the BSF project's immediate and medium-term milestones, linking these to long-term goals (see Figure 3, Finding 10).

160. With regard to the optimal length and size of the BSF projects, there are at least three given realities: i) the nature of PGRFA management requires a long-term perspective, with plant breeding requiring up to 15 years; ii) most donors have two to five-year project cycles; iii) the BSF and the projects are accountable for what they had committed to deliver within the project period, especially to farmers and donors. Most projects stated that the time was too short for them to complete the projects. This contradicts the survey findings, whereby most of the respondents stated that the project duration was sufficient. The evaluators found that the length and size of the project was reasonable, but that some projects activities and outcomes did not materialize more than realistic and efficient planning (see EQ 4 on Efficiency).

161. The total BSF 3 budgets of USD 9.7 million provided a good basis for the operations of the third cycle of the BSF. For Window 2 projects, a single-country project was allocated USD 150 000 to USD 300 000 for a maximum period of three years. A multi-country project was allocated USD 400 000 to USD 800 000 for a maximum of four years. For Window 3 projects, a single-country project was allocated USD 80 000 to USD 150 000 for a maximum two years. A multi-country project was allocated USD 200 000 to USD 500 000 for a maximum of three years. The length and size of the projects were sufficient and enabled the delivery of substantial results. The delays experienced by most projects were mainly due to a combination of complex contract management and some inefficiencies in project planning.

162. Since the first cycle, the length and size of the projects have increased considerably (see Table 2). For the third cycle, rather than the length and size of the projects, efficient planning and partnerships appear to be more decisive for BSF's success. The multi-stakeholder and multi-country approaches were more decisive in terms of projects' effectiveness and achievements. Constantly changing markets and environments mean that farmers need constant access to new PGRFA materials, so this is an ongoing and long-term goal. Multi-stakeholder and multi-country approaches are better placed for the co-generation and sustainability of the technological and institutional innovations in PGRFA management. These are also more reflective of the spirit of the MLS and the interdependence of countries on PGRFA.

3.5 Knowledge management

EQ 5. To what extent has the BSF 3 been able to contribute to knowledge management and sharing of experiences to inform PGRFA consultations worldwide?

Finding 16. The effective knowledge management at project level resulted in actionable climate adaptation strategies, with potentially promising outcomes as described in EQ 2 (Effectiveness). However, the lack of a strategic knowledge management strategy at the BSF programme level limited the benefits mainly to BSF-funded projects. BSF benefits in the form of knowledge products, PGRFA materials and lessons have not yet been further shared, improved and adapted by the wider stakeholders, and particularly by the Contracting Parties of the Treaty. In this regard, the leveraging of the knowledge generated by the BSF has so far been limited.

3.5.1 Knowledge management in individual projects

163. Most case study projects employed effective knowledge management to co-generate and adapt knowledge products, such as technologies and PGRFA materials, to specific context and needs. This occurred: i) amongst the project partners, e.g., researchers and civil society organizations; ii) between farmers within e.g. farmer field schools; iii) between farmers and researchers, which built bridges between scientific and traditional knowledge; and iv) to a limited degree, when sharing knowledge and lessons between the various projects of the BSF cycles.

164. Numerous activities related to knowledge management were conducted by the project holders. For example, the South-South cooperation, pooling of knowledge and expertise and the resulting institutional capacity building and the co-generation of technologies were described in EQ 2. In addition, numerous publications, datasets, and forums for access and sharing, such as web pages, platforms and databases, were established under Windows 2 and 3. Moreover, two Window 2 case studies used social media such as WhatsApp to communicate and exchange information among farmers and technicians.

165. In terms of bridging scientific and traditional knowledge, the design of the Window 2 projects employed various forms of participatory approaches that aimed at facilitating farmer-scientist joint analysis of climate change and possible PGRFA solutions through participatory varietal selection, enhancement and, in some cases, breeding. The materials and knowledge flow between *in situ* and *ex situ* were described in EQ 3.

166. In Zimbabwe (W2B-PR-42), traditional knowledge is used for predicting the timing, quantity and frequency of the upcoming rainfall season. The indicators include bird migration, characteristics of flowering trees, availability and quantities of fruits, as well as wind direction. In most cases, the traditional knowledge was found to be as accurate as the meteorological weather forecasts, which are provided by scientists before the onset of rainfall seasons. The project demonstrated a link between traditional and scientific knowledge. This is important to help determine the kind of PGRFA which can be best suited for a particular year to optimize production. The combined use of traditional knowledge, meteorological data and farmers' field data was used by farmers to plan their upcoming cropping season.

167. In Zimbabwe (W2B-PR-42), traditional knowledge of PGR conservation contributed to the scientific understanding of how different traits found in different crop varieties determine the development of long-term seed storage regimes. Farmers are able to provide information about storability and longevity of seeds of different varieties. For example, they know which part of the pearl millet head to harvest as seed to maximize production and for how long such seed can be stored in the traditional seed storage facilities or in community seed banks.

168. The BSF projects produced numerous publications. The circulation and reach of these publications are not known, nor have these been shared with other BSF projects.

169. When survey respondents were asked about their perception of the BSF 3 knowledge management;, about 92 percent of highlighted that the knowledge management efforts resulted in actionable climate adaptation strategies. However, about 17 percent of respondents indicated that there has not been sufficient knowledge sharing between the BSF projects. Respondents further highlighted the need for more efforts in knowledge sharing among BSF projects in future cycles.

3.5.2 Knowledge management at programme level

170. The evaluation found that the knowledge management at programme level has so far been marginal. After the knowledge and expertise accumulated in the three programme cycles, the BSF is now in a good position to develop a knowledge management strategy. The BSF, as a programme, so far lacks a system for collecting, systematizing and sharing the knowledge products, including lessons learned. This is a missed opportunity to add value at the macro level, to inform donors and to share learnings with similar projects regionally. For example, the use of PGRFA for climate adaptation as described in EQ 2 on Effectiveness could have more added value when collated and systematized, as these may constitute comprehensive community-based climate change adaptation and disaster risk reduction strategies. Another example is that the diversity of the projects can be compared and analysed to identify the various bottlenecks, challenges and solutions to build more capacity for the conservation and use of PGRFA. In this way, not only can the bottlenecks of individual projects be solved, but also other partners that are not recipients of the BSF could possibly benefit from BSF knowledge to solve their specific challenges.

171. Even in the optimal funding scenario, the BSF will not have enough money to fund all the Contracting Parties, nor has this been the intention. Nevertheless, there were some perceptions of exclusivity of the BSF and the sense of lack of ownership for those who were not funded. Some expressed frustration for the prominence of international organizations, which also have the expertise of crafting proposals; some stated that donors are already funding international organizations and that these international organizations should support national organizations rather than compete with them; whilst some also stated that they do not know and have no access to the information and knowledge products of the BSF. A strategic knowledge management strategy could be used as a "model" to support the rest of the BSF stakeholders. Such a knowledge management strategy would help ensure that benefits are not limited to the funded projects, but instead shared with the rest of the Contracting Parties. This also highlights and demonstrates the added value of the Treaty's leadership in the management and conservation of PGRFA.

172. A good practice of the BSF is the access to information on PGRFA made available through GLIS and assigning more than 10 340 DOIs, mainly wheat and rice accessions, that have been managed through the projects. This has value in dealing with climate change challenges.[12]

173. The lack of communication and coordination of the BSF with other departments of FAO is another missed opportunity for both sides. Even though the BSF and FAO work on the same topics, in the same countries and in many cases, with the same National Focal Points, there was little exchange

[12] For the list of DOIs assigned to material managed through BSF 3 projects, please refer to https://ssl.fao.org/glis/stats/by-project.

of information, knowledge products and expertise - for example, with the Farmer Field School programme, and the department of Climate, Biodiversity, Land and Water (OCB), even though the Treaty falls under the same department. In addition, the projects could mutually benefit from linkages to the FAO country offices. For example, the project in Zimbabwe could have benefited from FAO's expertise on dealing with the fall armyworm, and general coordination with the UN Food Security Cluster in countries. More recently, there were signs of improvement such as joint activities on projects like the Scaling up Climate Ambition on Land Use and Agriculture through nationally determined contributions and National Adaptation Plans (SCALA), and with the Commission on Genetic Resources for Food and Agriculture on a technical consultation on *in situ* conservation and on-farm management. These were encouraged by the Secretary of the Treaty.

174. **Finding 17.** At project level, there have been numerous initiatives for awareness raising, which have helped to generate awareness and goodwill. However, at global level, awareness on the collective achievements of the BSF 3 has not been translated into a compelling narrative to relate the significance of PGRFA's conservation and sustainable use for food security in the context of climate change. The major gaps in communications in terms of quality, accessibility and frequency, were consistently expressed by all stakeholders interviewed.

175. The BSF 3 projects conducted awareness raising events and developed materials such as videos, brochures, booklets, fact sheets, videos, websites, flash and PowerPoint presentations to support national, regional and subregional awareness raising strategies. More than 50 000 participants attended over 670 awareness raising events. A popular form of outreach, which also included sharing of benefits, were Seed and Food Fairs, as well as Farmer Field Days, which were generally local events that engaged farmers, local communities, schools, and local to high level government officials, and often involved local and national media. Aside from exchange of seeds and knowledge, these vibrant events often involved policy dialogues about the importance of plant diversity for food security and climate change and were often linked to awareness raising about the Treaty (Kenya, Uganda, United Republic of Tanzania W2B-PR-26; Zimbabwe W2A-PR-60, with Malawi and Zambia W2B-PR-42; Bhutan, Nepal, Peru W2B-PR-23, and Ghana W2A PR35; Islamic Republic of Iran, Morocco, Turkey W3B PR 18 and W2B PR 41).

176. For most of the Window 3 projects, outreach and communications were largely in the form of research publications, web pages, workshops and scientific congresses and farmer field days. For Ecuador and Peru, for example (W3B-PR-5), the combined activities reached about 8 000 researchers. The Islamic Republic of Iran, Morocco and Turkey (W3B-PR-18) reported to have reached 12 800 technical staff and scientists globally.

177. The field visits of donors (European Union, Italian government) to the projects in Africa and Latin America, including a high level visit in Malawi with Norway's Deputy Minister of Agriculture, dignitaries from the Ministry of Foreign Affairs and Embassy with the Secretary of the Treaty, generated very positive impressions and understanding regarding the BSF and the Treaty and the relevance of the projects to the farming communities and the countries.

178. At the global level, the communications were limited to side events during the Governing Body meetings, regional workshops and international conferences. These were important but not sufficient. The Treaty website contained well-summarized project results and good aggregated statistics. However, it is missing compelling stories that relate the BSF's significance to the Treaty, local and global food systems and climate change. The BSF project tools and communication materials were not posted on the website, nor were the narrative and financial reports of the BSF projects.

179. The BSF statistics (see Annex 5) on the number of projects, partners and farmers reached, and PGRFA produced were significant but the communications on context and outcomes were inadequate. Most of the people interviewed expressed the need for effective and targeted communication materials at three levels: i) accessible information on the projects, their outcomes and knowledge products; ii) accessible policy briefs, which, for example, National Focal Points can use to discuss the Treaty with their respective governments and institutions; iii) accessible, attractive and contemporary communication materials that relate the significance of PGRFA, the BSF and the ITPGRFA to the SDGs, climate change and related obligations, resilient food systems and sustainable livelihoods.

180. The evaluation noted that the planning and budget allocations on communication and visibility plans were not consistent at project level.

3.6 Sustainability

EQ 6. What are the prospects for sustaining the results beyond projects' closure? In particular, the systems in place after projects' closure to sustain key activities. What are the prospects for scaling-up the activities? To what degree is the national policy context favourable to a sustainable use of the rich diversity of PGRFA?

181. **Finding 18.** For the immediate and medium-term, the BSF remains dependent on voluntary contributions. The prospects of securing funding are dependent on a more strategic, innovative and competitive programme. At project level, it is still too early to assess its sustainability, though there are promising indications. There were also risks as most Window 3 projects had no provisions for project uptake. In addition, the operations and sustainability of some community seed banks are at risk.

182. The Multilateral System of Access and Benefit-sharing is premised on the assumption that the access to PGRFA under the MLS and its eventual use and commercialization will generate sizable and predictable income for the benefit-sharing mechanism (Article 13.d). Since the Treaty came into force in 2004, this assumption had not come to fruition. There has been only one mandatory user-based payment for the third project cycle. Since the establishment of the BSF in 2009, the funds had come largely from voluntary contributions to one-off contributions, development aid and the regular contribution by the Norwegian model.[13] There has been a one-off contribution from both the European Seed Association and the International Seed Federation, and since 2017, the French seed sector, *Groupement National Interprofessionel des Semences et Plants* (GNIS) has been providing annual voluntary contributions.

183. While it is not within scope of the evaluation to cover the MLS, it is important to state that the funding sustainability for the BSF is dependent on the full functioning of the MLS. The negotiations for the enhancement of the functioning of the MLS have gone on since 2013. After seven years of negotiation, at the 2019 Eighth Session of the Treaty's Governing Body (GB-8), the negotiations, unfortunately, collapsed. This was largely due to the huge gaps in expectations on the percentage of subscription payment and the disagreement over legal and practical issues related to digital sequence information (DSI). The MLS negotiations have now been put on hold and are not formally on the Agenda for GB-9 (in 2021). All stakeholders interviewed expressed disappointment and exhaustion over the collapse of the negotiations. As one respondent put it:

[13] Whereby, by national policy, the Norwegian Ministry of Agriculture contributes 0.1 percent of the annual seed sales of the Norwegian seed companies. This has been provided on an annual basis to the BSF since 2009 and is in addition to the development aid provided by the Norwegian Ministry of Foreign Affairs.

"We failed and we still don't know the consequences of our failure on the Treaty. It would be great to start changing the negative environment. We are worried that the Treaty could collapse." Since the GB-8, a number of efforts and informal consultations are underway to find a way forward.

184. The collapse of the negotiation GB-8 has a huge bearing on the medium- and long-term funding sustainability of the BSF. For the immediate and medium-term, the funding will have to continue to depend on voluntary contributions. A number of potential contributors stated their interest to make a voluntary contribution to the BSF. However, for these potential contributors, it may be difficult to justify and mobilize contributions into a fund. In order to convince their own decision makers, and others in their networks, to provide or increase contributions, many stated that the BSF needs to put forward a concrete strategic and innovative programme. In this sense, they welcome the further development of the programmatic approach. This should include problem-solving and capacity building for the conservation and use of PGRFA, and it should generate benefits to farmers and new PGRFA materials for the MLS, thus demonstrating the cyclical and mutually-supportive relationship of access and benefit-sharing mechanism.

185. With regard to the sustainability of the individual projects, there were promising but not yet conclusive indications: i) 75 percent of the BSF 3 projects have links to other programmes and plans, which could help in the uptake of the activities and results. For example, the United Republic of Tanzania (W3B-PR-37) has the facilities and expertise as well as downstream linkages to plant breeding, agricultural extension and farming communities; ii) a number of projects made specific provisions to help ensure project continuity. For instance, in Bhutan (W2B PR-23) links were made with the 12-year plan of the Ministry of Agriculture and Forest for the further uptake and development of the potato clones, which resulted from BSF 3; iii) the results in capacity building of farming communities and PGRFA institutions could help sustain key project activities such as in the FFS (W2B-PR-42). For example, BSF-supported FFS continues to function after the project period as confirmed by a female farmer in Mutoko district: *"The BSF project created a unique platform for us farmers to share ideas and seeds with farmers in other districts. Up to this day, the farmer-to-farmer linkages created are still active."*; iv) changes in policy and practice with a number of projects indicating that they intend to pursue the collaboration with the partner institutions and continue to engage farmers in their work.

186. The evaluation found that the sustainability of the four Community Seed Banks under Practical Action in Zimbabwe (W2A-PR-60) is at risk. However, the three completed community seed banks were found to be operational by the country case study, whilst the fourth is yet to be completed. Despite the support of the Zimbabwe National Genebank and the initial training provided by CTDT to Practical Action, the project experienced major delays and substantial staff turnover. The locations of the four community seed banks are too far apart for Practical Action to monitor and support; neither does Practical Action have the necessary expertise. At the time of writing this evaluation report, the BSF Secretariat is looking for ways to salvage the community seed banks, including having more support from the national genebank.

187. As discussed in EQ 2 (Effectiveness) and EQ 3 (Partnership) the community seed bank can offer seed security to farmers. However, the sustainability of the community seed banks depends on well thought-out and critical discussions with all stakeholders, especially at the level of community ownership and governance. Aside from community contributions of land and labour, seed management and the security and maintenance of the physical infrastructure demand commitment from communities and local government officials. Considering the past experience of long-running and self-sustaining community seed banks of CTDT (W2B-PR-42) and others, the long-term operations and sustainability of community seed banks are only viable if the communities actually find the seed bank useful, primarily for the seed access function. If the access

function does not work, the conservation function is likely to be burdensome for the community (see seed security under EQ 2 on Effectiveness).

188. In terms of the survey respondents' perception on the sustainability of the BSF 3 results, all respondents agreed that the results in capacity building could help sustain other results. Whereas about 96 percent agreed that the BSF 3 projects were linked to other programmes, which could help in the uptake of the activities and results.

3.7 Cross-cutting issues

EQ 7. To what extent have cross-cutting issues such as gender, fairness and equity considerations been taken into account in the BSF projects?

189. **Finding 19.** Most of the projects, especially Window 2, considered fairness and equity primarily by choosing to work in areas with high levels of poverty, including indigenous communities that were vulnerable to climate change. However, gender and social inclusion varied amongst projects. In addition, the project design did not specifically target the youth. With regard to the balance between rights and obligations of the Contracting Parties, much of the discussions are understandably around access and benefit. However, a number of respondents also pointed to the corresponding obligations of Contracting Parties to promote fair and equitable benefit-sharing. The obligations seem to receive less attention.

190. The call for proposals for Windows 2 and 3 in BSF 3 highlighted the key role of women, and the proposal template and project monitoring specified that project activities should target women, and that projects should ensure gender-disaggregated data for project activities. However, addressing women's participation was not a specific requirement for proposal selection. Many of the Window 2 projects achieved their target of 30 to 50 percent women's participation in the farmer field schools and in community seed banks.

191. The projects generally targeted individual farmers, rather than combined with household members. This may not reflect the nature of family farming and the diverse crops and varietal preferences between men, women and youth. For the projects that conducted baseline surveys or vulnerability assessments, gender analyses were also conducted. During project implementation, gender awareness training and socio-economic aspirations were included in the projects in Kenya, Uganda and United Republic of Tanzania (W2B-PR-26). In some projects, there was substantial women's participation, but this differed greatly amongst projects, ranging from 30 to 70 percent participation. Many of the projects worked towards increasing women's leadership roles. In particular, CTDT (W2B-PR-42) employed a gender-sensitive FFS curriculum, which included farmers' gender-differentiated plant breeding objectives and climate-resilient trait preferences. Kenya and the United Republic of Tanzania (W3B-PR-37) targeted women's crops, which enabled women to access disease-free and disease-resilient materials for home consumption and for selling crops and seedlings. The Ghana project (W2A-PR-35) made little attempt to target women, instead focusing on crop resilience that would benefit entire farming communities. For Window 3, Kenya and United Republic of Tanzania's focus on cassava (W3B-PR-37) attracted a high degree of women farmers' participation, largely because it is a crop traditionally grown by women.

192. Most of the projects strongly related their work towards policy advocacy and the implementation of Farmers' Rights, expressed in numerous policy dialogues with farmers' participation and farmers' accessing, exchanging, selecting, re-using and selling farm-saved seeds at local markets.

193. In the projects in Bhutan, Nepal and Peru (W2B PR-23), indigenous peoples were amongst the beneficiaries. A number of projects - e.g. the one in Zimbabwe (W2B PR 42) - enabled the inclusion of traditional knowledge often based on tribal groups. It would be relevant to systematically state the involvement of indigenous peoples of the project sites when applicable.

194. Some Contracting Parties noted that the discussions with BSF stakeholders about access and benefit-sharing were more inclined towards concerns for one's benefits than Contracting Parties' obligations. For example, the concerns of the private sector can be perceived as solely based on a business perspective and guarding their own interest with less concerns for obligations on equity. Others expressed that Contracting Parties, especially from developed and emerging economies and the private sector, should provide and/or increase their voluntary contributions whilst pursuing mandatory payments. However, the lack of a concrete programme is a barrier expressed by most of the respondents. The evaluators are of the opinion that common grounds need to be found for issues of equity from a rights-based perspective between the rights holders (i.e. farmers) and duty bearers (i.e. Contracting Parties). Trust-building seem to be warranted for all parties.

4. Conclusions and recommendations

4.1 Conclusions

Overall conclusion. The evaluation concludes that the niche and added value of the BSF (past and present cycles) are due to a combination of traits:

i. ***Unique and unequivocal mandate*** in which 148 signatory countries and the European Union committed to the Multilateral System of Access and Benefit-sharing.

ii. ***Works with the entire array*** of PGRFA needed to address the immense challenges brought about by climate change. This includes working with crop wild relatives, landraces, farmer-improved varieties, and improved varieties from research institutions, all explored from molecular, alleles and genes, from breeding materials to cultivars, at temporal and spatial scales, from genes to farms and to landscape levels.

iii. ***Representation of all stakeholders in the entire spectrum of in situ and ex situ PGRFA*** from on-farm to community seed banks, farmers and civil societies, universities, plant breeding to extension services, national governments and regional bodies, national and international genebanks, national and international research organizations, local and national markets and seed companies.

iv. ***Synergistic and mutually reinforcing Multilateral System of Access and Benefit-sharing*** that facilitates the access and use of PGRFA, which in turn generates new materials for the farmers and the MLS. Rather than just conserving and creating diversity, the BSF helps to strengthen the systems that maintain and create diversity for climate-resilient food and agriculture.

v. ***Integrated research for development*** with marginalized and vulnerable communities through participatory selection, development, conservation and sustainable use of PGRFA as an integral part of climate-resilient strategies.

Conclusion 1. Relevance. The BSF 3 was highly relevant in leveraging PGRFA as an indispensable element of farmers' food security and adaptation strategy for climate change. The BSF 3 was relevant and aligned at various levels linking PGRFA interventions from local, national to major international agreements, primarily with the SDGs, the Paris Agreement, the Convention on Biological Diversity and the Second Global Plan of Action.

195. The focus on poverty, climate vulnerability and geographic distribution of the BSF 3 projects were balanced at regional levels. However, there were some discrepancies within Asia and the Africa regions, particularly due to the absence of Francophone sub-Saharan Africa. The call for proposals did not reflect an analysis of the regional and intraregional context and priorities.

Conclusion 2. Effectiveness. For a relatively small amount of money, the BSF 3 significantly contributed to the overall objectives of the Benefit-sharing Fund. For USD 9.7 million, the BSF 3 enabled the formation of 270 partnerships to implement 20 projects in 43 participating countries. The multi-stakeholders and multi-country collaboration and capacity building delivered a likely unprecedented number of PGRFA materials to be accessed by farmers. 20,706 varieties were characterized and/or tested for the development and adaptation in multiple locations around the world, 298 new varieties were selected and developed and 5 933 accessions were planned for inclusion into the MLS.

196. Capacity building for the conservation and sustainable use of a large number of PGRFA materials resulted in the participatory development and adoption of climate-resilient strategies that indicated access to crops and varietal diversity and seeds, contributions to food security and to the livelihoods of men and women farmers. A greater appreciation of the achievements of the

BSF 3 could have been better framed by the further development of a strategic programmatic approach. The contribution to farmers' seed security and disaster risk reduction were unexpected results of the BSF 3. These were captured in the comparative analysis of evaluation but not directly reflected in the call for proposals and in the project reports. Moreover, the BSF 3 perspectives were limited to the four-year project cycle, whilst the immediate- and medium-term results of the BSF 3 were also related to the long-term goals of PGRFA conservation and sustainable use in the context of climate change. In addition, the likely strategic contribution of the BSF to the broadening of the genetic base or diversity of crops is important to building the resilience of agriculture under conditions of climate change. This has yet to be captured and appreciated. Furthermore, the diagnosis and corresponding options for farmers' PGRFA demands and breeding objectives need a more systematic analysis. It is important to link how these would help build farmers resilience not only for current climate adaptation, but also towards resilience for the future with the likely increasingly frequent, severe, multiple and interconnected climate hazards and risks.

Conclusion 3. Partnerships. The intergovernmental mechanism of the Treaty and the partnerships within the multi-stakeholder and multi-country arrangements in the BSF 3 significantly contributed to the achievements of the projects. The partnerships generated and/or reinforced PGRFA innovations and capacity building, which otherwise were highly unlikely to be achieved by a single institution on its own. Through partnerships, the BSF 3 played a catalytic role in linking *in situ* and *ex situ* PGRFA management.

197. In effect, the BSF 3 demonstrated a viable model of the Multilateral System of Access and Benefit-sharing through the access and use of existing plant genetic materials, which in turn generated new materials for the farmers and the MLS. Moreover, the multi-country partnerships also helped in highlighting the mutual interdependence of countries on PGRFA, as well as the effectiveness of coordinated response to transboundary pests and diseases brought about by increased biotic and abiotic stresses, and in the formulation of DOI and software databases. The demonstration of the "viable model" in the BSF 3 is a key result within countries and regional cooperation.

198. The Southern leadership, which was supported by the South-South and North-South cooperation, generated not only good results but also remarkable goodwill. However, on the need to improve some perception of inclusivity of the BSF and further ensure that men and women farmers remain the primary beneficiary of the BSF were also expressed. At community level, the local governance proved crucial for the operations and sustainability of key activities, particularly the community seed banks.

199. The technical and PGRFA material support of the CGIAR significantly contributed to the achievements of projects. At the same time, the projects also offered significant opportunity for multi-location testing of PGRFA materials. However, in relation to supporting Southern leadership, the added value and cost efficiency when a CGIAR centre takes the project lead and management role are not clear. Moreover, the size of the CGIAR budget allocation varies amongst the projects. Some centres take minimum amounts, whilst others take a greater proportion of the BSF project.

200. Support of plant breeders to participatory plant breeding are so far limited and they are a missed opportunity for developing and adapting more PGRFA for farmers' needs. Similarly, engagement with the private seed sectors, for example in policy dialogue, business operations etc., has been limited.

Conclusion 4. Efficiency. As the operational arm of the Treaty's Multilateral System of Access and Benefit-sharing, and by constantly evolving, the BSF 3 provided an effective and reasonably efficient funding modality. In effect, the BSF 3 enabled the funding and implementation of a number of relatively

small and diverse but critical PGRFA interventions, which otherwise would not have been possible to be funded individually by major donors.

201. The total budget of less than USD 10 million for the BSF 3 cycle was sufficient to enable projects to deliver significant results. Rather than the length and size of the projects, efficient planning and partnerships appear to be more decisive for the BSF's success.

Conclusion 5. Efficiency. The third project cycle of the BSF was efficiently designed and well executed from the call for proposals, selection and approval processes. The checks and balances in project selection and approval process were rigorous. The Secretariat provided highly competent support to the selection and approval processes, and the help desk function. A good system for project cycle management is operational and the reporting and monitoring is more systematically addressed in the newly-approved Operations Manual of the BSF. However, the planning, monitoring and reporting for the BSF 3 was not consistently efficient. Lessons learned from the previous cycles have not yet been reflected on the mechanisms to help ensure greater outcomes such as linkages with other projects and partnerships, and the need for planning from the outset for the dissemination of results has yet to been included.

202. First, the work schedule in project proposals were not translated and regularly updated into periodic work plans and budgets that are adjusted according to the project's progress and risks. Second, some of the project plans did not have a realistic time frame, nor a feasibility assessment, for example for community seed banks and seeds commercialization. Third, the BSF Secretariat lacks the adequate technical support for the complexity and interdisciplinary nature of the BSF. The support of the Panel of Experts was limited to project appraisal and selection but not extended to the more challenging tasks of project implementation and monitoring.

203. For the proposals that were approved but not selected due to budget constraints, the certificate of excellence has not generated additional donor support. Furthermore, the communication procedures regarding the rejected proposals are not systematic and are subject to misinterpretation.

Conclusion 6. Knowledge management. The BSF generated rich and tangible data and knowledge on the still-developing field of PGRFA management for food security in the context of climate change. The effective knowledge management at the project level resulted in actionable climate adaptation strategies, with potentially promising outcomes. However, at the programme level, the leveraging of the knowledge generated by the BSF has so far been limited.

204. The benefits of the BSF, in the form of knowledge products, PGRFA materials and lessons learned had not yet been further shared, improved and adapted amongst project partners and by the wider stakeholders and Contracting Parties of the Treaty.

205. At the project level, there have been numerous initiatives for awareness raising, which have helped to generate awareness and goodwill about the ITPGRFA and the importance of PGRFA for food security in the context of climate change. However, at the global level, awareness on the collective achievements of the BSF 3 has not been translated into a compelling narrative to relate the significance of the PGRFA's conservation and sustainable use for food security in the context of climate change. The gaps in communication on knowledge management, in terms of quality, accessibility and frequency has been consistently expressed by all stakeholders. The lack of broader communication and visibility is a missed opportunity in highlighting the achievements of the BSF and its significance to the ITPGRFA implementation.

Conclusion 7. Sustainability. It is too early to assess the sustainability of the individual projects' activities and outcomes. Nevertheless, there were promising indications: i) many of the BSF 3 projects were linked

to other programmes and plans, which could help in the uptake of the activities and results; ii) a number of projects made provisions to help ensure project continuity; iii) the results in capacity building could help sustain key project activities; iv) changes in policy and practice with a number of projects indicating intentions to pursue the collaboration with partner institutions and continue to engage farmers. However, there were also risks, given that a number of projects, particularly Window 3 projects, had not made provisions for project uptake. In addition, the operations and sustainability of some community seed banks were at risk.

206. The long-term funding sustainability of the BSF is dependent on predictable and mandatory user-based income from the MLS. However, given the current unresolved complications in the negotiations for the enhancement of the MLS, for the immediate- and medium-term, the BSF remains dependent on voluntary contributions. In addition, it is a major challenge to attract donors without a concrete programme. In this regard, the pursuit of a programmatic approach, as stated in the Treaty's funding strategy, is an important step that needs to be further developed.

Conclusion 8. Cross-cutting. Most of the projects, especially for Window 2, considered gender, fairness and equity through working with communities with high levels of poverty and vulnerability to climate change. However, the projects generally targeted individual farmers, rather than household members. This may not reflect the nature of family farming, the diversification of crops and varietal preferences between men, women and youth.

207. Amongst the Contracting Parties and stakeholders, a number of respondents pointed out that whilst the concerns regarding the functioning of the MLS and benefit-sharing are legitimate, they also need to be balanced by obligations to make the system work and to meet the obligations of equitably benefit-sharing. This includes increasing the voluntary contributions, especially from developed and emerging economies and the private sector, while pursuing mandatory payments. However, the lack of a concrete programme is a barrier expressed by most of the respondents. Trust building seem to be warranted for all parties.

4.2 Recommendations

Recommendation 1. To the Governing Body - Relevance. To capitalize on the BSF's achievements in highlighting PGRFA as an indispensable element of farmers' food and nutrition security and climate adaptation strategy; and in line with the call of ITPGRFA's Funding Strategy, to support the nexus between biodiversity and climate change; the Governing Body should further advance the BSF's alignments with SDG 2 (end hunger), SDG 13 (climate action) and the Paris Agreement on enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change[14] by further sharpening, illustrating and concretizing the strategic importance of PGRFA for a resilient food and nutrition security in the context of climate change.

208. Suggested actions:

i. With increasingly severe and extreme climate variabilities and related hazards, the various PGRFA climate adaptation strategies can be, for example, integrated into a comprehensive community-led PGRFA adaptation strategy, with support from national and international PGRFA institutions, by linking measures for seed security, resilient crops and disaster risk reduction. The BSF programme framework and the project cycles should define PGRFA

[14] Article 7, Paris Climate Agreement.

impact pathways and outcome indicators for climate change adaptation and resilient livelihoods.

ii. Highlighting the global interdependence of PGRFA and responding to increasing abiotic and biotic crop stresses linked to climate change, and leveraging the BSF's experience in dealing with transboundary pests and diseases, continue with and put greater emphasis on multi-country collaboration for the sustainable use and generation of new materials, for example through plant selection and breeding as well as targeted policy engagement at national, regional and global levels.

iii. To ensure a more responsive BSF programme and to help address intraregional participation, enable the regions of the Contracting Parties to define their specific regional and intraregional needs and priorities as inputs to the programme strategic framework of the BSF and for the specific call for proposals.

iv. To ensure greater relevance and alignment from local, national and regional levels, when possible, encourage the projects to seek linkages and synergies with the specific country's nationally determined contribution and Integrating Agriculture in National Adaptation Plans as many of these include crop management and seed distribution, for example as part of their Early Warning Early Action response. At the very least, all parties can possibly benefit from the mutual exchange of information.

Recommendation 2. To the Funding Committee - Effectiveness. In line with the ITPGRFA Funding Strategy for the programmatic implementation of the BSF in a long-term, coordinated, synergistic and effective manner, and to further leverage the significant achievements of the BSF 3, the evaluation recommends that the Funding Committee_commissions the development of the BSF multi-year programme framework, that is both strategic and operational, as well as technical and political, visionary and results oriented.

209. In consideration that PGRFA for food and nutrition in the context of climate change requires both urgency and a long-term approach, integrate immediate- and medium-term objectives within long-term goals. The long-term goals should be of global significance, such as i) preparing for changing climate and the possible range within which specific crops can be grown; ii) the greater need for PGRFA base-broadening under erratic, severe and extreme weather events; and iii) the long process of plant breeding and the necessity to breed with broad and multiple trait variations for diverse agroecologies, socio-economies and cultures. The immediate- and medium-term operations within the BSF project cycles should continue to target outcomes that primarily benefit farmers and, secondarily, the supporting PGRFA institutions. The medium-term outcomes should be guided by and contribute to the long-term goals.

210. In terms of PGRFA conservation and sustainable use for climate resilience, the programme framework should provide a strategy for linkages and institutional support for both the farmers' current and longer-term disaster risk management and adaptation.

211. The BSF cycles should continue to ensure more responsive and inclusive PGRFA outcomes catering to the diverse needs of farmers, including women and youth. The project design needs to include a well-defined methodology and corresponding rationale to demonstrate a farmer demand-driven approach with the differentiated and articulated breeding objectives and trait preferences of men, women and the youth.

212. As an operational mechanism of the Treaty's Multilateral System of Access and Benefit-sharing, the BSF programmes and corresponding projects' outcomes and policy focus should continue to prioritize approaches that reinforce and strengthen the cyclical and mutually enhancing relations between accessing materials from the MLS and generating new materials that add to new materials for the MLS and for the benefit of farmers and the PGRFA community at large. With

constantly changing markets and environments, continuous access of farmers to PGRFA must be further pursued by the BSF.

213. The strategic programme framework should be used as a basis for fundraising, broadening donor base, and for appealing to voluntary contributions. The programme framework should include different components, which can be adjusted according to funding availability.

Recommendation 3. To the Secretariat - Partnership. In line with the Funding Strategy's objective to strengthen partnerships and to leverage the significant contribution of the multi-stakeholder partnerships to the BSF 3, the evaluation recommends that the Secretariat map out institutions and programmes to define synergies and further define the programmatic approach of the BSF.

214. At programme level, the Secretariat should:

i. Convene programmes and institutions that work with similar thematic focus as the BSF, including the private sector and private foundations, to share lessons learned and conduct a meta-analysis to define key priority areas and gaps in PRGFA programme interventions as well as further define the niche and added value of the BSF.
ii. Link and define synergies with institutions and programmes that can complement and support the BSF's medium- and long-term goals. Consider an element of public-private partnership and its added value in strategic problem-solving in areas related to value chain development, etc..
iii. When appropriate, consider building alliances with programmes and organizations for synergistic planning to potentially expand the BSF's reach to more areas and farmers, mutually share expertise, tools and knowledge, and enable the BSF to specifically allocate funding to projects and activities where the BSF can add more value.
iv. Pursue a dialogue with the CGIAR to reconsider – if fair and feasible – their role as experts whereby it should neither be involved as project leader and in the management, nor be recipient of the BSF funding. Instead, the CGIAR could focus on providing specific technical expertise, PGRFA material support and advice for projects with capacity building function. Also identify and consider the mutual interest of the CGIAR, for example in the multi-location testing of relevant PGRFA materials, data sharing and responding to medium- to longer-term breeding in relation to adaptation to changing climate.
v. Design the call for proposals to solicit more participation of plant breeding institutes in the BSF projects, which can support smallholder farmers in the development of climate-resilient PGRFA materials targeted for specific agroecologies as well as the genetic base broadening encompassing both traditional and modern cultivars.

215. At project level, the Secretariat should:

i. Continue to encourage the multi-stakeholder programme collaboration within projects and across countries.
ii. Project leadership by national institutions (governments and civil society organizations) is a good practice and it should be maintained as much as possible.

Recommendation 4. To the Funding Committee - Efficiency. To improve the technical efficiency of the complex, multi-country and interdisciplinary PGRFA programme, consistent technical support for the BSF Secretariat is needed. The Funding Committee should consider extending the support of a broad range of experts not only in the selection process but also in the planning, monitoring, evaluation and learning process.

216. A flexible representation of expertise may include plant breeding, climate change, business and marketing, policy, gender, farmers' engagement, and regional and language expertise. In addition to the experts appointed by the regions of the Contracting Parties, the Secretariat should include the participation of FAO experts in climate change and PGRFA. The Secretariat servicing the experts may incur some additional costs. The involvement of additional experts should follow the model of pro bono technical advisers as much as possible.

Recommendation 5. To the Secretariat - Efficiency. To ensure a more efficient project management, the BFS Secretariat needs to improve its planning, monitoring, evaluation and learning (MEL) by: i) ensuring the integration of a responsive and periodically updated plan, budget and risk management; ii) get expert support to establish the technical feasibility of the project; and iii) establish coherence in reporting.

217. In line with the Funding Strategy's statement that the Operations Manual of the BSF is subject to FAO's existing standard procedures, including financial audits and reports, the plan and budget from the original proposal needs to be translated to project work plans to reflect the built-in inception period of the project and updated periodically to reflect and respond to project progress and risks. To avoid a major factor of delays, procurement should also be integrated in the work plan as needed. After the initial period of implementation, succeeding approvals should be based not only on the progress and financial reports, but also on the plans and budget for the coming period. The latter could be summarized in a page including updates on changes in project context, progress and problems in implementation and risk management. The additional steps should not cause additional burden to the projects, as most of the organizations periodically update their plans, anyway. Neither should this cause additional burden to the Secretariat, as it should be easier to monitor updated plans.

218. The technical feasibility of the work plans and budgets, including plant breeding, selection and enhancement, needs to be reviewed by experts from Recommendation 4.

219. To further ensure efficiency and sustainability, selected projects with business/marketing components should submit a business plan, including feasibility for demand and supply, clear targeting for local or commercial markets, and end-of-project turnover. The plan should be reviewed and monitored by respective experts.

220. To further ensure efficiency and sustainability, selected projects with community seed bank component should submit project rationale, PGRFA management, feasibility and sustainability plan. The plan should reflect: i) expertise, track record and long-term commitment of projects led together with the support of PGRFA institutions; ii) ownership, governance, support for building the technical and operational capacity of local communities and local authorities. The plan should be reviewed and monitored by respective experts.

221. In further capturing lessons learned, the Secretariat should carry out a comprehensive internal review looking across all project cycles to reflect on mechanisms for achieving greater outcomes for the BSF projects in such areas as linkages with other projects and partnerships, and the need for planning from the outset for the dissemination of results and mechanisms to help ensure impacts.

Recommendation 6. To the Secretariat - Efficiency. To improve efficiency and transparency in contract management and reporting, the Secretariat should regularly submit and distribute the BSF's annual progress and financial reports to all the donors, the Funding Committee, the Contracting Parties and the project holders. This should be also posted in the ITPGRFA's website. This report should serve as a

common template used for all donor requirements as much as possible, and it should be adjusted to specific donor requirements as needed.

222. Issuing contracts/Letters of Agreement directly to the project holders is good practice. To better manage the administrative complications in contract management, the Secretariat is requested to continue with its good practice to update its assessment and suggestions for improvement reflecting the lessons learned from the project cycles.

223. It is good practice that management and funds disbursement for the subcontractors are managed solely by the project holder. However, the progress and financial reports of the subcontractors should also be monitored by the Secretariat. For example, include specific country reports in the overall reporting. In addition, aside from the activity/category-based budget, the budget should also be presented by institutional and/or country allocations.

224. For multi-country projects, all the respective National Focal Points should be informed of all the countries in projects that involved their respective country. The National Focal Points should be encouraged and supported in coordinating with their counterparts for multi-country projects and when reporting to their respective regional groups in the ITPGRFA.

225. Standardize procedures on communicating reasons for the rejections of unselected proposals. For goodwill and learning, briefly include the reason for rejection, subject to more details if requested.

Recommendation 7. To the Funding Committee - Knowledge management and communications. In line with the statement of the funding strategy on knowledge management and investing in communications, the strategic programme framework referred to in Recommendation 2 should include the development and budget allocation of a corresponding knowledge management and communication strategy. The Secretariat can formulate the design so that the BSF's contribution to the conservation and sustainable use of PGRFA is leveraged for greater reach, impact and visibility.

226. The knowledge management component should focus on: i) leveraging and adding value to the knowledge products of the BSF so that these can be potentially adapted and further improved by a wider set of stakeholders in highly diverse context; ii) reaching out to a wider set of institutions and knowledge platforms, whose knowledge products can mutually enrich the BSF such as with FAO's early warning systems; iii) ensuring that the benefits of the BSF, in terms of knowledge, products and problem-solving, are not limited to those who get funded, but they are applicable to the wider Contracting Parties of the ITPGRFA.

227. The communications component should weave a compelling, evidence-based narrative on the achievements of the BSF and the significance of PGRFA for food and nutrition security and for climate change adaptation and resilience. This should reach out to and relate the significance of the BSF's achievements to e.g. the SDG, Paris Agreement and the national and regional priorities. Furthermore, the communications should reach out to the wider stakeholders along the food chain, including the food processing industries and consumers. Communication materials should be adapted to specific audiences.

228. The BSF should consider partnering with other institutions for specific communication purposes. For instance, with the Global Crop Diversity Trust on e.g. the importance of linking *in-situ* and *ex-situ* PGRFA management for local to global food systems. The BSF should also coordinate with other departments at FAO for joint communications related to food and nutrition security and climate resilience.

Recommendation 8. To the Funding Committee and the Secretariat - Sustainability. For greater reach and sustainability of the BSF projects, put emphasis on the efficiency in capacity building methods, impact pathways with clear entry and exit strategies, and extend investments to further optimize results of very well performing projects from previous project cycles.

229. For greater reach and sustainability, the training-of-trainers approach in capacity building interventions should be encouraged, including the systematization of training materials (e.g. learning modules, curriculum) and action plans on how the trainees will apply and share their learning.

230. To optimize project outputs and outcomes, as well as the impact pathways for both Window 2 and 3, the projects should define a more explicit entry strategy (where and how would the specific project interventions fit and add value into a specific context and/or other programmes and plans) and exit strategy (project turn over, plans for uptake of project outputs, built capacities to continue activities and/or use project outputs). The impact pathways should also relate to scaling the reach to more farmers.

231. Rather than issuing a certificate of excellence to selected proposals that were not approved due to funding limitation, the opportunity cost of further investments in very well performing projects from previous BSF cycles, with unfinished outputs and/or highly promising outcomes should be considered for future BSF project cycles. The process of selection should involve updated and evidence-based plans and targets and subjected to the selection process of the Panel of Experts.

Recommendation 9. To the Secretariat - Cross-cutting. To improve the reach to more farmers and to improve gender and social inclusion, the Secretariat should guide projects for more coherent ways of calculating the numbers of farmers reached, formalizing women's role and leadership as a project selection criterion. In the context of family farming, consider working with household as a unit rather than individual farmers.

232. At programme level, a coherent methodology and clear assumptions for calculating the number of farmers directly and indirectly reached needs to be designed by the Secretariat, and the impact pathways need to include how more farmers can be directly and indirectly reached by the project.

233. The Secretariat should put weight in women's participation and leadership as one of the criteria for project selection. Gender sensitive tools (e.g., PGRFA objectives setting, training) should complement the good practice of gender disaggregated data by the BSF. Specifically ensure that the plant breeding objectives and traits preferences are specified by gender and youth.

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Appendix 1. List of BSF 3 projects

Appendix Table 1. Summary information for Window 2 projects

Region	Project ID	Targeted countries	Project title	Executing entity	Total budget
Africa	W2A-PR-115	Uganda	Strengthening Seed Delivery System for Dryland Cereals and Legumes in Drought-prone Areas of Uganda	National Semi Arid Resources Research Institute - National Agricultural Research Organisation (NARO)	299 655
	W2A-PR-35	Ghana	Sustainable utilization of cowpea genetic resources for enhanced food security and poverty alleviation in the dry savannah northern regions of Ghana	University of Cape Coast, Department of Molecular Biology and Biotechnology	198 792
	W2A-PR-60	Zimbabwe	Community based conservation, utilization and management of climate adapted Sorghum, Pearl-Millet, Cowpea and Bambaranuts in Matebeleland South Province of Zimbabwe	Practical Action	298 162
	W2B-PR-26	Kenya (L), United Republic of Tanzania (P) and Uganda (P)	Promoting open source seed systems for beans, forage legumes, millet and sorghum for climate change adaptation in Kenya, United Republic of Tanzania and Uganda	National Genebank of Kenya	800 000
	W2B-PR-42	Zimbabwe (L), Malawi (P); Zambia (P);	Policies and practices to facilitate the implementation of developed Strategic Action Plans for Plant Genetic Resources conservation and use for the improvement of food and nutrition security under changing climatic conditions	Community Technology Development Trust	799 525
Europe	W2A-PR-01	Albania	Strengthening on-farm conservation and utilization of PGRFA to support farmers' adaptation to climate change and improved livelihoods in Albania	Agricultural University of Tirana	260 000
GRULAC	W2A-PR-200	Cuba	La diversidad de recursos forrajeros en los sistemas ganaderos para atenuar el efecto del cambio climático en Cuba (FITORED)	Estación Experimental de Pastos y Forrajes Indio Hatuey'	150 000
	W2B-PR-11	Guatemala (L), Honduras (P), Nicaragua (P) and Costa Rica (P)	Uso sostenible de la agro-biodiversidad de maíz, frijol y especies sub-utilizadas en comunidades indígenas de Centroamérica: Una estrategia para la seguridad alimentaria y adaptación climática	Asociación de Organizaciones de los Cuchumatanes (ASOCUCH)	799 183
	W2B-PR-23	Peru (L), Bhutan (P), Nepal (P)	Exchanging and Developing Biodiverse Potato Varieties in Peru, Nepal and Bhutan	International Potato Center (CIP)	800 000
Middle East and North Africa	W2B-PR-41	Turkey (L), Afghanistan (P), Islamic Republic of Iran (P)	Improving food security by enhancing wheat production and its resilience to climate change through maintaining the diversity of currently grown landraces	International Maize and Wheat Improvement Center (CIMMYT)	785 400

Appendix Table 2. Summary Information for Window 3 projects

Region	Project ID	Targeted countries	Project Title	Executing entity	Total budget
Africa	W3B-PR-37-United Republic of Tanzania	United Republic of Tanzania (L) and Kenya (P)	Marker assisted selection of useful cassava germplasm adapted to biotic and abiotic stresses caused by global climate change	Mikocheni Agricultural Research Institute	472 780
Asia	W3A-PR-07-Indonesia	Indonesia	Development of Biomarkers Tools for Improved Production and Climate Change Resistance in Indonesian Rice	Bina Nusantara University	150 000
	W3A-PR-27-DPR Korea	DPR Korea	Genetic base broadening and germplasm enhancement for the development of drought tolerant cultivars of wheat and barley in DPR Korea	Academy of Agricultural Sciences (AAS)	137 553
	W3B-PR-08-Indonesia	Indonesia(L), Malaysia, Lao People's Democratic Republic and Philippines	Co-Development and transfer of Rice Technologies	Indonesian Agency for Agricultural Research and Development	484 902
	W3B-PR-26-Malaysia	Malaysia(L), Nigeria(P), Ghana(P), Indonesia(P)	Genetic and trait characterisation of farmer and genebank sources of bambara groundnut for the development of drought tolerant lines in sub-Saharan Africa and Southeast Asia	Crops for the Future Research Centre	499 999
	W3B-PR-29-Indonesia	Indonesia (L), Rwanda (P), India (P) and Brazil (P)	Multi-country construction of a test platform for the development and allocation of globally unique identifiers for rice germplasm, linking the MLS information infrastructure and the DivSeek repository	Indonesian Agency for Agricultural Research and Development, Ministry of Agriculture	499 660
GRULAC	W3A-PR-08-Costa Rica	Costa Rica	"Tecnología informática para el uso y la conservación de resursos fitogenéticos de raíces tropicales (yuca, ñame,camote, tiquizque y malanga) que contribuyen a la alimentación humana y animal en Costa Rica	"Instituto National de Innovacion y Trasferencia de Tecnología Agropecuaria	149 716
	W3B-PR-05-Peru	Peru (L), Ecuador (P) and Venezuela (P)	Marker assisted selection for potato germplasm adapted to biotic and abiotic stresses caused by global climate change	Universidad Nacional Agraria la Molina (UNALM)- Instituto de Biotecnologia (IBIT)	497 585
Middle East and North Africa	W3B-PR-02-Jordan	Jordan (L), Egypt (P), Ethiopia (P) and Sudan (P)	An Integrated Approach to Identify and Characterize Climate-resilient Wheat for the West Asia and North Africa Region	ICARDA	500 000

Region	Project ID	Targeted countries	Project Title	Executing entity	Total budget
	W3B-PR-18-Turkey	Turkey (L), Iran (P) and Morocco (P)	Addressing the challenges of climate change for sustainable food security in Turkey, Iran and Morocco, through the creation and dissemination of an international database to promote the use of wheat genetic resources and increase genetic gains	International Maize and Wheat Improvement Center (CIMMYT)	500 000
	W3B-PR-21-Morocco	Morocco (L), Tunisia (P) and Algeria (P)	In vitro culture and genomics-assisted fast track improvement of local landraces of wheat and barley in Morocco, Tunisia and Algeria for enhancing food security and adaptation to climate change	ICARDA	496 503
	South West Pacific	W3B-PR-39-Fiji	Fiji (L), Kiribati (P), Marshall Islands (P), Palau (P), Samoa (P), Tonga (P) and Cook Islands (P)	Using modern biotechnologies to sustain food security in Pacific island countries	499 165

Appendix 2. Summary of identified good practices

Criterion	Good practices
Relevance	Targeting the conservation and sustainable use of PGRFA materials for men and women farmers, who live in areas of poverty and climate vulnerability is an important component of the biodiversity and climate change nexus. Aligning local to national level PGRFA conservation and use results in contributions to food security in the context of climate change that are aligned to global agreements such as the Sustainable Development Goals.
Effectiveness	Facilitating the cooperation of national PGRFA institutions within and between countries and regions contributed to their capacity building and the co-development of technologies, which had three inter-connected results: i) enabling PGRFA institutions in the South to access technologies and adapt such technologies to their own context and priorities; ii) South-South capacity building through co-development of technologies that could potentially facilitate germplasm exchange and related information; iii) pooling of expertise and knowledge sharing towards addressing the fragmented research and development. Participatory approaches and specifically targeting both men and women farmers contribute to farmers' empowerment enabling them to conserve and use PGRFA tailored to their highly diverse agroecologies and socio-cultural needs. These potentially enabled farmers to: i) enhance their knowledge, skills and attitude to individually and jointly assess problems, identify solutions, define their plant breeding objectives and trait preferences; ii) select, enhance or develop, multiply, distribute, use and in some cases sell, climate-resilient PGRFA; and iii) engage in policy dialogue in support of farmer seed systems. The participatory and evidence-based interventions resulted in the development and adoption of climate-resilient strategies that included both farmers' cultivars and/or landraces and improved cultivars. These results contributed to the food security and improved livelihoods of men and women farmers. Facilitating an unlikely unprecedented number of PGRFA materials to be accessed, tested and developed with farmers in multiple locations of highly diverse agroecologies and cultures were mutually beneficial for all parties. High agro-biodiversity supports climate resilience and the feedback from farmers is highly valuable for a more responsive and effective support to PGRFA research and development. The linkages between community seed banks and the national seed banks were essential in building capacities and in the exchange of materials and knowledge between communities and between communities and PGRFA institutions. In effect, the BSF demonstrated a viable model of the Multilateral System of Access and Benefit-sharing through the access and use of existing plant genetic materials, which in turn generated new materials for the farmers and the MLS.

Criterion	Good practices
Partnerships	The **multi-stakeholder and multi-country** partnerships are decisive elements in ensuring the attainment and sustainability of the results and outcomes. **Most of the projects are part of a wider network, which potentially contributes to the sustainability of the projects.** Through partnerships, the BSF 3 played a catalytic role linking *in-situ* and *ex-situ* PGRFA management. This was concretely manifested at three levels: i) the iterative flow of PGRFA materials; ii) the iterative flow of PGRFA materials was accompanied by an active exchange of scientific and local knowledge; iii) as an inter-governmental undertaking, the active engagement and ownership of national institutions of the Contracting Parties was highly decisive in facilitating the wide access and use of PGRFA, as well as in dealing with trans-boundary pest and diseases. The leadership of national organizations was effective in ensuring the relevance of the project design and results, capacity building and ownership.
Efficiency	The BSF has been constantly evolving through its systematic application of lessons learned. The Secretariat provided a well-planned and well-executed support system, from the design and the Call for Proposals, help desk services and the selection process of the Panel of Experts and the final approval by the Bureau. The policy and implementation on the Conflict of Interest has been very good. The Call for Proposal and the templates for the submission of project proposals were well structured. The help desk functioned to help with the elaboration of proposals and to provide language support. The Panel of Experts conducted a high-quality and independent appraisal of project proposals using a protocol to ensure standardized scoring by individual experts and a collective appraisal of the list of project proposals presented for final approval. In addition, a rigorous methodology for project selection and approval was put into place - the tools for project selection were cost-effective and efficient by undertaking a thorough screening to limit the number of approved pre-proposals. The template for project monitoring and reporting are well designed and the collation of the project outputs into an aggregated log frame provided is very good data for monitoring and evaluation. The specification of gender-disaggregated data is very good.

Criterion	Good practices
Knowledge Management	Linking farmers' traditional knowledge with scientific knowledge is effective to generate climate adaptation strategies. Farmers' knowledge of plant traits and adaptability to local environments, their understanding of local weather combined with accessible meteorological information, their understanding of data, climate conditions associated with crop growth, etc. are highly valuable in co-generating effective responses and adaptations. The BSF facilitated the two-way exchange of PGRFA information between farmers, research institutions and genebanks for the conservation and sustainable use of PGR. The Farmer Field Schools are effective mechanisms to enable farmers to jointly identify problem and solutions. The participatory plant selection, enhancement and breeding are best done under an FFS approach. Beyond creating a knowledge-sharing platform, Seed Fairs and Farmer Field Days enabled farmers to dialogue with policy makers and stakeholders. Aside from exchange of seeds and knowledge, these events often involved policy dialogues about the importance of plant diversity for food security and climate change and were often linked to awareness raising about Farmers' Rights. The creation of DOI for rice is a good example of a BSF project result that potentially solves key bottleneck in the Treaty implementation.
Sustainability	Direct farmer involvement in decision making on PGRFA ensures ownership and thus sustainability. Local governance, community ownership and the actual utility of the materials from community seed banks ensures sustainability. These are the lessons from the long-running and self-sustaining community seed banks where the long-term operations and viability are dependent on community governance and their members actually find the seed bank useful, primarily for the seed access function.
Cross cutting	Window 2 projects were effective in integrating gender equality, and equity primarily by targeting women for leadership roles or ensuring participation, choosing to work in areas with high levels of poverty and choosing to work in communities, including indigenous communities that were vulnerable to climate change. Most projects employed participatory and empowering methodologies that enabled men and women farmers to contribute to and benefit from the projects.

Office of Evaluation
evaluation@fao.org
www.fao.org/evaluation

Food and Agriculture Organization of the United Nations
Rome, Italy

CB8605EN/1/02.22