How the CGIAR contributes to policy change: learning from four cases

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Content

Acronyms and abbreviations

A4NH	CGIAR Research Program on Agriculture for Nutrition and Health
ACDI-VOCA	Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance
AU	African Union
BMGF	Bill and Melinda Gates Foundation
CASS	Cassava Agribusiness Seeds System
CBSD	Cassava brown streak disease
CGIAR	Consultative Group on International Agricultural Research
CMD	Cassava mosaic disease
CRP	CGIAR Research Program
CRS	Catholic Relief Services
CIP	Spanish acronym for the International Potato Center
EQ	Evaluation question
EU	European Union
FAO	Food and Agriculture Organization
GLCI	Great Lakes Cassava Initiative
IFAD	International Fund for Agricultural Development
IITA	International Institute for Tropical Agriculture
INGABO	Rwanda Farmers' Trade Union
M&E	Monitoring and Evaluation
MINAGRI	Rwanda's Ministry of Agriculture and Animal Resources
NARO	(Ugandan) National Agricultural Research Organization
NGO	Non-governmental Organization
PSTA	Strategic Plan for Agriculture Transformation
QDS	Quality Declared Seed
QMP	Quality management protocol
RAB	Rwanda Agricultural Board
RALIS	Rwanda Agriculture and Livestock Inspection Services
R4D	Research for Development
RSB	Rwanda Standards Board
RTB	CGIAR Research Program on Roots, Tubers and Bananas
SRF	Strategy and Results Framework
TAAT	Technologies for African Agricultural Transformation
TOSCI	Tanzania Official Seed Certification Agency
USAID	United States Agency for International Development

Glossary

Outcome: A change in behavior (practices, relationships) or policies (that influence behavior) of individuals, groups, organizations or institutions

Outcome evidencing approach: An adaptation of outcome harvesting in which a case is built and challenged as to whether a program has contributed to one or more outcome trajectories

Outcome trajectory: The pattern of interactions and causal links between actors, technologies and institutions that maintain and scale a coherent set of outcomes over time, e.g., outcomes associated with the development and adoption of cassava seed standards

Champion: Someone who sees value in an outcome trajectory and engages with decision-makers to strengthen it

Initiative: Coherent sets of activities such as breeding, dissemination, policy engagement and technical support that may or may not be project-related

Generic (policy) theory of change: A theory of change that describes, from the peer-reviewed literature, in a general sense how the policy change process works.

Specified (policy) theory of change: The generic theory of change which is made specific to the instance of policy change being studied.

Executive Summary

Background and context. Since their inception in 2012, the CGIAR research programs (CRPs) on Roots, Tubers and Bananas (RTB) and Agriculture for Nutrition and Health (A4NH) have been generating innovations, testing interventions, and providing science-based evidence and advice to policy and decision makers at local, national and supra-national levels with the expectation that this advice will contribute to policy changes that in turn helps create an enabling environment for agri-food systems innovations. In 2019, the two CRP leadership teams commissioned a systematic assessment to validate four significant policy outcomes to which they had contributed. The four policy outcomes are:

1. Mainstreaming of biofortification in the African Union (AU)
2. Development of a cassava seed certification system in Tanzania
3. Development of a cassava seed certification system in Rwanda
4. Control of potato purple top in Ecuador[1]

This report derives lessons from considering similarities and differences between the four cases. The first objective of this synthesis is to generate deeper and more generalizable understanding of how CGIAR contributes to policy change than would be possible from any single case. The second is to present a broadly-applicable theory of change that can help understand and accumulate learning about how policy changes in different contexts. To achieve these objectives, the report addresses the following synthesis questions (SQs):

1. What are the characteristics of the four policy outcome trajectories, what has been achieved so far, and what is the potential for impact?
2. How can the Policy Window theory of change be adapted to model the four policy outcome trajectories?
3. What are the main policy outcomes resulting from the four cases and how did CGIAR contribute to them?
4. How has CGIAR contributed to the integration/consideration of gender in the four cases?
5. Are the four policy change trajectories likely to be sustained and scaled over the long term?

Findings

Findings related to SQ 1: What are the characteristics of the four policy outcome trajectories, what has been achieved so far, and what is the potential for impact?

Finding 1: The impact potential of the four policy trajectories ranges by orders of magnitude from millions of farmers and consumers to tens of thousands of farmers, as does the level of investment made (Table 2). In three cases, achieved outcomes relate to the development, agreement and adoption of policies. In the fourth trajectory, which has progressed least far, the change relates to the establishment of a national-level technical committee to develop policy. All trajectories have been framed and driven forward by coalitions of actors that include the CGIAR, in which CGIAR contribution has been important, but not sufficient by itself (also see Finding 6).

[1] Links to all four outcomes are available in Annex 1.

Findings related to SQ 2: How can the Policy Window theory of change be adapted to model four policy outcome trajectories?

Finding 2: In three of the trajectories, the problem to be addressed was relatively well understood which allowed for most of the effort to shift social norms to focus on developing, proving and communicating the respective solutions. The exception was the Ecuador case where PMP was a new and complex disease. The relatively visible and immediate solution of seed certification to help control CBSD in cassava, were an easier sell than the less visible and immediate solution of biofortified crops to tackle hidden hunger. The latter required an expensive randomized control effectiveness trial. News articles about trajectory solutions were important in all four cases, in particular Rwanda, where public interest had been heightened by a recent and serious outbreak of CBSD.

Finding 3: The ability to carry out informal advocacy came from the innate good partnering practices of CGIAR staff and their national-level colleagues, built up over years of working together at country level. As such, informal advocacy did not require separate, formal training. It worked where CGIAR staff and national-level colleagues had close-enough links to influence key decision-makers, which was the case in the three trajectories involving national-level policy change.

Where key decision-makers were further away in network terms from CGIAR staff and colleagues, it proved necessary to form a cadre of advocates to influence the policy process. This happened in the case of the AU declaration trajectory, and to reach District-level decision-makers in Tanzania.

Trajectory actors also contributed to training of the people responsible for making the solutions work, for example, training of seed certification inspectors and seed producers using public sector funding. In Ecuador, there is some indication that low levels of public sector funding to train farmers in how to control PMP has allowed space for the private sector to prioritize and train in the use of agro-chemicals, at the expense of more integrated approaches.

Finding 4: A strengthened support base gave impetus to the four trajectories in two ways: through funding support and creating an enabling environment for the trajectories. CGIAR Centers and CRPs were particularly valued by other trajectory actors for their ability to develop and fund multi-partner projects. Donors also played an important role, particularly those that provided funding over several project cycles, allowing for momentum to be built and maintained. Support from enabling institutions took many forms at different scales, including: support from a global community of practice of researchers working on controlling vegetatively-propagated diseases; panels of African leaders championing biofortification at a continental scale; national-level technical working groups developing and owning cassava seed standards; and, strengthening the cassava value chain.

Finding 5: Two types of policy window in particular helped drive the respective trajectories forward: conferences and disease outbreaks Regional- and global-level conferences provided opportunities for biofortification champions to link biofortification to the broader and well-supported nutrition trajectory. Disease outbreaks were the most important policy windows for the three disease-related trajectories.

Finding 6: It proved useful to understand the four outcome trajectories as iteratively and interactively generating three outcomes – shift in social norms; change in capacity; and more enabling environment – driven by participants' ability to generate and make use of policy windows. The idea that a 'coalition' provided impetus resonated with how the three disease-related trajectories evolved. The evaluation has developed a

specified and adapted theory of change diagram that models how CGIAR contributed to policy change across the four trajectories.

Finding related to SQ3: What are the main policy outcomes resulting from the four cases and how did CGIAR contribute to them?

Finding 7: The main outcomes from the four cases are: drafting of a continental declaration supporting the planting and consumption of biofortified crops in Africa; development and approval of cassava seed standards in Tanzania and Rwanda; and establishment of a national technical committee to agree a national-level strategy to control PMP. The way CGIAR contributed is modeled in the theory of change depicted in Figure 3 and detailed in Table 3 to Table 5. Perhaps CGIAR's most important overall contribution has been to provide sustained funding, intellectual leadership, platforms and facilitation to give the respective trajectories direction and keep them going.

Finding related to SQ4: How has CGIAR contributed to the integration/consideration of gender in the four cases and how?

Finding 8: Consideration of women and children was assured in the biofortification trajectory by framing the problem in terms of micronutrient malnutrition in women of reproductive age and children under five. In the other trajectories, gender is only recently being given much consideration in new CGIAR projects supporting the implementation of cassava seed standards and in ongoing CIP/RTB research analyzing gendered differences in access to information and support in seed systems.

Finding related to SQ5: Are the four policy change trajectories likely to be sustained and scale over the long term?

The four policy change trajectories are likely to be sustained and scaled over the long term if the networks of champions and coalitions that are driving the trajectories can continue to do so. This will depend in part on the CGIAR continuing to provide some degree of funding and coordination to them. The next step in the biofortification declaration trajectory is for biofortification to be written into National Agricultural Investment Plans (NAIPs) and implemented. The next step for control of PMP is to continue to strengthen and support the PMP national technical committee. The next step for the two cassava seed certification trajectories is to continue to support a move towards more market-led cassava value chains that create a more enabling environment for seed certification.

Conclusions

Conclusion 1 on policy outcomes and impact:

The four case studies assemble sufficient evidence to establish beyond reasonable doubt that the four trajectories have produced important policy outcomes and CGIAR has made significant contributions to them. The policy outcome trajectories have the potential to change the lives of tens of thousands (PMP) to millions (biofortification and cassava seed certification). The case studies and this synthesis report have helped explain how.

Conclusion 2 on what drove the trajectories:

The trajectories made progress in part through the combined efforts of groups of people who shared and were motivated by a common, broad vision. In the biofortification declaration trajectory, this grouping took the form of a network of champions selected and trained to explicitly advocate for biofortification at high-level

conferences (i.e. policy windows) on improving nutrition in Africa and globally. In network terms, trajectory actors were links away from policy-makers in the AUC and champions were needed to bridge the gap.

The other trajectories were aimed at national-level policy change. Here, the type of grouping is better described as a coalition of CGIAR researchers, donor representatives, project partners and key people working in the respective national agricultural research and extension systems. The coalition members provided resources to move their trajectory forward, including funding, knowledge and access to their contacts. They were close enough in network terms to key policy makers and their advisors to be able to advocate directly, without special training or an explicit strategy to do so, or even for the word 'advocacy' to be used at all.

Conclusion 3 on role of donors:

BMGF and DFID showed the degree to which a donor can support outcome trajectories. BMGF provided uninterrupted funding for work on cassava seed systems from 2007 which is set to continue to 2024. The idea that seed certification was crucial to a clean cassava seed system was born out of the work prior to 2012, which led to the emergence of the seed certification standards trajectory in Tanzania. BMGF staff were part of the incipient coalition that launched the trajectory and moved it forward.

In the AU biofortification trajectory, BMGF and DFID also provided uninterrupted funding over many years, which continues. Both donors also supported panels of African leaders who advocated for biofortification at the highest level. Their message strengthened and was boosted by the more bottom-up advocacy on the part of the CGIAR- supported network of champions.

By funding work at field to global scale, both BMGF and DFID were offered a unique overview of the biofortification trajectory. This provided both donors with an opportunity to shape the work of other trajectory actors, in particular the CGIAR, so as to reduce competition, improve collaboration and help researchers better understand how their work fits in.

Conclusion 4 on the development of a broadly-applicable theory of change:

Part of what this evaluation has developed is a broadly-applicable theory of change, adapted from the political science literature to model how trajectory actors contributed to policy change in the four cases chosen for analysis (see Finding 7). Because it is broadly applicable, it can be reused to help explain CGIAR contribution to other policy changes in other contexts. Theoretically, it has the potential to work as a framework for accumulating understanding and learning about how CGIAR research influences policy changes more broadly. The learning can be used to refine and adapt the model to different types of policy change in different contexts.

Conclusion 5 on the next step for the evaluation approach used:

Across the four cases, the approach, of developing timelines, generating rich, thick descriptions and choosing and specifying a generic theory of change from the literature, appears to have worked to clarify and substantiate causal claims and to identify and explain underlying causal mechanisms. This synthesis report suggests that the policy window theory of change proved a useful framework for generating and accumulating learning across the four cases. The approach may have broader applicability. To test these claims, the approach should be written up as an article in an evaluation journal and be subject to peer review. An annotated table of contents for such a paper is provided in Appendix 2.

Introduction

CGIAR is a global research partnership for a food-secure future dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources. Fifteen research centers are part of this global network and work together towards the achievement of a common Strategy and Results Framework. The CGIAR works through CGIAR Research Programs (CRPs) and Research Support Platforms. CRPs are led by CGIAR Centers, some of which have been operating for more than 50 years.

Since their inception in 2012, the CGIAR Research Programs (CRPs) on Roots, Tubers and Bananas (RTB) and Agriculture for Nutrition and Health (A4NH) have been generating innovations, testing interventions, and providing science-based evidence and advice to policy and decision makers at local, national and supra-national levels with the expectation that this advice will contribute to policy change that in turn helps create an enabling environment for agri-food systems innovation.

This synthesis report is an output of an evaluation commissioned by RTB and A4NH to understand how the program's interventions have contributed to policy change. The evaluation considered four cases of policy change (Table 1), chosen in a consultation process carried out to agree and prepare the terms of reference for the study. The choices were based on the significance of the policy change, information available and the interest of country teams that the cases be documented and analyzed. While all the interventions are part of RTB, the International Potato Center (CIP) and the International Institute of Tropical Agriculture (IITA) are key players in the four outcome trajectories. In one case, RTB and A4NH contributed to the policy change and so the study was commissioned by both programs. CGIAR interventions related to this case were carried out by HarvestPlus and CIP, which are part of A4NH and RTB, respectively.

Table 1: Current status of the four policy change trajectories considered in the evaluation

Trajectory and current status	CGIAIR entities involved
1. Mainstreaming of biofortification in the African Union (AU) A continental declaration has been drafted by the AU Commission (AUC) that endorses regional- and country-level operationalization of biofortification as a strategic step in accelerating the scale-up and adoption of biofortified crops and products.	A4NH, HarvestPlus RTB, CIP
2. Development of a cassava seed certification system in Tanzania Cassava seed standards, from pre-basic to quality declared seed (QDS), have been passed into law to provide the regulatory framework for a functioning and sustainable cassava seed system. The system is being progressively put into place and current advances include strengthening of national and local technical and organizational capacities, development of an online app to manage the certification process.	RTB, IITA
3. Development of a cassava seed certification system in Rwanda The same as Tanzania, but in less time, having benefited from prior experience.	RTB, IITA
4. Control of potato purple top in Ecuador Establishment of a national-level technical committee who have drafted a coordinated national control strategy.	RTB, CIP

The objectives of each of the four case studies were the same:

1. To determine and document how and in what ways CRP interventions contributed to the respective outcome trajectories;
2. To identify other major contributing factors, actions and actors;
3. To generate findings to strengthen evidence of CRP contribution to the respective trajectories;
4. To contribute to this synthesis report.

The four cases were published as separate, stand-alone evaluation reports which are attached as Annexes to this report. The first objective of this synthesis report is to generate deeper and more generalizable understanding of how CGIAR contributes to policy change than is possible from any single case. The second is to present a broadly-applicable theory of change that can help understand and accumulate learning about how policy changes in different contexts.

The primary intended users for this synthesis are researchers, practitioners and decision-makers in CGIAR, in partner organizations and amongst funding agencies who are interested in better understanding how agricultural research for development and other forms of intervention contribute to policy change. Within the CGIAR, interested readers are likely to come from the program and project management units and committees, and the CGIAR System Organization. They may also come from donor organizations; other CRPs or R4D programs; and national partners and stakeholders working to improve the enabling environment for agri-food systems and/or wanting to assess/evaluate their role in contributing to policy change and changing the enabling environment.

Methodology

The case evaluations use a version of outcome harvesting called outcome evidencing (Paz and Douthwaite, 2017). Outcome harvesting is 'backward looking' in that it starts with an outcome and works backwards to identify and understand the patterns of interactions between people, institutions and technology that contributed to it, over time. This slow-changing pattern is called an 'outcome trajectory.' The approach then seeks to identify the contribution made by the evaluand to the outcome trajectory and describes the contribution in a theory of change based on the behavior change literature. In contrast, most program evaluations model how program activity and outputs are contributing directly to outcomes without reference to the literature and without acknowledging an outcome trajectory as a mediating mechanism. As a result of the latter, most outcome and impact evaluations tend to over emphasize the role of the program, and underplay the role of other actors and ongoing processes, from local to global level.

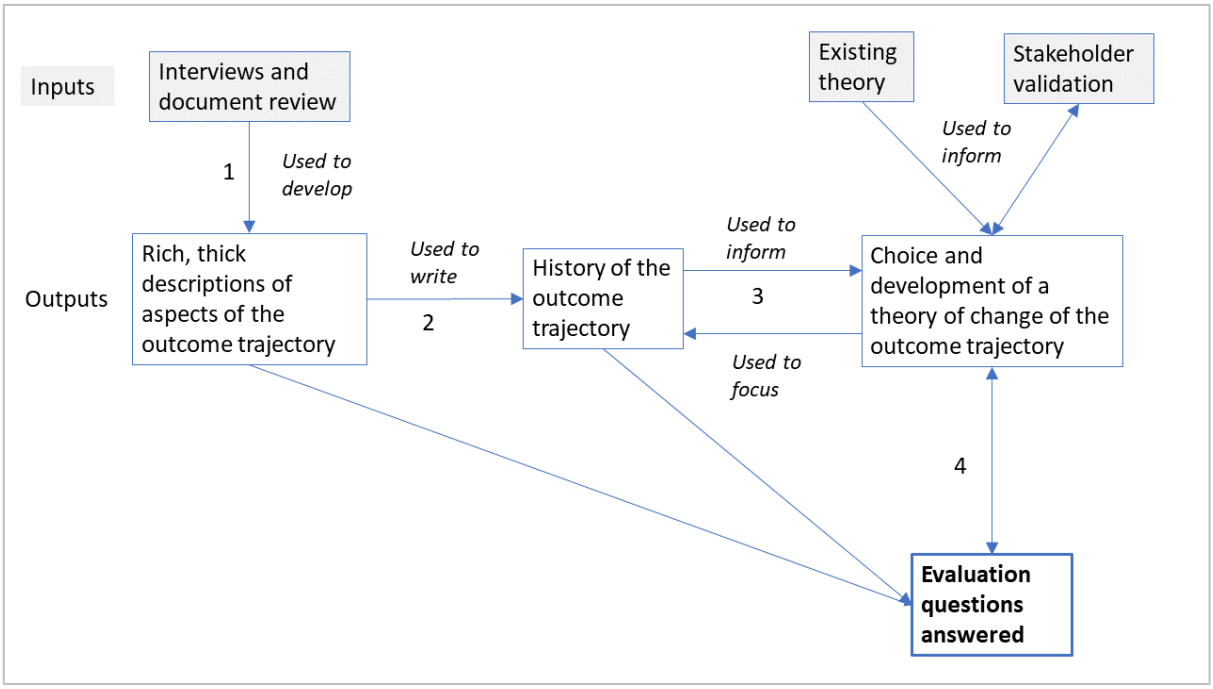
The evaluation followed a series of steps in each of the four cases, as shown in Figure 1.

1. Interview of key participants to build rich, thick descriptions and understanding of aspects of the history of the case outcome trajectory. Interviews were written up in detail, and 'fact checked' by cross-referencing to other interviews as well as through a review of documents sourced from the case team and from online searches.
2. Develop a historical timeline of the case outcome trajectory from the interviews and document review.
3. Use the timeline to 'specify' an existing generic theory of change, chosen from the literature, to best explain how CGIAR influences policy. At the same time, the generic theory of change was used to help focus the construction of the timeline, in particular where to gather rich, thick descriptions. This helped avoid a known problem with case studies that the evaluator becomes lost in the details.
4. Answer the first evaluation question, which is how the theory of change is manifest in the outcome trajectory timeline. The preliminary answer, in the form of a specified theory of change diagram, together with the timeline, were then checked with key participants in a virtual workshop, and modified. The modified versions were used to answer the remaining evaluation questions.

The evaluation questions were similar for each case. For example, the evaluation questions for the two seed certification trajectories were:

1. How can the Policy Window theory of change be made more specific to the seed standards trajectory?
2. What are the main outcomes resulting from the seed standards trajectory and how did the CGIAR contribute to them?
3. Has the CGIAR contributed to integration/consideration of gender in the seed standards trajectory and how?
4. Is the seed standards trajectory likely to be sustained and scale over the long term?

Figure 1: Flow diagram of the evaluation approach used in each case study



The synthesis questions (SQs) tackled in this report seek to generate deeper and more generalizable findings and conclusions by comparing and contrasting the four cases. The first question seeks to describe the four trajectories in terms of their characteristics, achievements and potential for impact. The remaining four questions derive from the case-level questions. The SQs are as follows:

1. What are the characteristics of the four policy outcome trajectories, what has been achieved so far, and what is the potential for impact?
2. How can the Policy Window theory of change be adapted to model four policy outcome trajectories?
3. What are the main policy outcomes resulting from the four cases and how did CGIAR contribute to them?
4. How has CGIAR contributed to the integration/consideration of gender in the four cases and how?
5. Are the four policy change trajectories likely to be sustained and scale over the long term?

The main limitation to this evaluation was that travel restrictions related to the COVID-19 pandemic prevented any field visits or face-to-face interviews – all interactions with key informants were virtual. A second limitation was that the resources available to carry out the study were relatively modest.

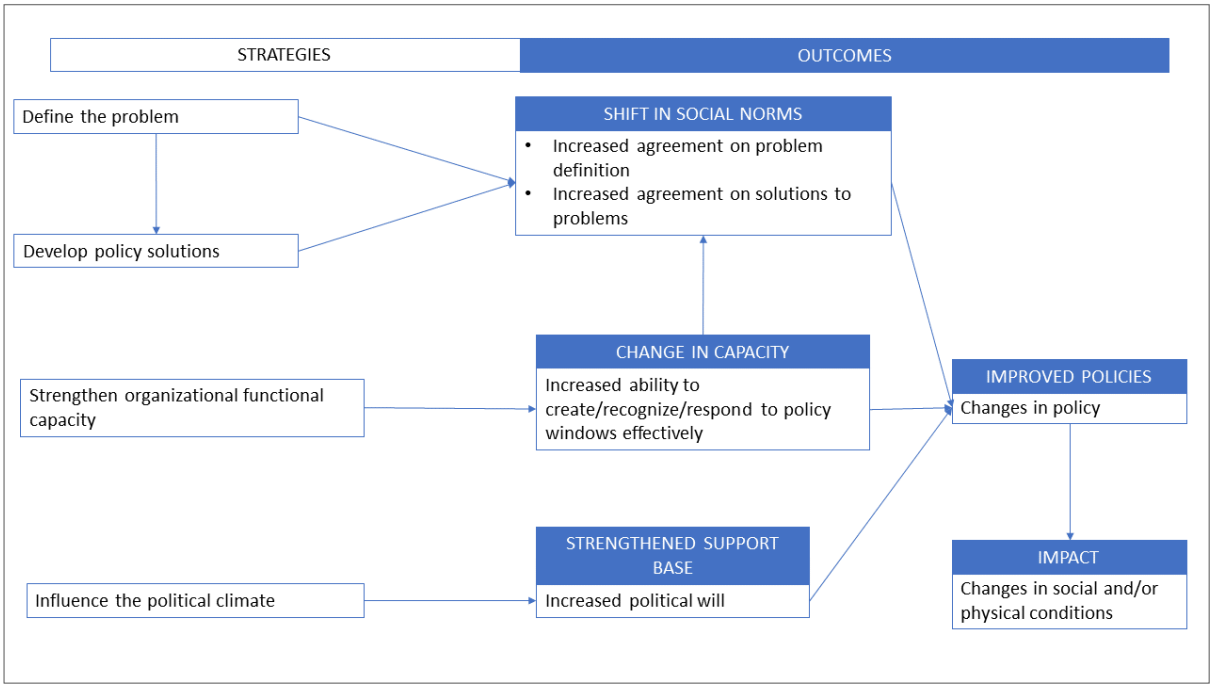
Description of the generic theory of change chosen

The evaluator, along with the evaluation management team and case study team, considered five so-called 'global' theories of change identified by Stachowiak (2013) to describe the policy change process and selected the Policy Window theory of change as the most suitable generic theory of change for all four case studies (Figure 2). Agreeing on one generic theory of change for all the cases also facilitated this cross-case comparison and synthesis.

The Policy Window theory comes from political science and was developed by Kingdon (1984). The model proposes that policy changes during *windows of opportunity,* which help champions successfully connect two or more components of the policy process. The components are: the way a *problem* is defined; the *policy*

solution to the problem; and, the *politics* surrounding the issue (Stachowiak, 2013; Sabatier and Weible, 2007). Windows of opportunity are moments when progress can be made. They can be created by natural events such as pandemics, droughts or earthquakes. For example, the latter is an opportunity to change building regulations. They can be man-made events like spikes in air pollution that lead to changes in clean air regulations. They can also be changes in government, budget cycles or landmark meetings and summits held as part of ongoing national, regional and global processes. Policy windows are often short in duration and may be predictable or unpredictable.

Figure 2: Adapted generic Policy Window theory of change describing ways CGIAR interventions in four cases contributed to policy change[2]



Stachowaik (2013 p. 7) made a number of qualifying statements with respect to the Policy Window theory of change:

- Often there are many competing ideas on how to address problems. To receive serious consideration, policy solutions need to be seen as technically feasible and consistent with policy maker and public values;
- The way a problem is defined makes a difference as to whether and where the problem is placed on the agenda. Problem definition also has a value or emotional component; values and beliefs guide decisions about which conditions are perceived as problems;
- Champions can attach their solution to an existing problem that has gained prominence on the agenda, even if that prominence is independent of their efforts;
- To effectively recognize and take advantage of open policy windows, champions must possess knowledge, time, relationships and good reputations;
- Policy achieves impact by being translated into action plans and implemented;
- Effective strategies for strengthening support base include coalition building; demonstrations and media advocacy.

[2] Redrawn from Stachowiak (2013)

Findings

The findings come from answering the synthesis questions (SQs), as described in the Methodology section. The findings draw from four case study reports in the Annex, namely:

1. Mainstreaming of Biofortification in the African Union: evaluation of CGIAR contributions to a policy outcome trajectory;
2. Development of a cassava seed certification system in Tanzania: evaluation of CGIAR contributions to a policy outcome trajectory;
3. Development of a cassava seed certification system in Rwanda: evaluation of CGIAR contributions to a policy outcome trajectory;
4. Control of potato purple top in Ecuador: evaluation of CGIAR contributions to a policy outcome trajectory.

SQ1: What are the characteristics of the four policy outcome trajectories, what has been achieved so far, and what is the potential for impact?

Table 2 compares the characteristics of the four cases, as written up in the Annexes.

Finding 1:. The impact potential of the four trajectories ranges by orders of magnitude from millions of farmers and consumers to tens of thousands of farmers, as does the level of investment made (Table 2). In three cases, achieved outcomes relate to the development, agreement and adoption of policies. In the fourth trajectory which has progressed least far, the change relates to the establishment of a national-level technical committee to develop policy. All trajectories have been framed and driven forward by coalitions of actors that include the CGIAR, in which CGIAR contribution has been important, but not sufficient by itself (also see Finding 6).

The first case seeks an endorsement by African heads of state of a declaration supporting the planting and consumption of biofortified crops across the continent as a solution to nutrient malnutrition, and as such it is both a consumer- and producer-oriented policy.[3] The three other trajectories relate to producer-oriented policy decisions and specifically to production support measures. The three trajectories respond to the need for better management strategies for diseases of vegetatively-propagated crops at national level. Two of these are attempting to bring the same policy change relating to the development, agreement and passing into law of cassava seed standards governing the supply of clean planting material in Tanzania and Rwanda. The third trajectory, which has progressed least far, relates to the establishment of a national-level technical committee to develop strategy to control PMP in Ecuador, that would eventually become policy.

The biofortification trajectory has potentially a much higher scale of impact than the others because the political support that it seeks is for the whole of Africa in which millions of women and children suffer from micronutrient malnutrition. Correspondingly, much more has been spent on the trajectory which itself is part of a larger body of work to develop and promote biofortified crops and their value chains, globally. In contrast, an order of magnitude less has been spent on the PMP trajectory because the trajectory is relatively young, there are far fewer direct beneficiaries and it is generally harder to fund projects in Latin America compared to Africa.

[3] Using FAO's classification, see http://www.fao.org/3/a-bc358e.pdf

More has been spent on the Tanzania trajectory than the Rwanda one, in part because it started earlier. Rwanda was able to learn from Tanzania such that IITA/RTB was able to support the development and approval of cassava seed standards in a year compared to five years in Tanzania.

Table 2 shows a spread in the dates when CGIAR began participating in the respective trajectories 'in earnest.' For biofortification, the 'in earnest' starting point was the first time the idea of supporting a continental declaration was muted. For the cassava seed system trajectories in Tanzania and Rwanda, it was when a CGIAR-led project began to develop the cassava seed system in the respective countries. For PMP, it was when CGIAR undertook a PMP risk assessment as a strategy to build support for the trajectory. The trajectory timelines (see individual reports in Annexes) show a history of events that preceded the ramping up of CGIAR involvement. For example, a quality management protocol for cassava seed was first developed in 1997, twenty years before a version of it was finally approved in Tanzania. The exception is PMP, which is a new disease in Ecuador, with first outbreaks reported in 2012. This has allowed less time for stakeholders to develop a common understanding of the problem and solution.

All trajectories have been framed and driven forward by coalitions of actors in which CGIAR contribution was important but not sufficient (also see Finding 6) for achieving impact. For example, approved cassava standards in Tanzania and Rwanda need to be part of a cassava seed system in which farmers have access to genetically improved varieties, the quality of certified seed is assured, and farmers make sufficient profit to afford to buy it. This requires nurturing a more market-led cassava value chain than currently exists in either country. For such a value chain to work requires the contribution of a whole suite of actors, from CGIAR providing support to developing seed certification and access to genetically improved planting material, through national level agricultural research and seed certification institutes, farmer organizations, seed replicators and entrepreneurs, market actors and farmers.

Table 2: Characteristics of the four policy outcome trajectories, achievements to date, and potential for impact

	Biofortification at continental-level	Cassava seed certification in Tanzania	Cassava seed certification in Rwanda	Control of PMP in Ecuador
CHARACTERISTICS				
Policy change sought	**Continental** declaration by the AU in support of biofortification	Cassava seed certification system implemented by a **national** government	Cassava seed certification system implemented by a **national** government	Coordinated **national**-level response to control PMP
Orientation and nature of the policy outcome[4]	Consumer-oriented (nutrition and health assistance) and producer-oriented (production support, market management)	Producer-oriented (production support, agricultural inputs measures, seed technology and quality assurance systems)	Producer-oriented (production support, agricultural inputs measures, seed technology and quality assurance systems)	Producer-oriented (production support, genetic resources and sanitary measures, plant health measures)
Key trajectory actors	AUC-DREA, HarvestPlus/A4NH, CIP/RTB, IFPRI, AUDA, FARA, BMGF, DFID	TOSCI, IITA/RTB, TARI, MEDA, BMGF	RSB, IITA/RTB, RAB, RALIS, INAGBO, IFAD	INIAP, Agrocalidad, CIP/RTB, FAO, MAG, Central University, AECID
ACHIEVEMENTS				
Main outcome achieved to date	Continental declaration drafted and awaiting ratification	Standards published; TOSCI 5-Year action plan for Cassava Seed Certification approved	Standards published	National technical committee established; control strategy drafted
Further work required	Advocating to include biofortification in NAIPs	Develop a market-led cassava seed system that takes standards into account	Develop a market-led cassava seed system that takes standards into account	National technical committee to show strong leadership and be adequately funded
Estimated time CGIAR has engaged in the trajectory in earnest	More than five years	More than five years	Less than five years	Less than five years
CGIAR investment in the policy trajectory (US$)[5]	Millions	Hundreds of thousands	Hundreds of thousands	Tens of thousands
POTENTIAL FOR IMPACT				
Impact area	End all forms of malnutrition (SDG2 – Target 2.2)	Increase agricultural productivity and incomes of small-scale food producers (SDG2 – Target 2.3)	Increase agricultural productivity and incomes of small-scale food producers (SDG2 – Target 2.3)	Increase agricultural productivity and incomes of small-scale food producers (SDG2 – Target 2.3)
Potential impact	Millions of women and young children in Africa consuming biofortified foods and millions of farmers growing biofortified varieties	Millions of cassava farmers in Tanzania	Hundreds of thousands of farmers in Rwanda	Tens of thousands of farmers in Ecuador; potential spillover benefits for hundreds of thousands of farmers in the Andes

[4] Food and Agriculture Policy Classification, FAO 2015 (http://www.fao.org/fileadmin/templates/fapda/docs/FAPDA_policy_classification_April2015.pdf)

[5] CGIAR is a multi-donor trust fund. The estimate here may reflect contributions to CGIAR through its three established windows of funding along with bilateral, project-based grants. Estimating investments and sources of these investments was outside the scope of this evaluation.

SQ2: How can the Policy Window theory of change be adapted to model four policy outcome trajectories?

In each of the four case studies in the Annex, the Policy Window theory of change was adapted and made more specific to the respective policy outcome trajectories, by identifying how the theory's three main outcomes manifest themselves in the trajectories:

- *Shift in social norms*, understood as how participants and stakeholders in the four policy outcome trajectories came to a shared understanding of the problems and the policy solutions;
- *Change in capacity*, understood as increased ability to advocate for policy changes and increased capacity to implement the solutions;
- *Strengthened support base*, understood as a more enabling environment for the policy solutions sought.

The respective specified theories of change were then used to help answer subsequent evaluation questions.

The same approach is taken in this synthesis paper. The following sub questions allow for the development of an adapted and specified Policy Window theory of change applicable to the four cases, which is then used to help answer the subsequent synthesis questions, together with information from the four outcome trajectory evaluations.

SQ2.1 How does the 'shift in social norms' outcome manifest itself in the four trajectories?

Table 3 summarizes the strategies used by the key stakeholders involved in four respective outcome trajectories to bring about a 'shift in social norms.'

Finding 2: In three of the trajectories, the problem to be addressed was relatively well understood which allowed for most of the effort to shift social norms to focus on developing, proving and communicating the respective solutions. The exception was the Ecuador case where PMP was a new and complex disease. The relatively visible and immediate solution of seed certification to help control CBSD in cassava, were an easier sell than the less visible and immediate solution of biofortified crops to tackle hidden hunger. The latter required an expensive randomized control effectiveness trial. News articles about trajectory solutions were important in all four cases, in particular Rwanda, where public interest had been heightened by a recent and serious outbreak of CBSD.

Framing the problem

Table 3 shows that only the stakeholders involved in the PMP case carried out much work to establish the nature of the problem after the respective trajectories began in earnest. This is because PMP is new to Ecuador and the disease needs to be better understood before a set of control measures can be agreed. The disease has proven to be complex and difficult to diagnose. In contrast, cassava mosaic disease (CMD) and cassava brown streak disease (CBSD) have been present in Tanzania and East Africa for at least 85 and 110 years respectively and the problem they pose is relatively well understood., albeit both viruses have become more virulent in the last 25 years. The CBSD and CMD problem was framed by research published as early as 2006[6] as causing production losses worth more than US$1 billion every year in Africa and a threat to food and

[6] Legg et al., (2006)

income security for over 30 million farmers.[7] More than 277 papers had been written on CBSD alone by 2015, many of these before the seed certification trajectory began in earnest in 2012.

The problem of micronutrient malnutrition is very well understood, with much research carried out given the very high priority on nutrition globally.

Framing the solution

Actors in all four trajectories worked on developing and demonstrating their respective solutions. In the three trajectories addressing plant diseases, the key stakeholders formed technical committees to develop workable policies. In the Tanzania and Rwanda cases, the responsible seed certification institution hosted an inclusive technical committee to develop and consult on cassava seed standards. In Ecuador, MAG called for a national-level technical committee that has drafted a PMP control strategy, aspects of which can be expected to become policy in the future.

In the AU biofortification trajectory, a large effort went into demonstrating and communicating the efficacy and effectiveness of biofortified crops and on showing that biofortification could be scaled up so as to make a meaningful difference at national level. An example of the former is that the CGIAR-led Reaching End Users project invested US$ 6 million to run an effectiveness trial to show that biofortified sweet potato, provided to farmers, resulted in a reduction in vitamin A deficiency in their families. The cost of the trial was high because randomized control trials were used as this is seen by policy makers as the gold standard in proving causation, and thought necessary to influence policy decisions at the highest level.

Establishing that the control of CMD and CBSD requires farmers to use clean planting material, and this requires seed certification, proved relatively easy because of the work carried out on seed systems by three large projects beginning in 2007, in particular the Great Lakes Cassava Initiative (GLCI).

Communication

Key stakeholder contribution to the AU biofortification trajectory placed particular emphasis on communicating that biofortification was complementary to other ways of tackling micronutrient malnutrition, so as to attach the solution to a broader effort being undertaken on improving nutrition in Africa. Biofortification actors also focused on maintaining a clear and consistent message. Communication in Rwanda benefited from a heightened concern about CBSD following a very large outbreak that led to a number of news stories being published, in particular by the New Times newspaper. These stories were confirmed by what politicians heard from their constituents. CGIAR contributed to press coverage by putting out press releases in the two cassava seed certification trajectories. Communication on PMP control was largely limited to presentations at conferences by INIAP, Agrocalidad and the Central University due to lack of project funding.

[7] https://www.iita.org/news-item/project-brings-ray-hope-fight-cassava-viruses-africa/

Table 3: Strategies identified in the four cases that brought about a 'shift in social norms'

Strategies	Biofortification	Cassava seed certification in Tanzania	Cassava seed certification in Rwanda	PMP
Framing the problem				Research to identify vector(s) and causal agent(s)
				Research to document impact of Purple Top
				Bringing in outside experts
Framing the solution	Highly credible research showing biofortification can significantly reduce the main types of micronutrient malnutrition	Formation of a technical committee to develop seed standards		Formation of platforms, committees and groups to tackle PMP
	Demonstrating that biofortified crops can be grown at scale in Africa	Breeding disease-resistant, high yielding varieties		Development of effective control measures
	Work to establish biofortification as a solution that can be defined and measured	Development and piloting of business models		
Communication	Maintaining a clear and consistent message		Coverage of CBSD impact in print media confirmed by feedback provided to politicians from their constituencies	Communication of the problem and/or solution
	Framing of solution as complementary to other ways of reducing micronutrient malnutrition	Issuing press releases		

SQ2.2 How does the 'change in capacity' outcome manifest itself in the four cases?

Table 4 summarizes the strategies used by the key stakeholders involved in four respective outcome trajectories to bring about 'change in capacity.'

Finding 3: The ability to carry out informal advocacy came from the innate good partnering practices of CGIAR staff and their national-level colleagues, built up over years of working together at country level. As such, informal advocacy did not require separate, formal training. It worked where CGIAR staff and national-level colleagues had close-enough links to influence key decision-makers, which was the case in the three trajectories involving national-level policy change.

Where key decision-makers were further away in network terms from CGIAR staff and colleagues, it proved necessary to form a cadre of advocates to influence the policy process. This happened in the case of the AU declaration trajectory, and to reach District-level decision-makers in Tanzania.

Trajectory actors also contributed to training of the people responsible for making the solutions work, for example, training of seed certification inspectors and seed producers using public sector funding. In Ecuador, there is some indication that low levels of public sector funding to train farmers in how to control PMP has allowed space for the private sector to prioritize and train in the use of agro-chemicals, at the expense of more integrated approaches.

Increasing capacity to carry out formal advocacy

Actors in two trajectories were explicit that they carried out advocacy to bring about desired policy changes. By far the greatest investment was made on formal advocacy in the biofortification trajectory where BMGF funded two consecutive CGIAR- and FARA-led projects to train national and regional networks of 'champions' to advocate for biofortification in Africa by, for example, on how to link to other policy processes and to hold side events at high-level meetings on nutrition. This has been crucial in the progress made to date in developing and agreeing a continental declaration for ratification at the next AU summit.

In Tanzania, a CGIAR-led component of a project is recruiting and supporting District-level champions to advocate the use of government funding allocated to Districts to promote cassava as a cash crop. The thinking is that seed certification will only be viable if farmers are earning enough cash to pay for certified planting material.

Increasing capacity to carry out informal advocacy

The seed certification organizations in Tanzania and Rwanda agreed to lead the development and support the approval process of cassava seed standards, without the need for an explicit advocacy strategy. The CGIAR contribution amounted to 'informal advocacy' that involved the use of networks that the corresponding CGIAR center/CRP had built up over years of collaboration with individuals and organizations in the respective national agricultural research and extension system. The networks were called upon by CGIAR staff who, through experience, knew how to engage productively with national colleagues, and vice versa. In other words, the capacity to carry out informal advocacy was innate in CGIAR good partnering practices. A tactic that worked in Tanzania and Rwanda was a combination of one-on-one meetings with pivotal decision-makers in the respective governments, together with the formation of inclusive technical working group to develop the standards, that met several times. INIAP and CIP/RTB are endeavoring to work in a similar way in Ecuador through supporting a national-level working group, although the trajectory is hampered by lack of funding to convene the necessary meetings.

One might hypothesize that this informal advocacy when CGIAR staff have strong working relationships with colleagues who themselves are close in network terms to the pivotal decision-makers. When the network distance[8] is greater, for example when working at a continental scale as with the AU, or at District level in Tanzania, then champions need to be enlisted through a more formal and explicit process so as to bridge the gap.

Training

In the two cassava seed trajectories, capacity development of farmers, seed producers, seed inspectors and laboratory staff was important for seed certification to happen, in part by convincing key decision-makers that cassava seed certification was implementable. In Tanzania, trajectory actors trained cassava food processors in how to use cassava flour to replace more expensive imports of wheat flour.

Capacity development was also important to help farmers know how to control PMP, even though there was no consensus on how best to do so. There is some indication that lack of public-sector support to the trajectory allowed agro-chemical suppliers to promote greater use of insecticides than CGIAR would recommend.

[8] Network distance is a synonym for path length and is simply the number of contacts that link the researcher to the policy-maker.

Table 4: Strategies identified in the four cases to bring about changes in capacity

Strategies	Biofortification	Tanzania cassava seed standards	Rwanda cassava seed standards	PMP
Increasing capacity to carry out formal advocacy	Building the capacity of biofortification champions to advocate	Building the capacity of a network of district-level champions promoting cassava production, processing and commercialization		
Increasing capacity to carry out informal advocacy		Build the capacity to build coalitions, e.g., initiate and support a technical working group together with one-on-one meetings to enable pivotal stakeholders to understand and take ownership of the solution		
Training	New scientific evidence regularly provided to champions	Training TARI staff in basic seed production	Training of seed inspectors and seed producers	Training of technicians and farmers in the control of PMP
		Training TOSCI staff in seed certification scheme implementation including upgrading lab skills	'Learning by using' of QDS protocol by RAB staff	
		Training provided to seed entrepreneurs and inspectors		

SQ2.3 How does the 'strengthened support base' outcome manifest itself in the four cases?

Table 5 summarizes the strategies used by the key stakeholders involved in four respective outcome trajectories to bring about and engage with a 'strengthened support base.'

Finding 4: A strengthened support base gave impetus to the four trajectories in two ways: through funding support and creating an enabling environment for the trajectories. CGIAR Centers and CRPs were particularly valued by other trajectory actors for their ability to develop and fund multi-partner projects. Donors also played an important role, particularly those that provided funding over several project cycles, allowing for momentum to be built and maintained. Support from enabling institutions took many forms at different scales, including: support from a global community of practice of researchers working on controlling vegetatively-propagated diseases; panels of African leaders championing biofortification at a continental scale; national-level technical working groups developing and owning cassava seed standards; and, strengthening the cassava value chain.

Funding support

Availability of funding was one of the most important enablers for all four of the policy trajectories. A valued competency of the CGIAR by other trajectory actors was CGIAR ability to propose and win multi-partner projects. The CGIAR in Tanzania and Rwanda had more success than in Ecuador. The Tanzania trajectory benefited from consistent support from BMGF from 2007 and set to continue until 2024. IFAD has been providing consistent support to the Rwanda trajectory since 2017. In Ecuador, CGIAR championed and supported the carrying out of a risk assessment as a strategy to bring more funding to bear on the threat posed by PMP, with only partial success. Generally speaking, funding for work on agriculture and food policy is

harder to find in Latin America compared to Africa. Also, since the second half of 2019, PMP has fared poorly in competition for attention and funding from a threat to its banana export industry. The threat comes from the appearance of another disease that RTB works on – Fusarium TR4 in bananas – in a neighboring country, Colombia. Ecuador is a leading global producer of bananas and bananas are the country's most economically-important crop.

Funding support has been less of an issue in the AU biofortification trajectory because it is part of a much larger trajectory relating to the global scaling of biofortification as a solution to hidden hunger. Over half a billion dollars has been invested in the global trajectory, much of it coming from BMGF and DFID as donors to CGIAR. Nevertheless, CGIAR proposing and winning two consecutive projects to build a regional network of biofortification champions was key to progress to date.

Building enabling institutions

The policy owner in the three plant disease trajectories assumed leadership of a national-level technical working group to work on the solution, with support for CGIAR. In the case of Tanzania and Rwanda, where the working group has achieved its objective, there is some indication that it also helped build a coalition of key people supporting and championing the trajectory. For example, in Tanzania, members of the technical working group were also members of the technical committee responsible for approving the standards.

In Tanzania, a multi-partner project established a seed growers' association which support the establishment and commercial viability of seed entrepreneurs. For example, the association helps schedule certification inspections so as to keep the cost down for individual entrepreneurs.

In Tanzania and Rwanda, CGIAR has supported the respective governments and private sectors to expand the market and increase the value of cassava as a cash crop. As discussed under Finding 9, it is generally accepted that a more market-driven cassava value chain is necessary if farmers are going to pay for certified planting material and if seed producers are going to make it available.

BMGF and DFID also provided support to high-level panels of African leaders, including the Global Panel on Agriculture and Food Systems for Nutrition (the Global Panel) and the African Leaders for Nutrition (ALN) initiative. These panels actively supported biofortification as part of a package of measures to combat micronutrient malnutrition. This helped biofortification be seen as complementary to other strategies to tackle micronutrient malnutrition, including fortification, dietary diversity and supplementation.

As already seen under Finding 3, formal advocacy capacity development activities carried out in the AU biofortification trajectory led to a network of biofortification champions. The institution proved pivotal in the agreement on and drafting of a continental declaration. Informal advocacy relied on a largely pre-existing professional linkages between trajectory actors who have learned how to work well together over years. While such networks, understood as 'coalitions,' will have helped progress along all four trajectories, their importance was most visible in the cassava seed certification trajectories.

Table 5: Strategies identified in the four cases that strengthened the support base in the respective outcome trajectories

Outcome and causal factors	Biofortification	Tanzania cassava seed standards	Rwanda cassava seed standards	PMP
Funding support	CGIAR proposing and winning two projects to build a network of regional biofortification champions	CGIAR proposing and winning projects to: 1) provide clean cassava seed in response to CBSD and CMD outbreaks; and, 2) strengthen the cassava value chain		CGIAR proposing and winning projects to tackle PMP
	Funding of large-scale initiatives that include biofortification, involving more organizations			Risk assessment carried out as a pre-requisite for a declaration of emergency and release of funding
Building enabling institutions	Explicitly establishing and supporting a network of regional and national-level biofortification champions	Explicitly establishing and supporting network of District level champions of cassava as a cash crop		
		Coalition-building: Implicitly creating and strengthening of linkages between trajectory actors, e.g. setting up and supporting national-level technical working groups		
		Engagement in an RTB-coordinated community of practice working on improving seed systems for vegetatively-propagated crops		
	Two main biofortification donors (BMGF and DFID) forming and supporting high level panels of African leaders who championed biofortification	Establishment of and support to a seed growers association		Launch of a regional initiative to prevent the spread of PMP
		Government measures to expand the market for cassava, e.g., establishment of cassava mill		

SQ2.4: What were the policy windows that proved effective in the four cases?

Finding 5: Two types of policy window in particular helped drive the respective trajectories forward: conferences and disease outbreaks Regional- and global-level conferences provided opportunities for biofortification champions to link biofortification to the broader and well-supported nutrition trajectory. Disease outbreaks were the most important policy windows for the three disease-related trajectories.

In the biofortification declaration trajectory, the policy windows that proved most effective was regional- and global-level conferences and workshops relating to nutrition. CGIAR supported biofortification champions to attend well over 20 such meetings to explicitly advocate for including biofortification as part of the package of viable solutions to nutrient malnutrition. The strategy succeeded in linking biofortification to the broader nutrition trajectory, which is a high-level global priority.

The most important window of opportunity in disease-related trajectories were disease outbreaks that increased the prominence of the problem among policy-makers. In Rwanda in particular, severe and well

publicized outbreaks of CBSD from 2012 to 2015 most likely helped accelerate the time it took to develop and approve a set of cassava seed certification standards.

In Ecuador, some trajectory actors tried to use the severity and risk of PMP to convince the government to declare a PMP emergency. Such a declaration opens a window of opportunity because it unlocks government and FAO funding.

SQ2.5 What aspects of the Policy Window theory of change were useful in understanding how trajectory actors contributed to policy change in the four cases?

Finding 6: It proved useful to understand the four outcome trajectories as iteratively and interactively generating three outcomes – shift in social norms; change in capacity; and, more enabling environment – driven by participants' ability to generate and make use of policy windows. The idea that a 'coalition' provided impetus resonated with how the three disease-related trajectories evolved. The evaluation has developed a specified and adapted theory of change diagram that models how CGIAR contributed to policy change across the four trajectories.

The Policy Window theory of change suggests that CGIAR contributed to policy change by helping to frame the problem and the solution (i.e. a shift in social norms) in tune with political will, while advocating for change, during policy windows. Policy windows are moments when a policy shift, or a step towards it, becomes more possible. Capacity to generate and respond to policy windows helps drive progress, as does contributing to an enabling environment for approving and implementing the policy change.

The 'shift in social norms' idea was probably the most widely applicable. It helped see in all four cases that the majority of trajectory actor effort went into framing the solution for the three more mature trajectories (biofortification and the two cassava seed certification trajectories) while framing the problem was fundamental to establishing the PMP control trajectory in the first place.

The importance suggested by the theory of change of building capacity to create, recognize and respond to policy windows, highlighted the relevance of the advocacy work that has been carried out in the biofortification declaration trajectory. Training of champions was less important in the other trajectories where the main policy windows were disease outbreaks. Here, capacity already existed to take advantage of the policy windows, learned through experience of how to work effectively with national-level counterparts as part of CGIAR normal operating practices.

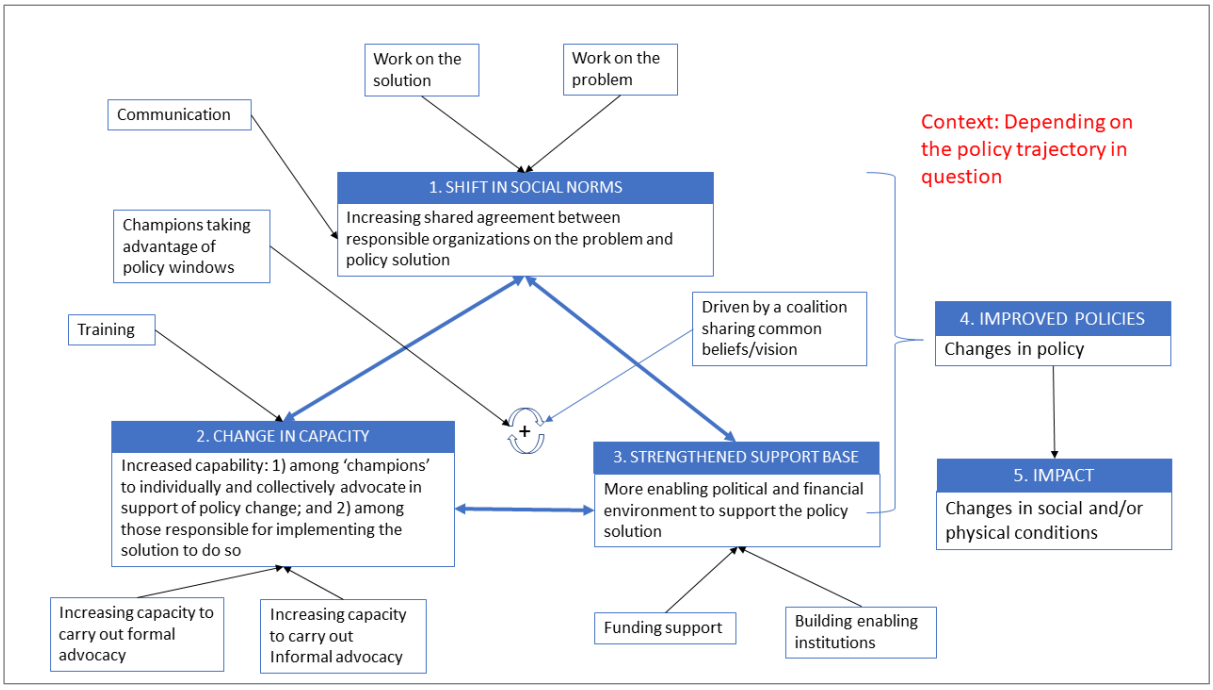
An enabling environment, or lack of it in the case of PMP, did appear to drive or thwart progress in the four trajectories and was therefore also useful. For example, the model helped clarify that for the two cassava seed certification trajectories, the enabling environment is in large part a strengthening market for cassava to drive the demand for seed certification. In Ecuador, the enabling environment idea helped to draw attention to competition for limited resources to work on plant diseases, and that it is not surprising that potatoes are losing out to bananas given the latter is Ecuador's most economically-important crop.

After writing up the four cases, it is clear that the concept of a coalition is particularly useful. This is the idea that coalitions of stakeholders coalesce around broad, shared agendas. Members bring resources to the table, including strategic knowledge, capacity to act on that knowledge, relationships with other allies and constituencies and control of financial and other resources (Stackowiak, 2013, p. 13). The coalition idea describes well how the trajectory actors worked, or attempted to work, in the three disease-related trajectories, even though in Ecuador the attempt to establish a coalition has been constrained due to a lack of funds to convene the necessary meetings to do so. It works less well with the biofortification declaration

trajectory, probably because of the size of the gap in network terms between researchers working on the problem and solution and the policy makers who needed to develop and approve the declaration. As discussed under Finding 3, this gap was bridged by regional-level champions.

Figure 3 proposes a theory of change to describe how trajectory actors contributed to policy change in the four cases, built on the Policy Window theory of change. The strategies are the broad groupings identified and described in Table 3 to Table 5.

Figure 3: Theory of change describing how trajectory actors contributed to policy change in the four trajectories



SQ3: What are the main policy outcomes resulting from the four cases and how did CGIAR contribute to them?

Finding 7: The main outcomes from the four cases are: drafting of a continental declaration supporting the planting and consumption of biofortified crops in Africa; development and approval of cassava seed standards in Tanzania and Rwanda; and, establishment of a national technical committee to agree a national-level strategy to control PMP. The way CGIAR contributed is modeled in the theory of change depicted in Figure 3 and detailed in Table 3 to Table 5. Perhaps CGIAR's most important overall contribution has been to provide sustained funding, intellectual leadership, platforms and facilitation to give the respective trajectories direction and keep them going.

In each case, CGIAR was one of a set of trajectory actors that contributed to a stream of policy outcomes over time. The outcomes are detailed in tables in the respective case study reports, together with the specifics of how CGIAR contributed. Overall, CGIAR led or contributed to the three main Policy Window outcomes – 'shift in social norms,' 'change in capacity,' and 'strengthened support base.' It has done so by leading or supporting the strategies identified in the specified Policy Window theory of change shown in Figure 3, and detailed in Table 3 to Table 5. Perhaps CGIAR's most important overall contribution has been to provide sustained funding, intellectual leadership, platforms and facilitation to give the respective trajectories direction and keep them going. These interventions have allowed the three main Policy Window outcomes to complement and reinforce each other so as to create and maintain a self-reinforcing dynamic at the heart of each trajectory.

The main policy outcomes by trajectory and CGIAR contribution are as follows.

Biofortification

The main AU biofortification trajectory outcome is a continental declaration and road map to be submitted by the AUC at the next AU Summit. The perceived value of the declaration is that it will add impetus and permanency to biofortification within African governments' policies, programs and budgets, as well as sending a signal to the private sector to increase investments. Together with other trajectory actors, CGIAR played a leading role, by: providing 'gold standard' evidence that biofortification works to alleviate nutrient malnutrition; demonstrating that biofortified crops are available to be planted and yield well; supporting a network of regional champions; and framing biofortification as complementary to other strategies for tackling hidden hunger.

Cassava seed certification in Tanzania

The main outcome in Tanzania has been the publication and government gazettement of cassava seed standards for pre-basic to certified seed in 2017 and QDS in 2019. The standards provide the regulatory framework for a functioning and sustainable cassava seed system. Progress has been, and continues to be made, in putting such a system into place. IITA/RTB has played a central role in creating, shaping and moving the trajectory forward, helped by strong and consistent working relationships with staff from TOSCI, TARI and MEDA. The four organizations have formed a *de facto* coalition funded by the BMGF through a series of projects, beginning in 2009 and set to continue until 2024. IITA/RTB has also contributed technically to the trajectory, for example by upgrading TOSCI's testing laboratory and training staff.

Cassava seed certification in Rwanda

Similar to Tanzania, the main outcome in Rwanda has been the publication and gazettement of cassava seed standards for pre-basic to QDS in 2018. The standards also provide the regulatory framework for a functioning and sustainable cassava seed system. As in Tanzania, IITA/RTB has played a central role in creating, shaping and moving the trajectory forward, helped by strong working relationships with staff from RSB and RAB, with funding from IFAD. Staff from IITA/RTB, RSB and RAB have been part of a larger regional- and global-level coalition coordinated by RTB that has been guided by a common conceptual framework and an ethos of sharing experiences in improving seed systems for vegetatively propagated crops. This sharing contributed to Rwanda learning from Tanzania and passing cassava seed standards in less than a year, compared to five years in Tanzania.

Control of potato purple top in Ecuador

The main outcome of the PMP control trajectory is the establishment of a national-level technical committee to develop a coordinated national strategy. CIP/RTB has supported research, and a risk assessment, to better understand the threat posed by PMP which helped motivate the formation of the committee in the first place. CIP/RTB has also been asked by INIAP to play a stronger convening and leadership role in the policy process, but has been unable to do so because of limited funding. CIP/RTB has supported a call for PMP to be declared a national emergency as this would release funding, but this has not yet happened. Work to combat PMP nationally only began in earnest in 2018, so it may be premature to expect a national strategy to already be in place and implemented.

A second important outcome is progress towards agreeing the scope of the threat to potato production in Ecuador. CIP/RTB has successfully proposed research projects and carried out research to help better understand and test for PMP. CIP/RTB has also launched a regional response to controlling the spread of PMP across the Andean region.

SQ4: How has CGIAR contributed to the integration/consideration of gender in the four cases and how?

Finding 8: Consideration of women and children was assured in the biofortification trajectory by framing the problem in terms of micronutrient malnutrition in women of reproductive age and children under five. In the other trajectories, gender is only recently being given much consideration in new CGIAR projects supporting the implementation of cassava seed standards and in ongoing CIP/RTB research analyzing gendered differences in access to information and support in seed systems.

Women of reproductive age and children under five years of age were included in the framing of the problem by CGIAR that the AU biofortification trajectory seeks to address – micronutrient malnutrition in women of reproductive age and children under five years of age. The framing of the problem around women and children is reflected in the declaration and the policy brief that supports it. Targeting women and children is not the same as giving consideration of gender in the process of policy change.

Gender is not mentioned in the published cassava seed standards in Tanzania and Rwanda. It may be that considering gender would have made little difference to cassava seed standard policies and regulations, but this question does not seem to have been asked.

There is evidence that gender is being given greater consideration as the focus of the trajectories moves to the logical next step of implementation of policies and regulations. In Tanzania, a new CGIAR- and MEDA-led project will carry out a gender assessment of the cassava seed system, and gender targets are being established for new projects. In Rwanda, a new CGIAR-led project will give special consideration to women and youth in the development of agribusiness models to provide farmers with clean disease-resistant planting material, in line with the Government of Rwanda's current Strategic Plan for Agricultural Transformation. In the PMP trajectory, CIP/RTB is carrying out research to analyze gender differences in management of seed and seed replacement strategies to make the findings available to influence regulations on movement of seed and material from one region to the other. Other research is looking at gender differences at farmer and organizational level to help understand different levels of bias in access to information and support.

SQ5: Are the four policy change trajectories likely to be sustained and scale over the long term?

Finding 9: The four policy change trajectories are likely to be sustained and scaled over the long term if the networks of champions and coalitions that are driving the trajectories can continue to do so. This will depend in part on the CGIAR continuing to provide some degree of funding and coordination to them. The next step in the biofortification declaration trajectory is for biofortification to be written into National Agricultural Investment Plans (NAIPs) and implemented. The next step for control of PMP is to continue to strengthen and support the PMP national technical committee. The next step for the two cassava seed certification trajectories is to continue to support a move towards more market-led cassava value chains that create a more enabling environment for seed certification.

The theory of change that models how the four trajectories are generating outcomes (Figure 3) suggests that the trajectories will continue if the network of champions, in the case of the biofortification declaration trajectory, and coalitions in the other three, are able to continue to move the trajectories forward. This depends on CGIAR continuing to provide some degree of funding and coordination to the networks and coalitions through proposing and implementing new projects that do so. It will also depend on CGIAR leadership clearly recognizing the importance of working alongside networks of champions and coalitions in scaling outcomes, for more than a single project cycle.

The case studies (see Annexes) suggest the directions the trajectories should go in. Irrespective of whether the declaration is passed in the next AU Summit, the biofortification champions interviewed saw they had a role in pushing for national governments to write biofortification into their NAIPs and implement them.

The incipient coalition that is pushing for a coordinated national response to PMP in Ecuador should focus on making the recently-formed national technical working group a success, in particular that it is well led, coordinated and has sufficient funding at least to convene its meetings. The coalition also needs to continue to carry out research to reach a common understanding of the PMP threat to potato production in the country, and how best to tackle its various manifestations. Clearer messaging will help PMP compete politically against other calls on limited government resources, for example with the powerful TR4 lobby that has so far been more successful in mobilizing funds.

The future success of the two cassava seed certification trajectories depends on creating more market-led cassava value chains that create an enabling environment for seed certification. This environment includes seed entrepreneurs who know how to produce clean cassava planting material, seed inspectors able and willing to certify it and farmers who can afford and are willing to buy it.

Conclusions

Conclusion 1 on policy outcomes and impact:

The four case studies assemble sufficient evidence to establish beyond reasonable doubt that the four trajectories have produced important policy outcomes and CGIAR has made significant contributions to them. The policy outcome trajectories have the potential to change the lives of tens of thousands (PMP) to millions (biofortification and cassava seed certification). The case studies and this synthesis report have helped explain how.

Conclusion 2 on what drove the trajectories:

The trajectories made progress in part through the combined efforts of groups of people who shared and were motivated by a common, broad vision. In the biofortification declaration trajectory, this grouping took the form of a network of champions selected and trained to explicitly advocate for biofortification at high-level conferences (i.e. policy windows) on improving nutrition in Africa and globally. In network terms, trajectory actors were links away from policy-makers in the AUC and champions were needed to bridge the gap.

The other trajectories were aimed at national-level policy change. Here, the type of grouping is better described as a coalition of CGIAR researchers, donor representatives, project partners and key people working in the respective national agricultural research and extension systems. The coalition members provided resources to move their trajectory forward, including funding, knowledge and access to their contacts. They were close enough in network terms to key policy makers and their advisors to be able to advocate directly, without special training or an explicit strategy to do so, or even for the word 'advocacy' to be used at all.

Conclusion 3 on role of donors:

BMGF and DFID showed the degree to which a donor can support outcome trajectories. BMGF provided uninterrupted funding for work on cassava seed systems from 2007 which is set to continue to 2024. The idea that seed certification was crucial to a clean cassava seed system was born out of the work prior to 2012, which led to the emergence of the seed certification standards trajectory in Tanzania. BMGF staff were part of the incipient coalition that launched the trajectory and moved it forward.

In the AU biofortification trajectory, BMGF and DFID also provided uninterrupted funding over many years, which continues. Both donors also supported panels of African leaders who advocated for biofortification at the highest level. Their message strengthened and was boosted by the more bottom-up advocacy on the part of the CGIAR- supported network of champions.

By funding work at field to global scale, both BMGF and DFID were offered a unique overview of the biofortification trajectory. This provided both donors with an opportunity to shape the work of other trajectory actors, in particular the CGIAR, so as to reduce competition, improve collaboration and help researchers better understand how their work fits in.

Conclusion 4 on the development of a broadly-applicable theory of change:

Part of what this evaluation has developed is a broadly-applicable theory of change, adapted from the political science literature to model how trajectory actors contributed to policy change in the four cases chosen for analysis (see Finding 7). Because it is broadly applicable, it can be reused to help explain CGIAR contribution to

other policy changes in other contexts. Theoretically, it has the potential to work as a framework for accumulating understanding and learning about how CGIAR research influences policy changes more broadly. [9] The learning can be used to refine and adapt the model to different types of policy change in different contexts.

Conclusion 5 on the next step for the evaluation approach used:

Across the four cases, the approach, of developing timelines, generating rich, thick descriptions and choosing and specifying a generic theory of change from the literature, appears to have worked to clarify and substantiate causal claims and to identify and explain underlying causal mechanisms. This synthesis report suggests that the policy window theory of change proved a useful framework for generating and accumulating learning across the four cases. The approach may have broader applicability. To test these claims, the approach should be written up as an article in an evaluation journal and be subject to peer review. An annotated table of contents for such a paper is provided in Appendix 2.

[9] Proponents of Realist Evaluation see a large benefit in accumulating evaluative learning from one evaluation to the next (see Pawson, 2013)

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Annexes

Annex 1: Case evaluation reports

Mainstreaming of Biofortification in the African Union: evaluation of CGIAR contributions to a policy outcome trajectory. See here https://cgspace.cgiar.org/handle/10568/109849

Development of a cassava seed certification system in Tanzania: evaluation of CGIAR contributions to a policy outcome trajectory. See here https://cgspace.cgiar.org/handle/10568/110093

Development of a cassava seed certification system in Rwanda: evaluation of CGIAR contributions to a policy outcome trajectory. See here https://cgspace.cgiar.org/handle/10568/110289

Control of potato purple top in Ecuador: evaluation of CGIAR contributions to a policy outcome trajectory. See here https://cgspace.cgiar.org/handle/10568/110195

Annex 2: Annotated table of contents of a journal article describing the evaluative approach used in the study

Working Title: Evaluating contribution to policy outcomes using a theory-driven approach

Authors: Boru Douthwaite, Claudio Proietti, Amanda Wyatt and Vivian Polar

To be submitted to an evaluation journal

Introduction

- Ag R4D organizations asked to map out pathways to impact
- Such pathways almost certainly involve policy change
- Therefore, plausible impact pathways will require R4D orgs to explain how needed policy changes will occur
- At the same time, Ag R4D orgs are being asked by donors to show how they have already contributed to policy change
- Policy change processes are a black box for many – assumption is that provision of evidence will lead to policy change. How exactly is not explored
- Given this, RTB and A4NH commissioned an evaluation of four policy changes to:
    - Document, understand and substantiate CGIAR contribution
    - Accumulate learning to inform future practice

Objectives of paper

- Present and explain the method used, aspects of which may be useful in future evaluations

Methodology

- Main influences / conceptual framework
    - Idea that using theory helps understand change
    - Outcome harvesting and starting with outcomes and working backwards
    - Crime analogy and the use of a quasi-judicial approach
    - Use of timelines to show prior intention to help trace processes
    - Case study methodology
        - Rich thick description to really understand what is going on
- Choice of ToC
- The steps taken
    - Refer to the steps diagram (from PowerPoint presentation)

Results and discussion

- Specified ToC for one case (biofortification?)
    - Present ToC diagram plus table unpacking the strategies
    - Elucidate main insights generated by using ToC
    - Discussion of the value of the approach
- Specified ToC for the four cases
    - Present ToC diagram
    - Main synthesis insights generated
    - Discussion of the value of the synthesis and insights generated, in particular drawing on SQ2.5 on usefulness of ToC in understanding contribution of trajectory actors

Conclusions

- Advantages and applicability of the evaluative approach
- Limitations and further improvement required