



Private Investment for Enhanced Resilience (PIER) Final Evaluation Report

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Key Acronyms

BSR	Business for Social Responsibility
CA	Climate Adaptation
CA/R	Climate Adaptation/Resilience
CFA	Climate Finance Advisors
COFIDE	Development Finance Corporation of Peru
DOS	Department of State
M&E	Monitoring & Evaluation
MOU	Memorandum of Understanding
NAP	National Adaptation Plans
NDA	Non-Disclosure Agreement
NGO	Non-Governmental Organization
OES	Bureau of Oceans and International Environmental and Scientific Affairs
PIER	Private Investment for Enhanced Resilience
PPP	Public Private Partnership
TA	Technical Assistance

EXECUTIVE SUMMARY

The Private Investment for Enhanced Resilience (PIER) program was designed at a time when the global scientific community was working to increase attention on climate adaptation (i.e. changes in processes, practices, and structures that might be put in place to moderate potential damages, or benefit from opportunities, associated with climate change), and were seeking knowledge on how key economic and social systems could be made *climate resilient* (climate-proofed for the future). Governments across the world were also working on their own *National Adaptation Plans (NAP's)* identifying actions that could be taken to adapt to climate change, but the expansive lists of what was required generated concerns over funding. As developing nations and existing multilateral funds provide only limited resources and were subject to a variety of institutional and political constraints, it was hoped that private sector actors could be enticed to play a larger role in undertaking and financing climate adaptation activities to improve climate resilience.

In 2017, the U.S. Department of State (DOS), Bureau of Oceans and International Environmental and Scientific Affairs (OES) provided a Cooperative Agreement to Winrock International (Winrock) to implement the *Private Investment for Enhanced Resilience (PIER)* program, to address barriers that the private sector faces to increasing investment in resilience activities in developing countries. The PIER project was originally expected to operate for 3 years but this was amended twice. During its nearly five-year period of performance (09/26/2017 to 08/31/2022), PIER provided technical assistance and advisory services, as well as customized tools and development models, in partnership with a variety of sector actors and in-country stakeholders.

Over the life of the program PIER conducted 11 broad reaching in-country assessments and selected 14 demonstration projects across 6 countries (Ghana, Vietnam, Indonesia, Peru, Jamaica Grenada). In general, half (50%) of these projects focused on demonstrating how supporting institutions (governments, financial institutions, business associations, etc.) could improve the enabling environment for private sector investment; and half (50%) of the projects demonstrated to private sector companies working in the agricultural space how to analyze climate-related risks to their investments and promote climate resilient adaptation and or mitigation practices.

The PIER program illustrated that private sector, government and other relevant actors were eager to participate, yet were not confident in the depth of their knowledge nor understood how best to engage in climate adaptation and resilience. Businesses were struggling with how to clarify climate risks in terms of valuing the cost and benefits of alternative options and developing a rationale that could support decision makers in selecting the preferred solution and investments; while governments and parastatals were struggling with determining how to best engage private sector actors, and needed support in considering what actions, incentives, guidance, policy or legal structures might enable and attract private sector funding to support their climate goals.

Overall, the PIER program and the demonstration projects themselves were well managed and implemented, and Winrock International and Climate Finance Advisors (CFA) staff were well regarded both by the donor and in the field. Government staff and private sector entities found merit in partnerships *with* PIER, and they found technical assistance and capacity building to be beneficial and a value-add to their existing efforts. An analysis of results indicates that 6 projects (43%) fully met their demonstration goals, 5 projects (36%) partially met their goals, 1 project did not meet its goals, and 2 projects were still in process and the outcomes were yet to be determined. PIER program participants commonly described the program as “*innovative, ground-breaking, and important.*”

The addition of new knowledge, particularly on pathways of engagement, was one of the most significant outcomes of the projects and a critical attribute identified by participants as to what made a project effective. Other factors that contributed to project success included the facilitating nature of PIER’s implementation approach (PIER staff often playing the role of an ombudsman); the technical expertise brought forth by Winrock, partner organizations and in-country technical experts; the development and testing of bespoke climate risk analysis and financial analysis; and development of strategies and improvement in capacities of government and parastatals to engage private sector actors (and participants in Ghana, Vietnam and Peru reported substantive positive change in how the government viewed private sector interaction).

The majority of respondents did *not* identify mobilization of private sector funding as either key to project effectiveness or success (most thought this too lofty a goal for projects of this length) but felt the projects were more effective when they delivered *new language and a climate profile* that could be used by stakeholders to approach financial institutions, donors or other partners, in bids for certification or additional funding.

PIER’s demonstration projects were hampered by overly long planning processes which resulted in shorter implementations timelines and restricted budgets, and were impacted by COVID-19 which required a pivot to virtual trainings and meeting, all of which resulted in a lack opportunity to fully roll out, test ideas or scale-up projects. Participants expressed regret that financial institutions had not been brought in at the onset of the process, conveying that these institutions also needed deeper knowledge of climate adaptation and resilience and relevant methods for integration into projects. A lack of strategic articulation of program goals and program level learning was one of the most substantive criticisms of the PIER program, which was largely otherwise well considered, as the majority of respondents reported that PIER was effective and met its programmatic goal by demonstrating the value of making investments in resilience and clarifying potential investment pathways --to the donor, to the private sector and to host country governments, and this was the project’s ultimate success.

PIER exceeded its target for investment mobilized (raising \$45M in commitments, well past the \$15M target) though this primarily came from one source (Development Finance Corporation of Peru [COFIDE’s] loan to Aleatica). In general, the projects did not result in attracting or mobilizing funding (beyond small in-kind investments to work alongside PIER) but seemed to illustrate that it will take a

joint funding effort to deliver resilience at meaningful scale; that global national, and corporate level leadership is required to succeed; and that financial institutions need to be engaged to support these projects. PIER did demonstrate that private sector entities are not only willing to engage in supporting and helping to pay for climate adaptation and resilience but are actively seeking cost-effective ways to do so.

The most significant impact of PIER was illustrating to governments, parastatals, banks, and private sector entities – that the concept of climate adaptation and resilience can be operationalized as a business proposition and that engagement with private sector (by creating incentives, guidance, or legal frameworks) can help governments meet climate change adaptation priorities. Programming for engaging government, financial institutions and private sector in climate adaptation and resilience is critical and should be continued and expanded.

1. INTRODUCTION

1.1 Evaluation Purpose and Scope

The U.S. Department of State, Bureau of Oceans and International Environmental and Scientific Affairs (OES) provided \$5.8M for a Cooperative Agreement (S-LMAQM-17-CA-2032) to Winrock International to implement the Private Investment for Enhanced Resilience (PIER) project to address barriers that the private sector faces to increasing investment in resilience activities in developing countries. During its nearly five-year period of performance (09/26/2017 to 08/31/2022), PIER provided technical assistance (TA) and advisory services, as well as customized tools and development models, in partnership with a variety of sector and in-country stakeholders. As part of the PIER close-out procedures, Winrock hired an external international evaluation consultant to facilitate a participatory evaluation, to capture lessons learned.

1.2 Evaluation Objectives

The objectives of the evaluation assignment were to:

- Provide an overview of the strengths, weaknesses, challenges, and gaps in the project design and implementation.
- Compare the actual project outcomes as relevant to the expected outcomes and objectives.
- Assess the project's contribution and impact in addressing barriers that the private sector faces to increasing investment in resilience activities across a variety of countries.
- Provide lessons learned and recommendations useful for the design and implementation of future projects.

1.3 Methodology & Research Questions

The PIER evaluation effort sought to capture evidence of relevance and coherence, effectiveness¹, potential impact, and sustainability of the PIER program, including a broad review of all key activities across the life of the projects but focusing in on the countries in which PIER has worked during Stage 2 (Ghana, Indonesia, Vietnam, Peru, Grenada, and Jamaica). The evaluation approach incorporated four key analytical components to address a series of research questions, which were:

1. **A Relevance and Coherence Context Analysis** drawn from desk research, a document review and key informant interviews to determine to what extent the project design overall was relevant and if activities in each country were relevant and tailored to the country's needs. Including key informant reflections on:

¹ This evaluation did not include a cost-benefit analysis of efficiency, but some general insights on this topic can be found in Section 2.2.

- a. To what extent was the project needed, i.e., was it relevant given current global thinking at the time pertaining to the needs for and importance of projects for improving private sector resilience investment opportunities? How well did the intervention fit with other interventions in the countries and sector?
 - b. How germane was the initial expressed project theory of change/ i.e., were the key change pathways relevant in terms of meeting the expressed needs of the area, were any critical ideas not expressed, did the Theory of Change change during project implementation, if so, how?
 - c. How relevant was the project's implementation strategy (as designed and implemented) to the result of the project? How did this structure help or hinder delivery of results?
 - i. Was the team structure as implemented, appropriate to delivering results of the project? Given what was learned, is there a better structure for moving forward?
 - ii. How useful were the inception research activities and country implementation plans developed to the design of the project?
 - d. How coherent was PIER in terms of internal and external partnerships, i.e., how well did the project work with the various consultants, governments, non-governmental organizations (NGOs) and private sector partners?
2. An **Effectiveness Analysis**, drawn from key informant reflections and examination of existing documents and data sets to determine:
- a. The extent to which the objectives of the project were achieved, and relevant to the objectives in each country.
 - b. Identification of which components of the intervention were more successful, and which proved to be more challenging.
3. A modified **Outcome Harvest Analysis**, undertaken through desk research, data review and through consultation with key informants to assess the wider impacts/effects of the project capturing "change writ large" (such as actions, behaviors, relationships, investments, policies, practices) of one or more actors influenced by an intervention to determine:
- a. The extent to which the project delivered anticipated outcomes and impacts relevant to investment.
 - b. What (if any) factors beyond the control of the project had an influence on project outcomes?
 - c. To what extent can changes be attributed (evidenced) to the program?
 - d. What do stakeholders view as the most significant change of this project and why?
 - e. What do stakeholders feel didn't work on this project and why?
4. A **Sustainability Analysis** based on input from key informants who assessed to what extent the benefits of the program are likely to persist after donor funding ceases:

- a. What are the major factors that are influencing the sustainability of the program?
- b. What factors could contribute to ensuring achievements persist after the conclusion of the intervention?
- c. What if any mechanisms have been set up to support the achievement in the longer term?

The evaluation followed standard practice guidance as laid out by the American Evaluation Association² Society, European Union (EU)³, the OECD/DAC Network for Development Evaluation⁴, and adhered to American and the UN Ethical Guidelines for Evaluation / Do No Harm Principles.⁵

Data was collected from primary and secondary sources through:

1. **A Desk Study.** Including a review of relevant PIER program documents and data sets to mine for various assessment needs including the recent policy briefs developed by PIER.
2. **Key Informant Interviews:** Information was gathered through 34 semi-structured interviews with a variety of knowledgeable individuals including:
 - Nine (9) *in-country experts* who worked with PIER in Stage 2 focus countries (Ghana, Indonesia, Vietnam, Peru, Grenada, and Jamaica).
 - Six (6) *international experts* with deep sector knowledge on climate adaptation, resilience, and private sector investment (four of whom worked with PIER and two impact investors working in the climate sector who provided external sectoral thought leadership).
 - Five (5) *government representatives* (US Department of State OES, JAKARTA Indonesia, EPA Ghana).
 - Five (5) *Private Sector/ Financial Institution / Farmers or Business Association representative* (ECOMAfrica, ECOMAsia/ Indonesia Coffee Association & Board, COFIDE, Corteva, Grenada Nutmeg).
 - Four (4) *representatives from partner organizations*--supporting work in PIER (Climate Finance Advisors and Business for Social Responsibility [BSR]).
 - Five (5) *Winrock International staff* engaged in program management, country assessments, tool development and project implementation.

² <https://www.eval.org/About/Guiding-Principles>

³ EU Better Regulation Toolbox, Evaluation Criteria https://ec.europa.eu/info/sites/info/files/file_import/better-regulation-toolbox-47_en_0.pdf

⁴ oecd.org/dac/evaluation/dacriteriaforevaluatingdevelopmentassistance.htm#:~:text=The%20OECD%20DAC%20Network%20on,two%20principles%20for%20their%20use.

⁵ UNEG Ethical Guidelines for Evaluation (2020) https://www.unodc.org/documents/evaluation/Guidelines/UNEG_Ethical_Guidelines_for_Evaluation_2020.pdf

Open interview techniques were used, based on an interview guide prepared beforehand (approved by the Winrock Evaluation Committee⁶) and questions were tailored to each interview. Please see Annex 1 for Communication Protocols.

1.4 Methodological Considerations / Limitations

The data collection process had limitations in line with the nature of collecting data during the ongoing COVID-19 context and on research in climate adaptation--discussions were virtual and there is limited accurate formal data in the public arena regarding this topic to use for triangulation purposes. As a result, this report has largely had to rely on respondents' perceptions of the situation and outcomes. There is always a potential for individuals to answer in a way they believe makes them appear more favorable (Social Desirability Bias), thus, to the extent possible, data collection processes have been designed in a manner to try and minimize the opportunity for these biases and key findings have been triangulated where possible. Additionally, two (2) external international climate adaptation experts/ thought leaders (not specifically involved in PIER) were included as part of the interview pool, specifically to add insight on global relevance. Additional considerations and limitations that are important to note in understanding the information forwarded by this evaluation, are further discussed below.

Geographic Coverage: The PIER zone of influence included 5 regions and 22 countries (including the USA which was not a focus country but where some work took place)⁷, but primarily focused on 6 countries who were selected to move to Stage 2 of implementation (Ghana, Indonesia, Vietnam, Peru, Grenada, and Jamaica), thus reflective investigation focused more on these locales. During the evaluation *no* respondents spoke to results in Guyana, Mozambique, Dominican Republic, or Saint Lucia (which were eliminated as focus countries of PIER, and input on these countries was not sought based on the scope of the evaluation). More than a third of respondents (41% / 14 of 34) were engaged with PIER in multiple countries and spoke both broadly about the program at large, as well as to efforts and results in specific countries. In total, PIER's work in 5 regions were discussed by respondents (*Africa, Asia, Latin America, the Caribbean and North America*). Language and literacy levels were acknowledged as potential issues but were largely considered not significant given the requirement that local consultants were fluent in English and the substantive education level of all respondents. This evaluation did not seek to gather results from local community members, who were not the primary targeted audience of PIER.

⁶ The Winrock Evaluation Committee was comprised of representatives from the Program Team and from the Monitoring, Evaluation and Learning Team.

⁷ PIER conducted assessments and demonstration projects in 6 countries (Ghana, Vietnam, Indonesia, Peru, Jamaica, Grenada); conducted assessments alone in 4 countries (Bangladesh, Mozambique, Dominican Republic, & Saint Lucia); conducted an assessment and included stakeholders in training in 1 country (Tanzania); and conducted virtual climate adaptation and risk training, with agronomists from 10 countries (Zambia, Ethiopia, Kenya, Nigeria, Ivory Coast, Philippines, Malaysia, Pakistan, Korea, Thailand); and made presentations and worked with technical climate adaptation experts from the USA.

Length of Intervention: PIER operated for just under 5 years and Stage 2 (the field piloting of projects) had about 20-26 months to achieve results. PIER was undertaken in large part because it was considered innovative and was considered *pilot* in nature--relationship building with new targeted audiences and creation of innovative financial arrangements clearly take time to establish, thus many of the results attributed to PIER are still in their initial stages (some outcome and impact level findings are primarily *attributed or expected* rather than reported as completed). Nonetheless, the evaluator has sought to ensure there was sufficient substantiation for any results findings presented, through available data, desk research and stakeholder interviews, and triangulation of these sources of information.

Outcome Mapping Data: Outcome Mapping⁸ focuses on identifying and tracking behavior change and was used by the evaluator to help capture what change was desired within 14 specific PIER demonstration projects and what was actually delivered. As applied in PIER, the modified process included having the respondents clarify what they felt were the most significant changes (in the Stage 2 projects) that were brought about (and why), as well as the perceived sustainability of these changes. Respondent data was analyzed alongside relevant output and outcome data reported through the PIER monitoring, evaluation, and reporting system.

Controlling for Confirmation Bias: Confirmation bias is a type of limitation that may occur during the interpretation of study data when researchers, consciously or unconsciously, look for information or patterns in their data that confirm the ideas or opinions that they already hold. To help mitigate this issue, information to draw conclusions was drawn from a range of sources and the endline reflection process included a diverse group of people, who commented on the results of the program (this included the donor, local consultants, international technical experts, partner organizations, thought leaders and government actors) some with dissenting views, all of which were incorporated into the analysis.

⁸ *Outcome Mapping Earl et al 2001* <https://www.idrc.ca/en/book/outcome-mapping-building-learning-and-reflection-development-programs>

Ultimately the credibility of the results presented resides in the following:

1. That the source of much of the information are the PIER participants who went “on record” with their views of what was or was not changing as well as the significance of change to them;
2. PIER staff served as sources, knowing that the information they gave would be both public and to the extent possible, verified with other sources by an external consultant; and
3. An international evaluation consultant developed tools and provided analysis of the key data.

The results of this reflection effort are meant to be utilization focused--delivered with the intent to support future programming. To help with readability and programmatic understanding, the findings are presented by evaluation questions posed.

2. FINDINGS

2.1 The Relevance and Coherence of PIER

Private Investment in Enhanced Resilience (PIER) was designed and operated under a changing landscape in climate policy across the world. In 2015, the United States signed the Paris Climate Agreement and along with another 196 countries, pledged to set targets for their own greenhouse gas reductions and to report on progress. The backbone of the Paris Climate Agreement was a focus on *Climate Mitigation*—a declaration to prevent a global temperature rise of 2 degrees Celsius (3.6 degrees Fahrenheit). A year later in 2016, the World Economic Forum surveyed 750 experts and decision makers, who reported that they believed the greatest global economic risk was the potential for failure on climate change mitigation and adaptation⁹.

The focus on changing climate and greenhouse gas emissions was by no means lost on the private sector and a 2016 survey¹⁰ of 1,409 CEOs from 83 countries found that half (50%) believed that climate change was a direct threat to their growth prospects. Seen purely from the perspective of global cost minimization, some of the top priorities for climate protection included slowing deforestation in countries with extensive forests and introducing energy conservation measures and alternative fuels in emerging economies. From an equity perspective, it was felt that developing countries (with high carbon stock) should not bear the sole responsibility for financing future emission reductions¹¹, thus governments and private sector entities from across the world were deepening their focus on how to slow warming and were struggling to determine how targets could be achieved, while defining their own corporate social responsibilities.

In 2017 the United States withdrew from the Paris treaty¹², perceiving the restrictions imposed by the accord as too onerous, and the Administration cut government support for climate funding while also raising expectations that private sector funding could be better catalysed. Simultaneously, greater amounts of scientific research in ecological adaptation and natural resource management were coming to light that offered insight into how ecological, social, or economic systems may respond and be managed to respond to climatic stimuli.¹³

The global scientific community was increasing discussion on *climate adaptation* --referring to changes in processes, practices, and structures that might be put in place to moderate potential damages (or

⁹ <https://www.weforum.org/qaenda/2016/01/what-are-the-top-global-risks-for-2016/>

¹⁰ Price Waterhouse Coopers 19th Annual CEO Survey <https://www.pwc.com/qx/en/ceo-survey/2016/landing-paage/pwc-19th-annual-global-ceo-survey.pdf>

¹¹ *Financing the Climate Mitigation and Adaptation Measures in Developing Countries* Frank Ackerman 2009 https://unctad.org/system/files/official-document/gdsmdpg2420094_en.pdf

¹² *The US rejoined the Paris Agreement in 2021*

¹³ *Adaptation to Climate Change in the Context of Sustainable Development and Equity* (authors B. Smit & O. Pilifosova (2018) <https://www.ipcc.ch/site/assets/uploads/2018/03/wq2TARchap18.pdf>

benefit from opportunities) associated with climate change¹⁴, and began increased discussions on how key economic and social systems could be made **climate resilient** (climate-proofed for the future). Supported by the UN and others, governments across the world were also working on their own *National Adaptation Plans (NAP's)*¹⁵ identifying actions that could be taken to adapt to climate change, but the expansive lists of what was required generated concerns over funding. Given that developing nations and existing multilateral funds provide only limited resources and were subject to a variety of institutional and political constraints, it was hoped that governments could entice private sector to play a larger role in undertaking and financing climate adaptation activities to improve climate resilience.

So it was within this landscape that the U.S. Department of State, Bureau of Oceans and International Environmental and Scientific Affairs (OES) envisioned the PIER project to help stakeholders address barriers that the private sector faces to increasing investment in resilience in developing countries. The project was originally expected to operate for 3 years (9/2017- 10/2020) but this was amended twice; initially OES approved a cost extension of PIER by 20 months, from October 01, 2020 to May 31, 2022 and expanded the project's portfolio, and then later approved a no-cost extension for PIER to continue activities through September 2021.

As designed the project sought to increase private sector investment in resilience to climate change, by:

1. Improving developing country ability to attract private sector resilience investment:
 - a. Supporting adaptation of public sector policies, laws, regulations and incentives to reduce climate related risks to investors.
 - b. Improving institutional capacity of regulators, funders and investors to plan for resilience.
2. Improving private sector engagement and understanding of viable resilience investment opportunities:
 - a. Developing and testing sector specific climate risk reduction investment models and disseminating these to relevant stakeholders.
 - b. Developing public-private investment partnerships to finance solutions to address typical climate and weather risks.

“We wanted the project to pilot or demonstrate how to get private sector engagement in resilience...to make the business case for climate adaption and build the capacity of governments to attract such investments. We also wanted to see how non-profits would approach this task.”

*Excerpt/ Key Informant Interview
(DOS/OES)*

¹⁴ “In part because anthropogenic climate change appeared unavoidable and mitigation agreements seemed difficult to achieve.” *Transcending the Adaptation/Mitigation Climate Change Science Policy Debate: Tori L. Jennings Weather, Climate, and Society Vol. 3, No. 4 (October 2011)*

¹⁵ *The NAP* process was developed under the U.N. Framework Convention on Climate Change (UNFCCC)

The project kicked-off in May of 2017 and followed a number of distinct stages:

- Stage One: Country Assessment and Activity Selection-- the PIER team conducted in-country and desk assessments to identify activities to encourage private investment in resilience .
- Stage Two: Implementation—during which the PIER team developed and supported climate risk-reduction investments through internal and external technical assistance .
- Stage Three: Communications and Thought Leadership aimed to publicize results; inform donors, implementers, and stakeholders of lessons learned from PIER.¹⁶

2.1.1 To what extent was the project needed – i.e., was it relevant and coherent given global and sectoral thinking at the time? How well did the intervention fit with other interventions in the countries and sector?

In discussing the relevance of the project, respondents reported (nearly universally), that the project was **extremely relevant and that it was (and remains) needed**. Respondents commonly described the program as *“innovative, ground-breaking, useful, important, needed, and ahead of its time.”* A repeating theme shared in discussion was that in the period leading up to PIER the sectoral focus had primarily been on *climate mitigation* (what actions could be taken to reduce warming) rather than what activities could be taken to adapt to changing climatic conditions and to understand and address climate risks to ensure resilience of people, corporations, economies and governments into the future.

“We needed PIER, we were all investing in mitigation, but we needed to invest in adaptation, we just didn’t know how.”

Excerpt from interview with in-country expert

“There was and is an interest in PIER. The space for private sector into adaption is happening more... private sector is buzzing with potential interest.”

Excerpt from interview with in-country expert

Additionally, several respondents felt it was relevant because of a growing call for *disclosure of climate risk* response among private sector entities.

“Boards and financial institutions are now beginning to expect that companies understand and divulge their climate risks and share how they plan to adapt/address those risks.”

Excerpt from interview with an International Private Sector Impact Investor

There were however several respondents who shared that the project as designed and implemented, was not in step with where adaptation practice really was, yes countries had NAPs and yes there was some understanding of the concept, but they noted that in 2017 the climate adaptation concept was ill-

¹⁶ Later augmented to include *“scale-up PIER investment models to support sustainable supply chains and reduce deforestation in the Caribbean.”*

defined, that stakeholders needed significant capacity building, and ideas for private sector engagement needed more incubation. They wondered if the initial three years of the program would have been better spent on awareness creation, generalized capacity building and development of advocates and ideas in each country.

“Perhaps the time might have been better providing an additional level of capacity building.” ... “The project was good, but we weren’t ready for it.” ... “An acceleration approach would have been better, this is a bit what PIER changed into over time--finding sustainable business solutions that drive resilience. ”

Excerpts from key informant interview with Partner and Government Organizations

Nearly all respondents though, reported that the PIER intervention was welcomed by the host countries and fit with other interventions in the countries and sector, adding value while avoiding duplication of effort. Respondents believed that this occurred largely because *it was designed to*—the PIER assessment process sought out countries and opportunities that seemed best suited for support.

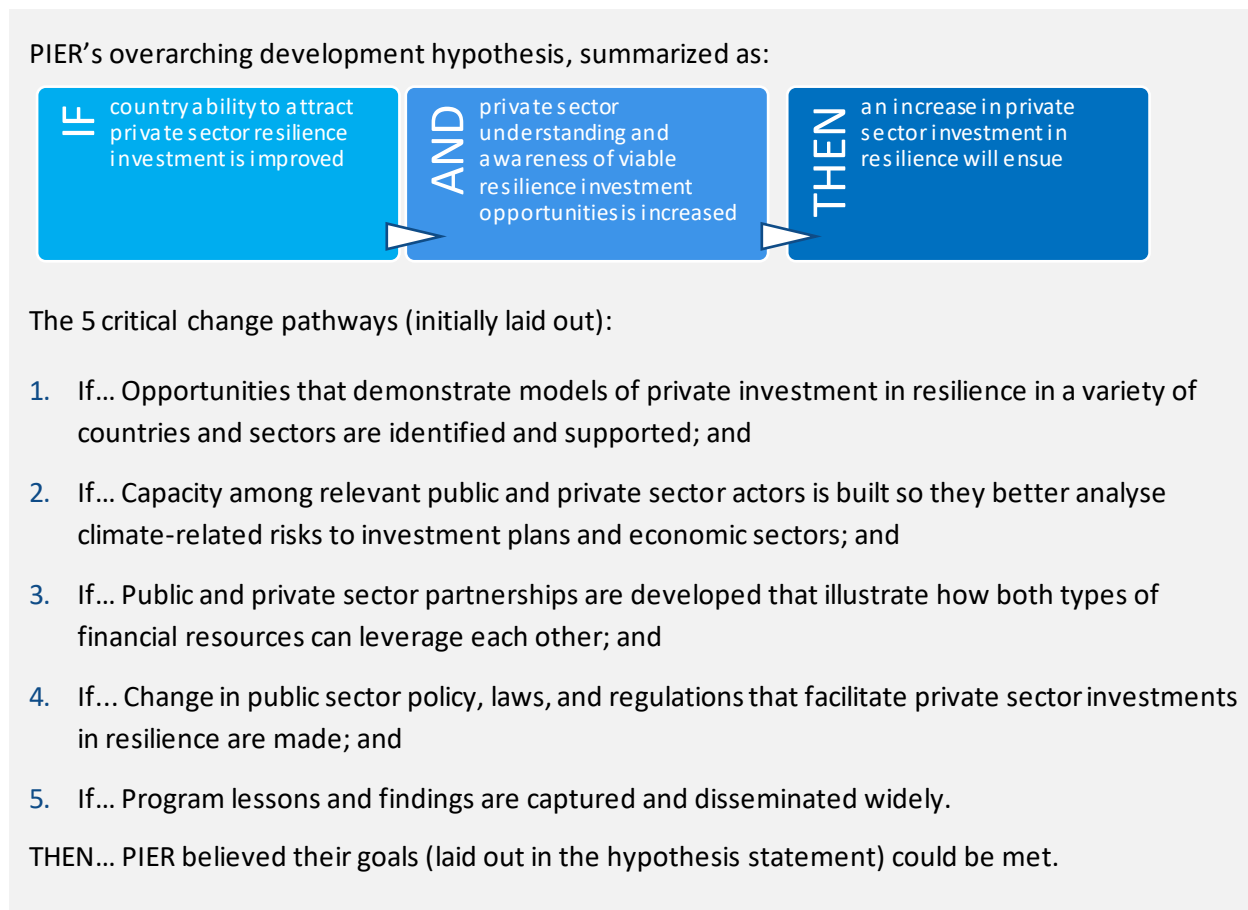
PIER clearly supported the U.S Department of State/OES’s mission of “ensuring that economic growth and a healthy planet go hand in hand” and the project’s strategic vision aligned technical support and implementation with the Administration’s goals in engaging the private sector. Overall, PIER was viewed as a relevant program globally and locally and was designed in line with sectoral thinking (both scientific and administrative) and managed to stay coherently in harmony with shifting political realities in both the USA and the multiple countries of operation.

2.1.2 How germane is the project Theory of Change --were any critical ideas not expressed; did the theory change during project implementation, if so, how?

Introduction: A good *Theory of Change (TOC)* lays out the project’s belief system of what changes need to occur to deliver results. A TOC often begins with a *hypotheses statement* (*if we do this then this will happen*) clarifying the various pathways of change that the project believes will take place to attain results and illustrates how and where project activities fit to bring about change. A TOC is also meant to clarify any key assumptions the project is making in conceptualizing the design (and/or in choosing a particular pathway and set of activities) and clarifies at the outset any risks that it may need to mitigate or address during programming. TOCs are often operationalized through the development of *logic models* that clarify the goals, objectives, activities, and indicators that will be used to measure change along these pathways. A strong TOC and logic model is important for several reasons, one, its helps ensure that the donor and the implementing partner have a *shared understanding* of the anticipated operating approach of the program (when this is not the case projects are often delayed or required to redo initial work); and two, it helps staff and partners better understand how their work (which is often activity-based) fits within a larger strategy and how they are meant to connect and align resources to deliver larger results (versus, say, just completing an activity and meeting a target). When project teams revisit their conceptual models *during* program implementation, they may find they need to adjust the *change theory* based on lessons learned during field implementation and/or because certain

assumptions they made initially did not hold true. This type of reflection effort allows for thoughtful program learning and *adaptive management* and contributes to growing maturity of sectoral thinking.

Figure 1 PIER Theory of Change



Findings / Discussion:

Respondents largely reported that **the Theory of Change was valid and captured many key components, yet it lacked depth and full articulation** and a complete logic model (laying out inputs, outputs outcomes, and corresponding measurement at each level, along with clarifying program level assumptions and risks) does not seem to have ever been articulated.¹⁷ A variety of examples (provided both through respondent interviews and in program documentation) illustrated some implementation issues as a result. For example, it is clear that at the outset the donor and the implementing partner did not have a unified vision of critical operational modalities--this came to light after the first country assessment was completed: Winrock appeared to be focusing on identifying

The PIER Theory of Change was valid and captured many key components, yet it lacked depth and full articulation.

¹⁷ Although some progress was made in 2020, and this was also undertaken relevant to some of the pilot projects

private sectors firms who could immediately support additional investment, while the OES wanted the project to focus more on capacitating and empowering the government to incentivize and attract private sector firms themselves, using largely existing programs in country to demonstrate success¹⁸. This required time to go back and retool.

Also notable was a lack of clarity (and thus a lack of discussion) on several key assumptions that the project made initially--**there was significant discussion among key stakeholders about whether PIER had identified the best entry points for delivering on results** (or wrongly assumed a supportive global corporate environment)--while the project focused on working with the private sector entities at the country level there were questions as to whether the program might have seen more success if they had focused first on working with CEOs, Boards, Headquarter-based Purchasing Teams, Buyers and/or Corporate Social Responsibility Teams – with several respondents feeling this would have delivered increased engagement in the field and delivered a supportive audience to the DOS/OES, helpful to lobbying in Washington and promoting action on the global stage.

The most common concern shared however, was the idea that “**private sector investment,**” while being an important outcome and indicator to track, **should not have been considered as the overall goal for the program given:** 1) the short program timeline (initially a 3-year effort); 2) that climate adaptation and resilience were largely new concepts in the countries (and with private sector entities); and 3) that the program was set up to be experimental in nature and was meant to pilot new ideas.¹⁹

“Private sector investment was not the best goal, better would have been improved institutional capacity and increased mandates (laws and policy changes). This project was experimental, we needed the focus to be on learning.”

Excerpt from interview with key informant (Winrock Staff)

Respondents commonly reported that success might have been better articulated as *Increased government and private sector engagement in climate adaptation and resilience*, with engagement defined as substantive action taken (new modalities adopted--such as policies, guidance, climate risk analyses, resilient agricultural adoption...). Some respondents felt that the need to deliver on an *investment* goal negatively influenced pilot project selection and learning opportunities.

“It was an erroneous assumption that pipeline was there and waiting to be funded instead we had to fund investment models as basic economies were not there yet.”

Excerpt from interview with key informant (Partner Organization)

¹⁸ Excerpt from PIER Progress Report #3: “This original emphasis on direct transaction was rooted in Winrock’s initial interpretation of indicator EG11.4². Under this indicator, Winrock committed to mobilize \$15M from the private sector by facilitating transactions, obtaining finance and investment commitments, and fostering public private partnerships, among other interventions. In response to OES’s feedback, the PIER team immediately updated the assessment and analysis processes to provide broader, market-oriented TA (Technical Assistance) and scalable transaction approaches that would incentivize the private sector to act on its own.”

¹⁹ Although by 2020 this started to be presented as a long-term goal.

Respondents also consistently reported that they felt **the change model needed to include a stronger pathway for building the capacity of the financial sector** to understand climate adaptation and make investments in resilience.

“I learned that we should have worked even more with the financial sector at the design phase or even during the intervention phase, they were critical and needed support.”

Excerpt from interview with key informant (Winrock Staff)

Also noted as lessons learned (though not as commonly) was that the **change pathways should have clarified the goal of making vulnerable populations more resilient** and that the **quantification and adoption of climate risk analysis** (by the government, private sector entities, financial institutions and ultimately vulnerable populations--such as small-scale farmers) was a fundamental prerequisite to success.

The PIER Theory of Change was modified slightly over the life of the program. For example, a year into the program (2018) the implementer described PIER as a project that *aimed to mobilize private-sector investment to support resilience to environmental change in specific countries*; but by 2022 this language had deepened becoming...“PIER demonstrates new models and approaches in climate change development assistance, and many of PIER’s activities are designed to test and document techniques of engaging the private sector. The objective of PIER is to deploy technical assistance to influence enabling environments that reduce long-term environmental risks while increasing resilience in development sectors prioritized by counterpart communities.”²⁰

Problematically however, for a program that held a mandate of testing, demonstration, piloting and learning, there was **little ongoing articulation at a program level, of what exactly was being tested and learned**. Without a higher-level learning focus and with an overly simplistic adaptive management structure (that focused more at the pilot project level) the implementation team tended to report on process and outputs rather than analysing outcomes and causal linkages to results and missed important opportunities to reflect on the strategic findings of a highly complex and innovative program.

The lack of strategic articulation and program level learning was perhaps one of the most substantive criticisms of the PIER program which was otherwise well considered.

Certainly, this was due in part, to the scale and pace of PIER and was a function of the speed at which implementers were *learning while doing*, but it also reflects a lack of commitment to sound monitoring and evaluation techniques. **The lack of strategic articulation and program level learning was perhaps**

²⁰ PIER Program Report 2022

one of the most substantive criticisms of the PIER program, which was largely otherwise well considered.

2.1.3 How relevant was the projects implementation strategy (as designed and implemented) to the result of the project?

Introduction: The approach to operationalize PIER had three phases and lessons on each phase of implementation are discussed below, as are lessons and feedback on the staffing strategy, partnerships and the general timeline.

Findings / Discussion on Stage 1--The Assessment Process:

PIER conducted 11²¹ in-country assessments to “identify and measure private sector experiences, barriers, and interest in resilience-related investment; to discern market actors’ presence, capability, and willingness to collaborate on interventions that may lead to a more welcoming enabling environment for investment in resilience measures; and to align technical assistance (TA) with national-level strategies and systems that address long-term environmental risks in PIER countries.”²² The PIER assessment process included a combination of desk research, in-country field work, engagement of local networks and knowledge, and strategic analysis of collected information. The assessments were used primarily as inputs into the selection process of which project’s the PIER program would support.

Respondents consistently reported that the assessments were an integral part of the program and provided useful and relevant knowledge, but they took too long, there were too many of them; that more information was gathered than necessary; and that the information that was collected was not adequately exploited (several respondents noted that the information documented was not widely shared). Many respondents (including the donor) reported the internal pressure to deliver private sector financing in the

“A lesson learned is to [next time] develop a higher-level analysis/ screening process first (to select countries) and then go in with the deeper analyses. We spent too much time on these and could have spent more resources in country.”

Excerpt from interview with key informant (Winrock Staff)

“Assessments... we didn’t have well defined goals and objectives--meant to be innovative... but they were really just fact finding missions to find funding opportunities – we had that metric drive us [amt of private sector investment].”

Excerpt from interview with key informant (Partner Organization)

“Assessment process... too expensive and probably not that necessary... after one year [they said] here are 20 opportunities but that was too many, really we just needed 5. Overall program was too ambitious, but they had to deliver on those targets.”

Excerpt from interview with key informant (DOS/OES)

²¹ Countries where assessments were completed: Ghana, Mozambique, Peru, Bangladesh, Vietnam, Indonesia, Guyana, Jamaica, Grenada and Dominican Republic, and St. Lucia

²² PIER Progress Report

original three-year timeline, skewed the assessment process away from finding the most interesting testable ideas in-country (for addressing barriers to private sector funding), to a more semantic search for finding existing relevant projects where financing was already anticipated (and thus could be counted as mobilized), and in hindsight this became an opportunity lost.

Going forward, respondents recommend that *assessments processes* could become more regional in nature, followed by a lighter screening process to select countries and opportunities and then a deeper dive on baseline knowledge relevant to the project selected; and felt that the information could be generated in a manner that built networks among relevant parties in country, resulting in increased ownership and engagement at the beginning of the pilot project that would ultimately result in delivering more advocates for sustaining and forwarding results and lessons.

Findings / Discussion on Stage 2— Demonstration Project Implementation:

After completing assessments, PIER and the DOS/OES identified 14 demonstration projects to support (see Annex 2), most were already underway but sought specific technical assistance and inputs from the PIER program to augment their efforts. In general, the PIER implementation approach was to initially hire well-connected local consultants to help them network, open doors and establish Memorandums of Understanding (MOUs)/Non-disclosure Agreements (NDAs) and partnerships; then provide other local and or external consultants to deliver specific technical support. These consultants primarily conducted desk research, interviewed key stakeholders and collected (or organized efforts to collect) relevant baseline data; and then (often working with staff from Winrock and CFA) developed capacity building materials and training, and customized *Climate Risk Models, Resilient Agriculture Models* and/or *Financial Models* that supported scenario-based analysis and decision-making.

In general, respondents reported the PIER program (overall) and the demonstration projects themselves **were well managed and implemented**. Both government staff and private sector entities enjoyed their partnerships *with* PIER and they found **technical assistance and capacity building to be beneficial and a value-add to their existing efforts**, and local and international consultants largely reported that they enjoyed working *for* PIER and had taken away significant new knowledge that they were now applying to their work (outside of PIER). The donor was also generally very pleased with implementation (*see inset*) though they found the initial monitoring and evaluation system lacking

“PIER is one of the better managed projects we have interacted with.”

“Extremely good program - good technical knowledge.”

“PIER had good structure, good technical folks, they impressed us.”

“PIER did a good job coordinating and pollinating ideas. In terms of Ag and cocoa pulled in their expertise and did interesting things.”

“PIERs Local Technical Advisors were key --having them as the facilitators mattered.

Excerpts from interviews with key informants (DOS/OES)

and noted some disruption with staff turnover (which in general, they thought was well managed).

Winrock International staff were very well regarded both by the donor and in the field, and were reported to deliver **quality thought-leadership**, and provided a sense of “calm in the storm” -- well managing COVID-19 and issues that arose in the field to keep things moving forward. CFA staff were also noted as delivering high level technical support.

In addition to accolades, respondents did provide some feedback on implementation issues that frustrated them, this included:

- **MOUs and NDAs took too long to finalize** and often delayed start-up, though few respondents had any suggestions for how this could have been better streamlined by PIER, suggesting instead that this should have been better considered at the project design phase, and either the assessment process timeline shortened, or the entire project lengthened to accommodate the type of partnership agreements needed to work with government and large private sector entities.
- That there were **significant delays because of COVID-19**. While the donor and partners felt that PIER did a very good job in managing the impact of COVID-19 on the program, it did limit what could be accomplished, particularly in ground truthing models and in limiting face-to-face capacity building and training.
- **Engaging local consultants was seen as time consuming and challenging** in that there are not many individuals with climate adaptation and resilience expertise (that also knew how to work with the private sector), **but it was also seen as a critical element of success**.
- Nearly everyone felt the pilot projects needed **additional time** with most reporting that the demonstration projects should have a 3-5 year time horizon (starting *after* MOUs were in place).
- Respondents also found the **budget too small** to operate 14 projects across 6 countries, and consistently reported that projects would have been better if PIER had been able to *fund* various value-add activities that could have helped in demonstrating the models (rather than just supporting data collection, TA and training).
- **Monitoring and evaluation was seen as an area where the project stumbled**, with significant shortcomings initially but then improving over time (under donor

“Spreadsheet models needed ground truthing but when it came time to hit the ground, COVID travel restrictions became a big issue.”

Excerpt from key informant interview (International Consultant)

“There was an isolation of projects, we should have networked projects and consultants to start something concrete-- needed to engage and support them as long-term advocates for climate adaptation.”

Excerpt from key informant interview (In-country consultant)

“Sometimes lessons were shared from one project to the next, but this wasn’t exploited.”

Excerpt from key informant interview (In-country consultant)

guidance and once Winrock engaged internal corporate support). However, there was a significant and consistent lack of analysis on indicator data, and data was not presented and analyzed programmatically (relevant to the Theory of Change or a log frame), so it lost value. For example, while the project presented data on number of people trained and tracked this data by project, they did not analyze the data programmatically to capture learning. For example, looking across projects, what type of people were being trained --who needed to be trained in what elements of climate change adaptation? What type of training appeared to best move resilience forward? How did having to switch to virtual trainings impact knowledge acquisition? (etc.).

- Respondents also reported that implementation approaches in country should have **given more attention and time in building awareness and ownership** both among (all stakeholders-- government, farmers, private sector actors) and that without stakeholders first understanding what climate change was and taking ownership in resolving it, resilience could not be achieved.

Findings / Discussion on Stage 3— Communications, Publicizing Results & Lessons, Scaling Projects:

PIER produced numerous technical reports, workshop reports, blog posts, handouts and presentations and completed a series of policy briefs targeting DOS and development actors (NGOs etc.). In general, respondents didn't have much to offer about Stage 3. The most common reflection was that both **pilot projects and consultants could have been better networked**, particularly recognizing the innovative design and learning focus nature of the program. Respondents felt **this group of pilot projects (and their stakeholders) should have been connected, had broader access to information across projects and could have been nurtured to become more of a force for climate adaptation and resilience efforts globally**. Respondents also felt scale up activities were limited in countries, given COVID-19 but also because PIER spent too much time in up-front planning, suggesting that being less prescriptive, and casting a wider net to find the best demonstration projects, then having sufficient operational time, might have better served learning and scaling goals. Some respondents also reported that there was insufficient budget available for Stage 3.

“PIER needed broader lessons & broader application.”

Excerpt from key informant interview (DOE/OES staff)

2.1.4 Key Lessons / Findings for Relevance and Coherence

- The PIER program was and is extremely relevant--it was necessary and timely to demonstrate to governments and the private sector the *need for* and *how to* engage in climate adaptation and resilience.
- PIER was designed in line with sectoral thinking (both scientific and administrative) and managed to stay coherently in harmony with shifting political realities in both the USA and the multiple countries of operation. In many ways PIER was a ground-breaking program operating at the forefront of climate adaptation and resilience programming.
- The PIER program was welcomed by the host countries and fit with other interventions in the countries and sector, adding value while avoiding duplication of effort.

- PIER clearly supported the U.S Department of State/OES's mission and aligned with the Administration's goals in engaging the private sector.
- The PIER program was well managed and implemented. Winrock International staff were widely regarded as good partners who delivered quality thought-leadership and sound programming and management. CFA staff were also well regarded.
- The PIER Theory of Change was valid and captured many key components but lacked depth and full articulation, as a result the program missed ongoing opportunities for strategic program level articulation of what exactly was being tested and learned across the 14 pilots.
- Mobilization of private sector investment, while being an important outcome and indicator to track, should not have been viewed as the overall goal for a 3-year program. Doing so resulted in skewing pilot project selection away from finding the most interesting testable ideas in-country (for addressing barriers to private sector funding) to a more semantic search for finding existing relevant projects where financing was already anticipated, and in hindsight this became an opportunity lost.
- The initial Assessment Phase (Stage 1) of PIER provided useful and relevant knowledge, but in hindsight the process and number of assessments undertaken should have been streamlined.
- The PIER Implementation Approach (Stage 2) was in general conducive to results attainment though pilot projects but could have used additional time and budget.
- Engaging local consultants was seen as time consuming and challenging but was also viewed as a critical element of success.
- The impact of COVID-19, though well managed by the program, nonetheless did limit what could be accomplished, particularly in ground truthing models and in limiting face-to-face capacity building and training and scale-up.
- Given the learning focus of program, stakeholders in pilot projects and consultants should have been better networked globally, to share ideas and lessons and to build advocates.
- PIER needed broader lessons and broader application (fewer pilot projects, more scale-up).

2.1.5 Recommendations for Way Forward

- Programming for engaging government and private sector in climate adaptation and resilience is critical and should be continued and expanded.
- Formal implementation partnerships with government and private sector actors should not be dropped but expanded by the DOS/OES, NGOs and others working in the sector.
- As part of the closeout process the PIER team should reflect on the Theory of Change that has been put into practice and the feedback from respondents and provide an updated change theory based on lessons learned:

- Consider “*Increased government and private sector engagement in climate adaptation and resilience*”, with engagement defined as substantive action taken (new modalities adopted--such as policies, guidance, climate risk analyses, resilient agricultural adoption...) as the program goal.
- Clarify a change pathway illustrating results delivered for making *vulnerable populations more resilient*
- Clarify a stronger pathway for building the capacity of the financial sector to understand climate adaptation and make investments in resilience.
- Clarify a change pathway illustrating results from quantification and adoption of climate risk analysis (by the government, private sector entities, financial institutions and ultimately vulnerable populations/such as small-scale farmers).
- Project re-design should consider the following:
 - Require that the major programmatic research questions to be tested, are articulated both at the outset of the program and for each pilot project and clarify what data/evidence will be collected and evaluated to test ideas.
 - Ensure an appropriate timeline for collecting baseline data, learning and testing new ideas (reduce number of pilot projects and lengthen timeline (e.g., 3-5 projects across a 5-year program)).
 - Provide sufficient budget and incorporate funding for various value-add activities (beyond supporting data collection, TA and training).
 - Streamline country and project selection and partnership processes (maximum 6 months).
 - Consider making projects more regional and or pairing similar projects in different countries to ensure cross fertilization and more sectoral/programmatic learning (as opposed to individual project-based learning).
 - Encourage vertical and horizontal entry points (e.g., national policy, global corporate leadership, in-country managers, farmer associations and farmers, etc.)
 - Given the relative newness of private sector engagement in climate adaptation and resilience, ensure programming maximizes information being generated in a manner that builds knowledge networks, and results in increased ownership – deliver more advocates for sustaining and forwarding results and lessons.

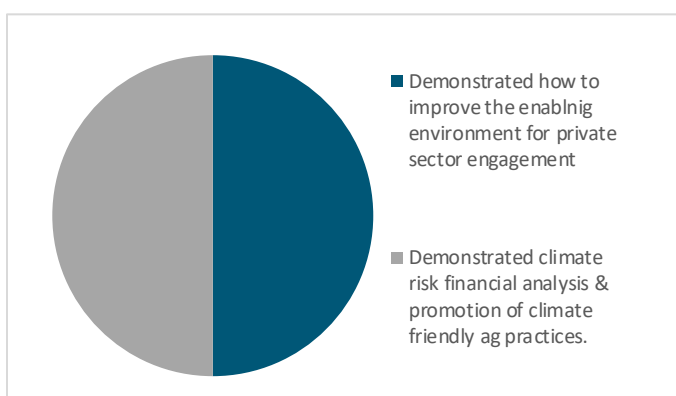
2.2 The Effectiveness & Impacts of PIER

The findings in this section examine the effectiveness and impact of PIER. Effectiveness analyses reflect on the extent to which the program achieved its objectives and its anticipated outputs and outcome level results, including any differential results and lessons across groups²³. Impact analysis reflects on the extent to which the intervention generated significant positive or negative, intended, or unintended, higher-level effects. This section presents overarching lessons gathered through analyses of the 14 individual demonstration projects. Please see Annex 2 for a summation of the results and lessons for each demonstration project.

2.2.1 Did PIER effectively identify, support and demonstrate models of private investment in resilience in a variety of countries?

During the life of the project PIER focused on 14 pilot projects across 6 countries (Table 1). In general, half (50%) of these projects focused on demonstrating how supporting institutions (governments, financial institutions, business associations, etc) could improve the enabling environment for private sector investment; and half (50%) of the projects demonstrated to private sector companies working in the agricultural space how to analyse climate-related risks to their investments and promote climate resilient adaptation and/or mitigation practices (Figure 2).

Figure 2 Demonstration Project Focus



The majority of respondents reported **that PIER was effective and met its goals by demonstrating the value of making investments in resilience and clarifying potential investment pathways** --to the donor, to the private sector and to host country governments, and this was the project's ultimate success.

“PIER showed us that there are [funding] opportunities here and we need to find ways to broaden these projects in-country. “

Excerpt from key informant interview (DOS/OES staff)

PIER demonstrated the value of making investments in resilience and clarified potential investment pathways --to the donor, to the private sector and to host country governments, and this was the project's ultimate success.

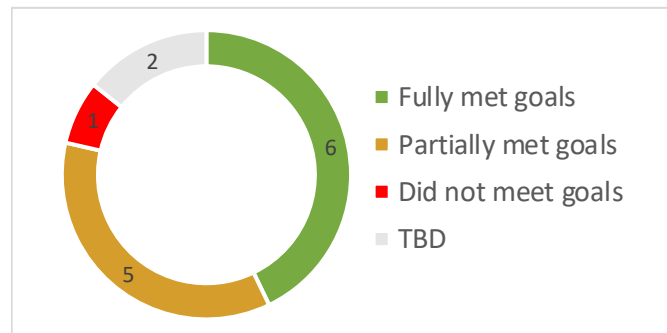
²³ PIER had 14 indicators (an initial 8 and then 7 were added as part of the extension) all targets were reported (by Winrock) as met or nearly met by Aug 2022.

“[As a result of PIER] we were able to engage positively with the private sector and we now have a tool to address climate. The project drew us closer to private sector to address climate change (our common enemy).”

Excerpt from key informant interview with Government Official

An analysis of results (please see Table 1 and Annex 2) indicates that 6 projects (43%) fully met their demonstration goals, 5 projects (36%) partially met their goals, 1 project did not meet its goals, and 2 projects were still in process and the outcomes were yet to be determined.

Figure 3 Demonstration Project Results



2.2.2 What contributed to, or challenged project effectiveness?

There were some clear themes about what made PIER effective in the eyes of the participants. A repeating theme expressed both by the private sector and the supporting enabling institutions (government, banks, associations, etc) was that while they were interested in engaging in climate adaptation and resilience (prior to PIER) and many had started some initial work in this area, respondents commonly reported that they did not have a deep understanding of the concepts, nor had a clear understanding of how they could operationalize these concepts. Even when respondents reported that *they themselves* held this knowledge, they felt most *other stakeholders* (in the government, private sector companies, financial institutions, farmers and farmer associations) did not. The **addition of new knowledge and particularly on pathways of engagement** was seen as a one of the most significant outcomes of the projects and critical attribute to why a project was effective.

Respondents were appreciative of **the facilitating nature of PIER’s** implementation approach (often playing the role of an ombudsman) and valued **the technical expertise** brought forth by Winrock, partner organizations and in country technical experts.

Table 1 PIER's Demonstration Projects

#	Country	Key Partners	Intent of Demonstration	Intent met?
1	Ghana	ECOM Agro-industrial Corporation (one of the world's largest cocoa traders and processors)	Demonstrate that there is a large-scale business case for climate smart farm rehabilitation services that delivers multiple environmental and social benefits to investors and farmers. Improve the awareness of ECOM in viable resilience investment opportunities. Develop and test model to analyze the financial feasibility of investing in cocoa rehabilitation (i.e., a <i>resilience investment</i>) using best practices in agroforestry. Improve the capacity of ECOM agronomists (who provide extension services to local farmers and downstream suppliers) in assessing and addressing climate risk.	Partial
2	Ghana	Office of Climate Vulnerabilities & Adaptation – Ghanaian Environmental Protection Agency (EPA)	Demonstrate to the Ghanaian Government how to engage, incentivize, and mobilize public and private sector actors to meet Ghana's climate change adaptation priorities (as laid out in the NAP and the Private Sector Engagement Strategy. Develop and test a <i>Climate Change NAP Capacity Building Tool</i> that can be used to improve the enabling environment for successful NAP implementation including private sector engagement in resilience in developing countries. Support the EPA in assessing their governance systems structures and identify the knowledge and skills needed to support successful NAP implementation.	Yes
3	Indonesia	EWINDO (a joint venture company that produces and markets vegetable seeds). Sundaya Industries (a Solar Products Manufacturer)	Demonstrate to EWINDO and Sundaya, the business case for investing in solar irrigation pumps to increase resilience of smallholder farmers.	No
4	Indonesia	Indonesia Coffee Company (ICC), a subsidiary of ECOM -The Research Center for Climate Risk Operations and Management (CCROM)- Sustainable Coffee Platform of Indonesia (SCOPI).	Demonstrate to Indonesian coffee stakeholders the business case for private financing for smallholder coffee farmers' resilience, mobilize investment and improve the capacity of local agronomists / agriculture trainers (who provide extension services to local farmers and downstream suppliers) in assessing and addressing climate risk.	Partial
5	Crosscutting/ Peru	Development Finance Corporation of Peru (COFIDE)	Demonstrate to the Development Finance Corporation of Peru (COFIDE) how to develop, improve, and promulgate the Bank's lending and portfolio regulations to include climate risk information.	Yes
6	Peru	UNDP The National Coffee Executive Council Ministry of Agricultural Development	Demonstrate to coffee stakeholders how to incorporate a path to increase producer access to necessary financial services in National Coffee Actions Strategies and Plans including a detailed implementation plan and mapping actions to domestic and international sources of finance.	Yes

#	Country	Key Partners	Intent of Demonstration	Intent met?
7	Peru	ALOXI (a supporting business association) Prolnversion (Peru's private investment support agency) Ministry of Finance	Demonstrate to the Peru Ministry of Finance; AIOXI, Prolnversion; and private companies, how the private sector can be engaged in climate adaptation and resilience, with a long-term goal to incorporate climate risk analysis into the design of <i>Obras por Impuestos</i> (Oxl) infrastructure investments.	Partial
8	Peru	PROINVERSIÓN (a technical body, attached to the Ministry of Economy & Finance, that promotes private investment in public services and public infrastructure projects.	Demonstrate to Prolnversion, how to analyze and address climate risks in PPP (public-private partnership) investments, while helping them build internal capacity in climate risk assessment and incorporate climate risk screening criteria in their institutional guidelines for PPPs.	Partial
9	Vietnam	Ministry of Natural Resources and Environment (MONRE)	Demonstrate to Vietnams Ministry of Natural Resources and Environment (MONRE) how to integrate Climate Risk Screening into Vietnam's National Environmental Impact Assessment policy and improve the Law on Environmental Protection (LEP) to address adaptation and build capacity among staff to ensure implementation.	YES
10	Vietnam	Office for Business Sustainable Development under the Vietnam Chamber of Commerce and Industry (VCCI)	Demonstrate to the Office for Business Sustainable Development under the Vietnam Chamber of Commerce and Industry (VCCI), the impact of climate change on the business sector and Increase knowledge to strengthen the capacity of businesses in Vietnam in responding to impacts from climate change by integrating resilience into their business strategy, policies, and day-to-day operations.	Partial
11	Jamaica	Jamaica Agricultural Commodity Regulatory Authority (JACARA)	Demonstrate to the Jamaica Agricultural Commodity Regulatory Authority (JACRA) a coffee farm sustainable landscapes, deforestation, and carbon traceability methodology, mapping carbon emissions and building resilience within Jamaica's Blue Mountain Coffee Value Chain, and deliver a carbon sequestration tool for use by JACRA for certification of sustainable coffee.	Unknown; project not complete at time of evaluation
12	Grenada	Grenada Nutmeg Association (GCNA)	Demonstrate to the Grenada Nutmeg Association a Sustainable Landscape Business model for Nutmeg Farm Rehabilitation and Investment in Grenada	Unknown; project not complete at time of evaluation
13	Crosscutting/ Indonesia	University of Wisconsin	Demonstrate to the global coffee sector, a cost-benefit analysis methodology that models the potential net benefits for coffee yields under alternative management and climate regimes	Yes
14	Crosscutting / Corteva	Corteva	Demonstrate to CORETVA how to integrate the topics of climate risks and resilience decision making into Corteva's ongoing agronomic training programs.	Yes

Relatedly, many respondents reported that PIER's ability to **deliver bespoke Climate Risk Analysis & Financial Analysis** was a critical element of project success. Respondents were deeply interested in figuring out methods for how to operationalize climate adaptation in a meaningful way and a variety of respondents (from private sector companies, farmer associations and financial institutions) spoke to the importance of having a climate risk model unique to their setting, that provided financial and outcome analyses of engaging different scenarios (even if that model was seen as currently incomplete). This was seen as even more powerful when **applied to a real test case**, such as a project underway (e.g., COFIDE, ECOM, Grenada, Jamaica...). A nuance of these discussion was the role that *tools* played (see inset), with respondents clarifying that it was the customization of a tool that was powerful and not the tool itself.

Respondents also spoke to the importance of **having strategies and the capacity to engage the private sector** which seemed to improve the project effectiveness, whether it was to engage jointly in NAP roll-out, strategic planning or in providing feedback on draft regulations and legislation. Respondents engaged in programming in Ghana and Vietnam and Peru reported substantive positive change in how the government viewed private sector interaction.

Respondents also noted that having **written standards, guidance, and training curricula** helped project effectiveness, in terms of *institutionalizing new concepts and methodologies*, and effectiveness also improved where guidelines were formally integrated and then scaled into other programs (as in the case of COFIDE and ECOM) or when new **legislation** was passed (Vietnam).

The majority of respondents did *not* identify mobilization of private sector funding as either key to project effectiveness or success (most thought this too lofty a goal for projects of this length) but felt the projects were more effective when they delivered **new language and a climate profile** that could be used by stakeholders to approach financial institutions, donor, or other partners, in bids for certification or additional funding.

The idea of **ownership/responsibility for engaging in climate adaptation activities**, was discussed often by respondents, as either something that helped or something that stalled project effectiveness. A

“In terms of being effective... toolkits/models aren't the answer, they don't work they only serve the donor, rather it's finding ad hoc unique opportunities to engage with, its understanding how private sector makes decisions and applies these ideas, more importantly it's supporting governments to pass legislation and incentives... flexibility is key to success -this is untidy business.”

Outtakes from key informant interviews with international technical experts

“I don't know that PIER really produced tools, not in the sense like you can take this off the shelf and apply it - we demonstrated proof of concept, proof of approach. The analyses were bespoke. We built a custom response.”

Excerpt from key informant interview (Winrock staff)

nuance of these discussions was that respondents often talked about the importance of getting *someone else* to take ownership to move resilience forward... i.e., *if... [farmers, donors, government, financial institutions, insurance companies, etc] take ownership, then we will achieve resilience*. This “tragedy of the commons” phenomena, where one perceives it is ok to continue to act in your own interest but that someone else’s engagement was going to be needed to achieve broader results, was a common enough occurrence that it is discussed in several of PIER’s final policy guidance pieces (developed by Winrock).

Some respondents tied the ability to be effective back to original decisions made on determining the entry points of the projects (which were primarily country-based projects mobilizing country-based actors) and suggested a better model for achieving resilience was the Montreal Protocol,²⁴ which illustrated an engagement model that built high level-ownership through the creation of global taskforces (among scientists, private sector companies and governments) to jointly own and deliver responses that are then fulfilled downstream. A few respondents questioned if substantive climate adaptation and resilience gains could ever be achieved by just working at the project level, and several felt that working with government to create the enabling environment (a focus of half of the pilot projects) to incentivize, guide and mandate change that required improved engagement of the private sector was the *most effective* method for producing change at scale in climate adaptation and resilience.

Table 2 Factors helping or hindering project effectiveness

Factors that Supported Effectiveness	Factors that Challenged Effectiveness
<ul style="list-style-type: none"> • Gains in knowledge on what climate adaptation and resilience are and how to engage. • A facilitator/ombudsman driving the program. • Provision of technical expertise. • Demonstration of climate risk analysis, financial analysis, and scenario planning in a bespoke manner. • Application of models/ideas to a <i>real</i> project. • Increasing joint ownership to engage in adaptation efforts. Bringing government and private sector actors together. • Flexibility, being able to modify the approach as needed. 	<ul style="list-style-type: none"> • Short timelines and budget-not having enough time or resources to absorb knowledge, fully test ideas or scale up results. • Virtual training, lack of face-to-face support (due to COVID-19). • Lack of engagement by actors in design of project. Particularly lack of engagement of 3rd party financial actors. • Belief that someone else’s ownership was more important than one’s own to deliver resilience. • Lack of existing quality data to use in modelling.

²⁴ <https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol>

Factors that Supported Effectiveness	Factors that Challenged Effectiveness
<ul style="list-style-type: none"> • Creating capacity in how to engage the private sector. • Creating capacity in the private sector in internalizing climate risk assessment and scenario planning. • Integration with local experts. • Creation of standards, guidance, training materials that help institutionalize the methods demonstrated. • Creation of policies and or laws that incentivize private sector engagement. • Provision of language and a “climate profile” useful to approach financial institutions, donors and or other partners. 	<ul style="list-style-type: none"> • Lack of application to a <i>real</i> project / practical example. • Lack of knowledge sharing and creating public ownership of data and results. • Lack of networking. • Lack of internal drivers. • Political upheaval - changes in key project stakeholders.

In terms of factors that challenged program effectiveness, most respondents expressed frustration with **project timelines and budgets** that they felt were too short and this resulted in a lack of opportunity to fully roll out, test ideas or scale-up projects.

In a few cases respondents felt the projects would have been more effective if they had **engaged the local stakeholders more fully in project design**, but more commonly expressed was the need to have **engaged 3rd party financial institutions at the onset of the process**, expressing that these institutions needed deeper knowledge and understating of climate adaptation and resilience and relevant methods for integration into projects.

Respondents were critical of project effectiveness when they felt that **ownership and drivers to move the project forward after PIER** was not laid out clearly enough and this would ultimately negatively affect results. There was also a consistent concern expressed about losing effectiveness over time if **results were not fully shared and diffused** and many respondents reported that better communication and networking strategies were needed.

Commonly shared was the fact that **COVID-19** impacted the way in which technical assistance was provided—offering that virtual meetings were not as effective as to face-to-face meetings and trainings.

“I learned that is was not sufficient to just work with government and the private sector, we also needed to bring along the financial sector.”

Excerpt from key informant interview (Winrock staff)

“This effort was good but the results are not yet diffused.”

Excerpt from key informant interview (In country technical expert)

Finally, in-country consultants, representatives from farming industries and associations, and implementation staff, often noted their frustration with a **lack of good quality data from which to build climate risk models**, though they still strongly valued having models, but recognized they needed to be improved over time.

2.2.3 Was the PIER Program Effective?

Ultimately the larger question of *effectiveness*, is did PIER as a *program* (through a portfolio of demonstration projects) deliver proof of concept (to the private sector, governments, and donors) by demonstrating to them the value of making investments in resilience and clarifying potential investment pathway? The answer is largely, yes.

PIER did effectively demonstrate several pathways for governments and parastatal organizations (such as regulation entities and Development Banks) to engage with private sector actors and improved their capacity in climate adaptation and resilience which bore fruit in terms of improving relationships with private sector actors, improved planning for resilience, and forwarding climate risk screening criteria in their institutional guidelines as well as new legal frameworks (as in the case of Vietnam). (Please see Table 3)

The PIER program also effectively demonstrated to private sector entities ways to engage and understand viable resilience investment opportunities by developing and testing sector specific climate risk analysis and integrating climate resilience into corporate business models (please see Table 4).

Was PIER Efficient?

This evaluation did not include an efficiency analysis or cost benefit analysis, but in general respondents reported resources appeared to be being used effectively. Donors reported the program was well managed, PIER efficiently distributed slim resources (\$5M) across 14 projects, and consultants hired by the project reported no issues with contracting. Nearly everyone, however, reported the project did too much with too little and suggested going forward fewer projects be selected for demonstration.

Table 3 Evidenced improvements relevant to PIER’s objectives for governments and parastatal organizations

Evidenced improvements in the capacity of governments and para-statal organizations (such as Regulation entities and Development Banks) to create an enabling environment and engage private sector actors in climate adaptation and plan for resilience (as a result of PIER).

- In Ghana, the Office of Climate Vulnerabilities & Adaptation under the Environmental Protection Agency (EPA) increased their capacity to engage, with private sector actors. Government participants reported they had positively worked with the private sector “to address a common enemy--climate change” and this type of partnership effort was viewed as novel and important. As a result of the program the EPA assessed their governance systems and structures and identified the knowledge and skills needed to better support and successful NAP (and the Private Sector Engagement Strategy) implementation going forward.
- In PERU, COFIDE (a 2nd Tier Development Bank) augmented the bank's lending and portfolio regulations to include climate risk information, and built capacity among Department Heads, Line Managers and Executives in promulgating these regulations. With PIER’s support the Bank and Aleatica (the infrastructure concessionaire) piloted the process on the *AuNorte* project to illustrate application and produced a *Climate Vulnerability Assessment* and *Financial Analysis* of relevant adaptation measures and recommend resilience strategies that could be incorporated in the financing terms. Subsequently, the COFIDE Chairman expressed (in writing) thier commitment towards sustainability, and their intent to implement the recommendations and Aleatica reported (in their 2021 Sustainability Report) that they have developed an “Adaptation and Resilience Strategy for AuNorte, VB and ARM with an action plan starting in 2022, to anticipate and reduce the risks associated with the effects of climate change.” Through these efforts PIER was able to claim \$45M in investment mobilized for climate change adaptation.
- In Peru, ProInversion (Peru’s Private Investment Support Agency), Peruvian Regional Governors, ALOXI, and Ministry of Finance staff increased their knowledge on climate risks and resilience assessment. ProInversion improved their capacity in analyzing and addressing climate risks in public private partnership (PPP) investments, incorporating climate risk screening criteria in their institutional guidelines for PPP’s. With PIERS support ProInversion piloted a climate risk assessment process on a demonstration project.
- In Peru, the Ministry of Agricultural Development and Irrigation and the National Coffee Executive Council endorsed the National Coffee Action Plan which includes a financial strategy (developed with the support of PIER) incorporating a path to increase more sustainable coffee production and producer access to necessary financial services.
- In Vietnam, the Ministry of Natural Resources and Environment (MONRE) mobilized \$90,000 (in-kind donation of staff time) to work alongside PIER in determining how to integrate EIA and climate change regulations and drafted a legal framework to incentivize private sector entities to invest in resilience building measures. A revised Law on Environmental Protection was approved by MONRE’s Department of Legal Affairs, the Minister of MONRE, the National Assembly, and was signed by the Prime Minister. Overall, the updated Law is an improvement for mainstreaming adaptation and engaging the private sector in Vietnam. Respondents reported improvement in MONRE’s view of the private sector (from “wanting to control them to now advocating for them”) and that the space for private sector to engage in adaptation has increased in Vietnam because of PIER.

Table 4 Evidenced improvements relevant to PIER's objectives for in private sector engagement

Evidenced improvements in private sector engagement and understanding of viable resilience investment opportunities (as a result of PIER)

- In Ghana, ECOM Agro-industrial Corporation (one of the world's largest cocoa traders and processors) improved their awareness of viable resilience investment opportunities. Developed and tested a scalable excel-based financial model to analyze the financial feasibility of investing in cocoa rehabilitation (i.e., a resilience investment) using best practices in agroforestry. Improved the capacity of 15 local agronomists / agriculture trainers (who provide extension services to local farmers and downstream suppliers) in assessing and addressing climate risk. Mobilized in-kind investment valued at \$178,848 (USD) for climate change adaptation activities and reported that they participation in PIER demonstrated to them a large-scale business case for climate smart farm rehabilitation. ECOM reported they had "Scaled up many of the lessons from their work in Ghana, to projects in other countries."
- In Indonesia, the ECOM-ASIA Agro-industrial Corporation (one of the world's largest coffee traders and processors), along with Research Center for Climate Risk Operations and Management (Bogor Agriculture University) and SCIO (NGO Coffee Platform) improved their capacity to train farmers in climate resilient coffee farming and increased awareness of the economic ramifications of climate change and viable resilience financing opportunities. With the support of PIER they developed a detailed financial model to analyze the farm-level economics of investing in adaptation measures, and conducted a cost-benefit analysis which demonstrated the business case for coffee rehabilitation, given a 10 year timeline (the estimated profits for renovation options exceeded expected profits for the baseline scenario) and surveyed farmers expressed willingness to invest \$211 over a two-year period (on average) on adaptation measures- a little over half the amount required to adapt to climate change. ECOM reports that they have adopted the materials as part of their normal training of staff and are actively pursuing new partnerships based on the experience, including registration of a new climate resilient variety of Arabica coffee with ICCRI (Indonesian Coffee and Cocoa Research Institute), and a proposal to the Africa Development Bank for supporting Smallholder Farmer Climate Resilience.
- In Vietnam, the Office for Business Sustainable Development under the Vietnam Chamber of Commerce and Industry refined and deployed tools and resources to guide businesses on how to identify climate risks and assess the impact of climate change on their businesses and developed and disseminated reference materials such as a list of publicly available tools on climate hazards for Vietnam and a step-by-step guide for business professionals.
- In Grenada, the Grenada Co-Operative Nutmeg Association worked with PIER and collected and analyzed data and developed an agro-economic and carbon baseline of the nutmeg sector, and devised climate-smart, resilient scenarios and modeling to understand (i) the techno-economic feasibility, and (ii) carbon impact of those models, to support investment and decision-making.
- Globally, Corteva (the largest American agricultural chemical and seed company, providing services and crop inputs to farmers in 140 countries) explored their exposure to climate risks and options for integrating climate resilience into Corteva's business model and integrated the topics of climate risks and resilience decision making into Corteva's ongoing agronomic training programs and trained key staff from Tanzania, Indonesia, Zambia, Zimbabwe, Ethiopia, Kenya, Philippines Malaysia; Korea; Pakistan; Thailand; Ghana; Nigeria, and Ivory Coast.

2.2.4 As a result of PIER was private sector investment mobilized? Were there higher-level program impacts?

While PIER exceeded its target for investment mobilized (raising \$45M, well past the \$15M target) this primarily came from one source (COFIDE's loan to Aleatica). In general, the projects did not result in attracting or mobilizing funding beyond small in-kind investments to work alongside PIER. In fact, what private investment actors largely took away from implementing climate risk scenario planning was that the financial burden was too high, and that large scale climate adaptation requires 3rd party funding to be a viable investment. PIER seemed to prove that it will take a joint effort to deliver resilience at meaningful scale; that global national, and corporate level leadership is required to succeed, and that financial institutions need to be engaged *now* to support these projects; and suggested that a new global financial mechanism is needed to support climate adaptation efforts at scale.

PIER did prove that private sector entities are not only willing to engage in supporting and helping to pay for climate adaptation and resilience but are actively seeking ways to do so.

PIER's largest impact was perhaps illustrating to government, parastatals, banks, and private sector entities – that the concept of climate adaptation and resilience could be operationalized as a business proposition and that engagement with private sector (by creating incentives or legal frameworks) could help governments meet climate change adaptation priorities.

“PIER was meant to demonstrate the feasibility of investment pathways for the private sector to take action in climate adaptation-- identifying investment pathways, business opportunities, conducting market analysis, determining feasibility – laying out more detailed business plans, clarity on capital outlays, roles and risks, etc. - it did all of this. The Ghana ECOM project was a good example, we determined resilience interventions required at the farmers level, designed the business model, designed the financing plan but we could not deliver financial closure.”

“Everyone had this notion of using private sector to fund their climate change needs. Everyone was interested to see if we could diversify funding for climate resilience. I do think PIER demonstrated this can be done and some appropriate approaches to make that happen.”

Excerpt from key informant interviews (Winrock staff).

2.2.5 Are the PIER Demonstration Projects Sustainable?

There were several aspects of PIER that contributed positively towards sustainability and were implemented widely across the 14 projects, for example, the use of in-country technical consultants was seen as being supportive of sustainability and consultants from multiple projects shared how they were already replicating what they had learned during PIER into other assignments (particularly customizing

climate risk assessment models). Certainly, passing legislation supports long term engagement, as does promulgation of new regulations and guidelines, and development of strategic plans and actions plans and updating training norms to include climate adaptation and resilience strategies. The creation of toolkits, resource guides and protocols and the development of policy briefs also helps to maintain processes continuously over time. This is not to say the projects themselves are fully sustainable as most respondents reported that additional support, ownership, time and funding is needed to deliver long term impact.

2.2.6 Key Lessons/ Findings in Terms of Program Effectiveness & Impact

- PIER was effective and met its goals by demonstrating the value of making investments in resilience and clarifying potential investment pathways --to the donor, to the private sector and to host country governments, and this was the projects ultimate success.
- An analysis of results indicated that 6 projects (43%) fully met their demonstration goals, 5 projects (36%) partially met their goals, 1 project did not meet its goals, and 2 projects were still in process and the outcomes were yet to be determined.
- PIER did effectively demonstrate several joint partnership pathways for governments and parastatal organizations to engage with private sector actors on climate adaptation and resilience.
- A variety of government and parastatal actors (across projects) improved their capacity in climate adaptation and resilience.
- Private sector actors learned ways to engage and understand climate risks and viable resilience scenarios and investment opportunities.
- PIER exceeded its target for investment mobilized (raising \$45M well past the \$15M target) this primarily came from one source (COFIDE's loan to Aleatica).
- In general, the projects did not result in attracting or mobilizing funding beyond small in-kind investments to work alongside PIER.
- PIER demonstrated that it would take a joint effort to deliver resilience at meaningful scale (government, donors, private sector companies, associations, and small holders).
- There were some clear themes about what made PIER effective--gains in knowledge on what climate adaptation and resilience are, and how to engage, a facilitated approach delivering technical expertise and demonstration of climate risk analysis, financial analysis, and scenario planning in a bespoke manner, were among the most commonly reported.
- There were some clear themes about what factors challenged effectiveness--not having enough time or resources to absorb knowledge, fully test ideas or scale up results, and a lack of face-to-face-contract/ training (due to COVID-19) were commonly reported.
- The idea of *ownership/responsibility for engaging in climate adaptation activities*, was mentioned, as either something that helped or something that stalled project effectiveness. Respondents often

talked about the importance of getting *someone else* to take ownership to move resilience forward... e.g., *if... [farmers, donors, government, financial institutions, insurance companies etc.] take ownership, then we will achieve resilience.*

- There were several aspects of PIER that contributed positively towards sustainability and were implemented widely across the 14 projects including the use of local technical consultants and promulgation of guidelines, regulations, and a law, yet most respondents reported that additional support, ownership, time and funding was needed to deliver long term impact.

2.2.7 Key Recommendations / Way Forward in Program Effectiveness & Impact

- Further investments should be made to create an advocacy network to help drive ideas and disseminate lessons in country.
- Demonstration projects in the future should have at least 3-5 years to test ideas.
- In Ghana and Indonesia, respondents recommended that to meet rehabilitation and resilience goals, funders of coffee and cocoa programs should insist that the agriculture models used are climate responsive and environmentally friendly, socially acceptable and financially beneficial to vulnerable populations.
- In Ghana, the Climate Change NAP Capacity Building Tool should be formalized. The tool (if documentation is improved) is scalable and could be modified to other countries working to implement NAPs and thus supports sustainability of NAP implementation. Going forward within the EPA, it will be important to build ownership of the assessment process, and support activities for capacity skill building as outlined in the Action Plan. Ideally, capacity would be re-assessed in the next 3 years and additional data collected to determine the effectiveness of the process and delivery of the Action Plan items. Ghanaian government respondents reported that going forward they needed tailored messaging and continuous training, targeting different audiences (private sector, financial sectors, industry, farmers...) as well as additional support on a policy framework to further guide private sector engagement and to create government incentives for private sector investment (and that to get this passed, high level political buy-in is needed). Respondents in Ghana noted that in the future, working directly with banks (who have become knowledgeable over the past few years) will be key, as will working with youth to act as a sector driver—actively advocating for climate mitigation, adaptation, and resilience response.
- In Indonesia, respondents suggested significant capacity building on climate change with farmers and financial institutions is needed to create understanding and ownership--that until farmers understand how climate impacts them (and how they can actively engage in adaptive practices to improve resilience), testing technologies would yield little returns. Some respondents suggested that a more appropriate workstream might be to work with big companies on climate infrastructure issues (like helping an airport cope with rising sea levels). Respondent's recommended that future efforts engage an even more comprehensive group of stakeholders earlier, including the banking

sector. More technical assistance and training is required at the farmer level to ensure farmers adoption.

- In Peru, respondents strongly believed that going forward Climate Risk Assessment should be included in all credit approvals and that work like this should also be done with First Tier financial institutions. Additional work is needed on the climate risk and financing models to improve scalability. Respondents suggested streamlining processes and procedures (perhaps by developing guidance by development sector and or geographic regions) and felt that a new type of financial instrument was needed that could incentivize a variety of financial actors to work together to fund resilience (particularly in infrastructure improvements). Additionally, the National Coffee Action Plan should be forwarded, and capacity for implementation built within the Ministry of Agricultural Development. Respondents felt that more political will is needed for engaging the private sector, suggested focusing on water infrastructure (projects to secure water), and creating a public media strategy was needed. In terms of ALOXI members, more case studies and demonstration are needed to apply the climate risk assessment tool. Going forward additional support is needed to build capacity and guidance materials at ProInversion.
- In Vietnam, more clarity is needed to ensure there is a driver within MONRE for fully addressing adaptation into the EIA process and for MONRE to use the technical recommendations and guidance from PIER to provide guidance to law enforcement. More practical application in piloting the guidance is also needed. Companies still need support to understand the value of investing in resilience and need to understand how to access green finance. More recognition by government of good corporate practices would be helpful. Going forward, a financing investment strategy and financing mechanisms is needed, respondents reported confusion among stakeholders as to who is being targeted to fund resilience, finding ways to de-risk investments by providing some type of guarantee would be useful. Going forward, efforts to maximize the already strong government interest in resilience and support them in developing incentives including tax structures and subsidies would be useful. Continuous engagement of the private sector and creation of networking opportunities would be useful. SME's need more capacity building to better access insurance, and a large cost-benefit analysis is needed with return on investment (short and long term) highlighted. Respondents recommended to continue work through making policy improvements.
- In Jamaica, existing coffee and climate data is in poor state and more could be done to improve data quality. Respondents recommended that a road map and more capacity building is needed at JACRA, and additional time and money is needed to complete the demonstration project.
- In Grenada, a pool of data is need for modeling, more time and effort are needed to finalize baseline data over the next two years. More clarity is needed on who will drive the demonstration project forward. Association and lead farmers need capacity building. Government needs to provide policy support, infrastructure support and incentives to land-owners and farmers (to plant) and financial support to respond to climate scenario is needed (ideally a coordinated financial mechanism.) Respondents recommended that the project should be scaled up to other spice crops.

- Going forward the cost-benefit analysis for coffee demonstrated by PIER is customizable and could be applied by donors, government actors, cooperatives, and other decision-makers to identify adaptation solutions.

3. CONCLUSIONS

The DOS/OES decision to support an initiative that identified and examined different pathways to engage the private sector in resilience (largely by making the business case for climate adaptation and building the capacity of governments to enable/attract such investments), represents cutting-edge development leadership and was extremely relevant for private sector actors, governments, financial institutions, and small holders. Given the body of work by PIER there are some larger conclusions that are important to draw:

OES's decision to demonstrate how to engage the private sector in resilience, making the business case for climate adaptation and building the capacity of governments to enable/ attract such investment, represents cutting edge development leadership.

3.1 Operationalizing climate adaptation and resilience is still in its infancy- more investment is needed to develop, demonstrate, communicate, and scale key concepts.

The PIER program illustrated a lack of working knowledge on climate adaptation and resilience among nearly all of the relevant stakeholders; while to some degree this was acknowledged in the original design which included capacity building, it was not adequately taken into account in the demonstration project timeline, which on average had only 20 months to build basic knowledge, develop and test ideas and models, collect relevant data, and capacitate stakeholders to own and invest in proposed solutions. Unsurprisingly, respondents reported they need more time to adequately absorb knowledge and refine resilience strategies. Given the speed at which climate change is occurring globally; donors, governments, parastatals, private sector entities and NGOs, should be considering how to refine the models already in play in these countries, and then invest further in testing ideas and scaling successful concepts to other countries.

3.2 Climate adaptation resources (human and technical) need to be further cultivated to drive the resilience agenda forward locally and globally.

PIER illustrated that existing resources required to support climate adaptation activities and strategic resilience strategies were in short supply; this includes a lack of quality climate, weather, agricultural and economic data, but also a lack of technical experts (in developing countries and globally), and a lack of shared knowledge platforms and networks that supported in-country ownership of data and results. To conduct work PIER mobilized and capacitated hundreds of individuals and generated a significant amount of information, which could be seen as the birth of a new network of actors and information to drive the resilience agenda forward, but substantive attention is needed to capitalize on this work in order to build and better network these actors, organize and house data gathered, and provide clarity on the data and resources that are needed going forward. A variety of respondents suggested future projects could pair regions or countries together – to create a larger scale of response.

3.3 Government and parastatal projects demonstrated the potential for *response at-scale*.

PIER's work with Ministry of Natural Resources and Environment (MONRE) in Vietnam and the Development Finance Corporation of Peru (COFIDE), provided some very interesting case studies of how climate adaptation can be fast tracked and brought quickly to scale through the promulgation of regulation. While respondents noted risks in working with governments who can change personnel and agendas after each election, they also reported import spin off benefits among private sector actors who, aware of increasing environmental regulation, began to apply the same processes internally (climate vulnerability assessments and financial analysis of relevant adaptation measures) to incorporate them into their own plans, proposals, and budgets, creating a rapid scale-up of results.

3.4 Private sector projects demonstrated a *rapid knowledge dissemination pathway* (paid for by the companies themselves).

PIER's work with ECOM Agro-industrial Corporation (one of the world's largest coffee and cocoa traders and processors) and CORTEVA (the largest American agricultural chemical and seed company, providing services and crop inputs to farmers in 140 countries) demonstrated some very interesting case studies of how integrating climate risks and resilience into the companies' agronomic training programs, quickly fast-tracked knowledge and new practices across multiple countries, delivering benefits not only internally but directly to farmers (who these agronomists train) thus forwarding the local government climate goals (at corporate expense).

3.5 Deeper engagement of the Financial Sector is needed for climate adaptation to succeed.

Currently determining *who* will pay for the more expensive resilience practices needed at the small-holder level, remains unclear. One of the most shared lessons was that financial institutions needed to be engaged earlier in project design and needed capacity building and awareness of climate change, its impact in countries and the significant financial risk posed to implementers. Respondents articulated a desire for a new climate adaptation financing mechanism to be developed (by World Bank or others) and that it will take a joint funding effort to deliver resilience at meaningful scale.

3.6 Programming for engaging government, financial institutions and private sector in climate adaptation and resilience is critical and should be continued and expanded.

The most significant impact of PIER was illustrating to government, parastatals, banks, and private sector entities – that the concept of climate adaptation and resilience can be operationalized as a business proposition and that engagement with private sector (by creating incentives, guidance, or legal frameworks) can help governments meet climate change adaptation priorities. Programming for

engaging government, financial institutions and private sector in climate adaptation and resilience is critical and should be continued and expanded.

ANNEX 1.

COMMUNICATION PROTOCOLS

Communication Protocol Utilized for the PIER Evaluation

1. Send *Introduction Invitation Email* to explain purpose and request interview time and date
2. Send *Reminder Email* (24 hours in advance of scheduled interview)
3. During Interview Protocol
 - Consultant Introduction
 - Review the purpose of the interview
 - Review Informed consent and clarify how the information will be utilized shared, and the degree of privacy, confidentiality to be expected
 - Inform respondent of interview duration (~45 minutes)
 - Let the respondent know that their participation is voluntary; they can decline to be interviewed or discontinue the interview anytime.
 - State the benefit on the respondents' end.
 - Ask for the respondent's consent.
 - Thank the respondent for participation.
 - If necessary, re-phrase and/or translate questions.
4. After interview, send *thank you email*.

Initial Contact Email

To: xxx

RE: Requesting a call

Dear _____,

I am writing to you to request your participation in a brief zoom call to discuss the PIER program.

As you may recall PIER was funded by the U.S. Department of State, Bureau of Oceans and International Environmental and Scientific Affairs (OES) with an aim to build capacity to incentivize private sector investments in support of national development objectives that address climate change, in key

countries. The project was operated by Winrock International who began work in September 2017 and who are now completing their efforts.

As part of the close-out process an international evaluation consulting firm has been hired to reach out to relevant stakeholders to gather reflective feedback.

Your involvement in the reflection process is key and will be used to help evaluate the effectiveness of the program so that donors and implementors can capture lessons that will help them design future projects. Your participation is completely voluntary, and all of your responses will be kept confidential.

The call will be brief and will only take about 30 minutes to complete.

Please let me know a time that might be best to reach you (over the next ten days) and I will send a zoom link (or if you prefer, we can talk on WhatsApp, or skype).

Thank you in advance for taking the time and sharing your perspectives. I look forward to our discussion. Your feedback is extremely important

Sincerely,

K. Lynn McCoy

International Evaluation Consultant

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Survey Questions/ Topics for Semi Structured Interviews

Note: Semi-structured interviews center around a mixed framework of general themes and pre-established questions, which can be adapted in the context of individual sessions. The interviewers are thus free to leave certain questions out, mix the order of questions, or ask certain standard questions in different ways depending on context. Semi-structured interviews also rely on a combination of both open and closed questions. Unique question routes (relevant to each key informant) are prepared for each interview prior to the zoom call.

Warm Ups

Q. Tell me a bit about your role, how were you involved in PIER? When were you involved in their project and for how long?

Q. What do you feel was the goal of this project – what was PIER fundamentally about? Did this goal change or evolve over time, if so, how?

Q. Did PIER contribute to the long-term goal of increasing private sector investment in resilience to climate change and sustainable landscapes, if so how?

Q: What did you learn from PIER, based on your experience what were your key takeaways from this project?

Outcome Harvest Analysis

- Q. What if any factors beyond the control of the project had an influence on the project?
- Q. What, if anything changed as a result of the PIER program ... To what extent can changes (intended/unintended, positive/negative) be attributed (evidenced) to the program?
- Q. What factors were most influential in bringing about these changes, why did the changes occur?
- Q. What worked and didn't work on this project and why?
- Q. What do you think was the most significant change resulting from the PIER program? Why was that the most significant?

Context

- Q. To what extent was the project needed, – i.e., was it relevant given current global thinking at the time?
- Q. How did the intervention fit with other interventions in the country/ countries / sector that were operating at the time?
- Q. for Winrock and donor staff only, Lynn describe basic TOC... How germane was the initial expressed project theory of change/ i.e., were the key change pathways relevant in terms of meeting the expressed needs of the area, were any critical ideas not expressed, did the TOC change during project implementation, if so how?
- Q. for Winrock and donor staff only, How relevant was the projects implementation strategy (as designed and implemented) to the result of the project? How did this structure help or hinder delivery of results?
- Q. Was the Team Structure as implemented, appropriate to delivering results of the project? Given what was learned, is there a better structure for moving forward?
- Q. How did PIER operate in terms of internal and external partnerships, i.e., how well did the project work with the various consultants, governments, NGO's and private sector partners?

Effectiveness

- Q. for Winrock and donor staff only, Lynn reviews the objectives for the respondent... To what extent do you think the objectives of the project were achieved or not achieved, were these objectives relevant to the objectives in each country?
- Q. Which components of the PIER program do you think were more successful, and which proved to be more challenging? Why?

Sustainability

- Q. What if any mechanisms have been set up to support the achievement in the longer term?
- Q. What are the major factors that are influencing the sustainability of the program?
- Q. What factors could contribute to ensuring achievements persist after the conclusion of the intervention?

ANNEX 2-

SUMMATION OF PIER'S DEMONSTRATION PROJECTS: KEY INPUTS, RESULTS, LESSONS & WAY FORWARD

<p>1. Ghana: Demonstrate that there is a large-scale business case for climate smart farm rehabilitation services that delivers multiple environmental and social benefits to investors and farmers. Improve the awareness of ECOM in viable resilience investment opportunities. Develop and test model to analyze the financial feasibility of investing in cocoa rehabilitation (i.e. <i>a resilience investment</i>) using best practices in agroforestry. Improve the capacity of ECOM agronomists (who provide extension services to local farmers and downstream suppliers) in assessing and addressing climate risk.</p>	<p>April 2019 April 2021</p>
<p>KEY INPUTS:</p> <ul style="list-style-type: none"> Partnership with ECOM Agro-industrial (Ghana), developed an MOU Provision of technical assistance: Engaged 2 local Ghanaian consultants (a finance and agroforestry specialist) to work alongside the ECOM team for one year. Development, testing and publication of an excel-based financial model to analyze the financial feasibility of investing in cocoa rehabilitation (i.e., a resilience investment) using best practices in agroforestry. Development and delivery of a Training of Trainers Program for local cocoa and agriculture trainers who provide extension services to local farmers and downstream suppliers. Development of several publications and presentations to present findings (largely outside of Ghana). 	
<p>KEY RESULTS</p>	<p>KEY LESSONS/WAY FORWARD</p>
<ul style="list-style-type: none"> Engaged ECOM Agro-industrial Corporation (one of the world's largest cocoa traders and processors) as a collaborating private-sector partner and improved their awareness of viable resilience investment opportunities. Developed and tested a scalable excel-based financial model to analyze the financial feasibility of investing in cocoa rehabilitation (i.e. <i>a resilience investment</i>) using best practices in agroforestry. Improved the capacity of 15 local agronomists / agriculture trainers (who provide extension services to local farmers and downstream suppliers) in assessing and addressing climate risk. ECOM reports that (due in part to PIER) farmers are now practicing climate resilient cocoa farming and 4M shade trees have been planted. Mobilized \$178,848 (USD) private sector investment for climate change adaptation activities. This was a calculation of ECOMs in-kind support to this project. Demonstrated that there is a large-scale business case for climate smart farm rehabilitation services that delivers multiple 	<ul style="list-style-type: none"> Respondents routinely reported that this was a successful project, though it did not result in the private sector increasing investment in the rehabilitation effort (ECOM felt the financial burden was too high and that the model required 3rd party funding to be a viable investment model). However, ECOM found both the financial analysis of resilience opportunities as well as the agronomic model of cocoa rehabilitation, very useful and retained their use in Ghana and scaled it into ECOM projects in Cote d'Ivoire (by their own initiative) and in Indonesia (with PIER's support). Respondents reported that engaging stakeholders at all levels (Farmers, Chiefs, Associations and ECOM) and understanding climate zones and relevant tree species was key to success, as was building knowledge and capacity of the Cocoa Board. Local consultants shared that they had (under their own initiative) successfully replicated this approach (outside of ECOM) with other partners. Respondent's suggested that <i>not</i> working in a networked manner (or having engaged multiple parties in the training and testing), was a missed opportunity to create an advocacy network to help drive the approach. Respondents reported that, as of yet, the model was not widely disseminated in country. Respondents reported that the program length was too short to ensure adoption and not sustainable without substantive additional funding and farmers taking ownership. Respondents believed that to move cocoa resiliency forward, the PIER/ECOM cocoa agro-forestry model needed to become the

<p>environmental and social benefits to investors and farmers.</p> <ul style="list-style-type: none">• Published findings and lessons including recommendations for 3 blended finance structures for donors and project designers to consider, including development of a blended finance facility, an SME loan fund, and/or a resilience bond.	<p>norm but this required a driving force pushing critical actors to engage (Govt, private sector and consumers) and a 3rd party financial partner, both of which were not yet present.</p> <ul style="list-style-type: none">• Respondents reported that if donors funding cocoa programs insisted the agriculture models in use were climate responsive and environmentally friendly, socially acceptable and financially beneficial then rehabilitation and resilience goals could be met in the cocoa sector.
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2. Ghana: Demonstrate to the Ghanaian Government how to engage, incentivize, and mobilize public and private sector actors to meet Ghana’s climate change adaptation priorities (as laid out in the NAP and the Private Sector Engagement Strategy. Develop and test a *Climate Change NAP Capacity Building Tool* that can be used to improve the enabling environment for successful NAP implementation including private sector engagement in resilience in developing countries. Support the EPA in assessing their governance systems structures and identify the knowledge and skills needed to support successful NAP implementation.

July 2019 – Sept 2021

KEY INPUTS:

- Provision of technical assistance--Embedded a full-time consultant in the Office of Climate Vulnerabilities & Adaptation under the Environmental Protection Agency (EPA) for nearly a year who conducted interviews and desk studies to identify perceived institutional capacity gaps hindering EPA engagement with private sector actors through consultation with stakeholders in both the private and public sectors.
- Development, testing and delivery of a *Climate Change NAP Capacity Assessment Tool* and conducted capacity assessments through questionnaires administered amongst EPA staff to gauge individual and organizational capacities in climate change knowledge, skills and use; strategy development; private sector engagement and collaboration
- Development and delivery of a Capacity Building Action Plan for the Ghana EPA.

KEY RESULTS	KEY LESSONS/ WAY FORWARD
<ul style="list-style-type: none"> • Developed and tested a scalable Climate Change NAP Capacity Building Tool that can be used to improve the enabling environment for successful NAP implementation including private sector engagement in resilience in developing countries. The tool helps those charged with NAP roll-out, assess their governance systems structures and identify the knowledge and skills needed to support successful NAP implementation. Assessment elements include vertical integration capacities (i.e. skills needed for mainstreaming adaptation across sub-national structures); horizontal integration capacities (i.e. skills needed for integrating adaptation across government ministries) and elements needed to ensure inclusive stakeholder engagement in NAP planning and implementation (especially the private sector who often have minimal recorded engagement in adaptation and resilience building). • Assessed & documented EPA’s current capacity to engage and mobilize public and private sector actors to meet Ghana’s climate change adaptation priorities as laid out in the NAP and the Private Sector Engagement Strategy. • Provided a <i>Capacity Building Action Plan</i> for the Ghanaian EPA. To date no one has been trained in areas where shortfalls in capacity were noted but govt anticipates doing so in the future. • To date the EPA has <i>not</i> mobilized additional private sector investment in resilience (as a result of improved capacity) but improvement in govt/private-sector relationships were noted. 	<ul style="list-style-type: none"> • This project contributed (at least tangentially) in improving the enabling environment for successful NAP implementation in GHANA. Although Government officials reported insufficient engagement in the process (“<i>The PIER consultant designed a tool for us rather than with us.</i>”) they still thought the effort worthwhile, and that staff learned much from participating in it. • Respondents reported that (as a result of the project) govt and private sector actors had positively worked together “<i>to address a common enemy--climate change</i>” and this type of joint partnership effort was viewed as novel and important. • The tool (if documentation is improved) is scalable and could be modified to other countries working to implement NAPs and thus supports sustainability of NAP implementation. Going forward within the EPA, it will be important to build ownership of the assessment process, and support activities for capacity skill building as outlined in the Action Plan. Ideally, capacity would be re-assessed in the next 3 years and additional data collected to determine the effectiveness of the process and delivery of the Action Plan items. • Ghanaian government respondents reported that going forward they needed tailored messaging and continuous training, targeting different audiences (private sector, financial sectors, industry, farmers...) as well as additional support on a policy framework to further guide private sector engagement and to create government incentives for private sector investment (and that to get this passed, high level political buy-in is needed). • Respondents in Ghana noted that in the future, working directly with banks (who have become knowledgeable over the past few years) will be key, as will working with youth to act as a sector driver—actively advocating for climate mitigation, adaptation, and resilience response.

3. Indonesia: Demonstrate to EWINDO and Sundaya, the business case for investing in solar irrigation pumps to increase resilience of smallholder farmers. May 2019 – Sept 2021

PIER INPUTS:

- Partnership with EWINDO (developed an MOU).
- Partnership with Sundaya Industries (*a Solar Products Manufacturer*)
- Provision of technical assistance—local consultant helped collect data and worked with farmers- documented baseline conditions on use of water resources and productivity in two districts
- Supported testing of solar pumps (procured 2 different brands of pumps to work under different conditions (depth, flow etc.) and installed 6 solar farm irrigation pumps in 6 horticulture farms. Provided local consultants to train 6 farmers in the installation and usage of the pumps and maintenance of solar pumps and drip irrigation.
- Development of a financial model and an excel-based tool to analyze the farm-level economics of purchasing and employing a solar irrigation pump on a variety of farm combinations).
- Supported Sundaya in their efforts to develop business plan and request for investment capital
- Helped develop and facilitate a virtual training...“*Water Management and Irrigation Techniques to Increase Climate Resilience in the Horticulture Sector*” in collaboration with local non-profit YBTS, project partners EWINDO and experts from CCROM.

KEY RESULTS	KEY LESSONS / WAY FORWARD
<ul style="list-style-type: none"> • Engaged with EWINDO (<i>a joint venture company between East West Seed and Enza Zaden that produces and markets vegetable seeds for 125,000 smallholder farmers in Indonesia</i>) as a collaborating private-sector partner and delivered new tools for EWINDO to use in farmer training relevant to viable resilience horticulture practices. • Developed and tested a financial model and an excel-based tool to analyze the farm-level economics of purchasing and employing a solar irrigation pump on a variety of farm combinations. • Engaged with Sundaya Industries (a Solar Products Manufacturer) as a collaborating private-sector partner in forwarding solar climate technology... helped build their capacity by providing guidance on the development of a business plan and an excel-based financial model to determine the financial feasibility of expanding their product line to include solar irrigation pumps. Facilitated a presentation by Sundaya on their business plan and request for investment capital to the Dutch Fund for Climate and Development (DFCD). Funding was not approved. • Sundaya mobilized \$46,591 (USD) in private sector in-kind investment for climate change adaptation. • Ultimately the project was not successful in demonstrating a business case for solar irrigation pumps to increase resilience of smallholder farmers in Indonesia. 	<ul style="list-style-type: none"> • This project was not viewed as a successful pilot project primarily because the business case for using solar irrigation pumps was not demonstrated. • Respondents reported that while the model itself was useful, the project failed because it was poorly designed, rushed, and tested the wrong climate technology—farmers in the area had been experiencing too much rain as a result of climate change, and thus <i>solar driers</i> might have been a better technology to test. Although they noted that the solar pumps did have some application to farmers with greenhouses, the pumps as designed did not work well and were considered by the farmers as too expensive, and they were not interested in taking a loan to purchase them. • Going forward respondents suggested significant capacity building on climate change with farmers and financial institution is needed to create understanding and ownership--that until farmers understood how climate impacted them and that they could actively engage in adaptive practices to improve resilience, testing technologies would yield little returns. Some respondents suggested that a more appropriate workstream might be to work with big companies on climate infrastructure issues (like helping an airport cope with rising sea levels).

4. **Indonesia.** Demonstrate to Indonesian coffee stakeholders the business case for private financing for smallholder coffee farmers’ resilience, mobilize investment and improve the capacity of local agronomists / agriculture trainers (who provide extension services to local farmers and downstream suppliers) in assessing & addressing climate risk.

April 2019 -
Sept 2021

KEY INPUTS

- Partnership with Indonesia Coffee Company (ICC), a subsidiary of ECOM (MOU)
- Partnership with the Research Center for Climate Risk Operations and Management (CCROM)- hired staff.
- Partnership with the Sustainable Coffee Platform of Indonesia (SCOPI).
- Provision of technical assistance-- Engaged 2 CCROM consultants to plan and conduct a training of trainers for ECOM’s agronomists and field staff.
- Mapped / documented the farmer-collector-trader network to better understand the value chain of coffee production in the Lake Toba region in North Sumatera
- Designed and conducted a survey of farmers (to inform efforts to train banks and farmers on coffee financing and develop an approach to loan structuring, processing, and disbursement).
- Created materials for agronomists to disseminate to nearly 4,000 farmers in the Lake Toba region (lessons on climate change impacts and adaptation measures).
- Facilitated a virtual training through Zoom on “Climate Change Adaptation for Coffee Farmers in Indonesia” targeted to Master Trainers (Field Counsellor officers who work with SCOPI platform members).
- ECOM’s agronomists conducted trainings for farmers in the Simalungun and Karo villages and conducted post-training surveys on increase in awareness and willingness to invest in adaptation measures.
- Developed a detailed financial model to analyze the farm-level economics of investing in adaptation measures, ranging from 100% rehabilitation strategy to a 100% renovation strategy and combinations in between farm-level and intermediary economics in baseline conditions and resilience scenarios.
- Conducted a cost-benefit analysis (CBA) to supplement the findings of the financial model.
- Trained ICC/ECOM staff, intermediaries (traders, collectors, sub-collectors) and financial institutions regarding climate change impacts and findings from the financial model and CBA.
- Presented recommendations for financing mechanisms to improve SH farmers access to finance.

KEY RESULTS	KEY LESSONS / WAY FORWARD
<ul style="list-style-type: none"> • Engaged ECOM Agro-industrial Corporation (one of the world’s largest cocoa traders and processors) and CCROM (Bogor Agriculture University) and SCIO (NGO Coffee Platform) as collaborating private-sector partners and improved their capacity to train farmers in climate resilient coffee farming and increased awareness of the economic ramifications of climate change and viable resilience financing opportunities. • Improved capacity of local agronomists / agriculture trainers (who provide extension services to local farmers and downstream suppliers) in assessing & addressing climate risk. • Demonstrated the business case for coffee rehabilitation, given a 10-year timeline (the estimated profits for renovation options exceeded expected profits for the baseline scenario) and surveyed farmers expressed willingness to invest \$211 over a two-year period (on average) on 	<ul style="list-style-type: none"> • Respondents routinely reported that this was a successful pilot project, even though it did not get rolled out sufficiently to famers and a financing mechanism was not yet in place (which they felt was due to COVID-19 interruptions). Respondents reported that the need to address climate impacts and models for assessing risk and various economic choices were well demonstrated. • Respondents reported that stakeholders at all levels had gained substantive new knowledge on how climate was impacting coffee. • ECOM reports that they have adopted the materials as part of their normal training of staff and are actively pursuing new partnerships based on the experience -- Registration of a new climate resilient variety of Arabica coffee with ICCRI (Indonesian Coffee and Cocoa Research Institute), and a proposal to the Africa Development Bank for supporting Smallholder Farmer Climate Resilience.

<p>adaptation measures- a little over half the amount required to adapt to climate change. Made recommendations for possible financing mechanisms.</p> <ul style="list-style-type: none"> • Due in part to COVID-19 (as all field activities stopped) did not realize the goal to mobilize \$200,000 in smallholder investments to increase productivity and climate resilience • Published findings and lessons including recommendations. 	<ul style="list-style-type: none"> • Respondent's recommended that future efforts engage an even more comprehensive group of stakeholders earlier, including the banking sector. • Respondents reported that the program length was too short to ensure adoption and was not yet sustainable but working with a variety of partners (ICC/ECOM, CCROM, SCOPI) had begun to seat these ideas more permanently among Indonesia coffee stakeholders. However, without substantive additional funding and farmers and Farmers Associations taking ownership, resilience efforts could falter. More technical assistance and training is required at the farmer level to ensure farmers adoption. • To move climate adaptation forward respondents noted they needed to take the PIER lessons and models into new partnerships, needed to engage financial institutions and deliver innovative financing for farmers, so farmers could adopt climate ag practices, and needed farmers to diversify income (through growing other corps) to increase their resilience • Going forward more data is needed to deepen the models, ECOM specifically reported they needed additional clarity on how to modify the models based on changing climatic conditions to create new scenarios, and reported they had mobilized funds to hire the consults PIER had used, to continue to work with ECOM on this. • Respondents reported felt the coffee sector needed more assistance in learning how to measure rainfall and needed more infrastructure development support. • ECOM noted they had produced an article on lessons and were actively pursuing partnerships with research institutions to deepen the models, and were now looking for a crop insurance partner.
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5. Peru. Demonstrate to the Development Finance Corporation of Peru (COFIDE) how to develop, improve, and promulgate the Bank's lending and portfolio regulations to include climate risk information

July 2019 -
Sept 2021

KEY INPUTS

- Partnered with the Development Finance Corporation of Peru (COFIDE)- MOU Developed
- Provided technical assistance to COFIDE through CFA over a period of two years.
- Conducted desk research and in-person interviews to clarify the organization structure and business processes of COFIDE.
- Developed and facilitated a series of trainings for mid-to-senior officers of COFIDE to increase awareness related to: (a) expected climate hazards faced by various sectors of the Peruvian economy and the need for having a resilient financial industry to as a strategy for increasing adaptive capacity; and (b) international best practices in the integration of climate risk within financial institutions.
- Developed a set of recommendations or climate mainstreaming /how to integrate physical climate risk within the relevant parts of COFIDE-- recommending the development, improvement, and promulgation of the Bank's lending and portfolio regulations to include climate risk information. Presented these recommendations to the Heads of Departments, CEO and Managing Director of COFIDE
- Developed a reference tool (Climate Risk Guidebook) to support COFIDE's leadership and line managers in promulgating climate risk information in lending and portfolio regulations
- Developed 3 case studies / articulating project designs that could assist the bank to launch adaptation-specific financial products to value and incorporate climate change considerations in their project finance transactions.
- Selected a demonstration project – A 283-kilometer toll road in Peru that is receiving \$45M+ (in financing from COFIDE) and; a) Engaged 2 local experts (a Climate Risk Analyst and a Road Engineering Specialist) to jointly produce a *Climate Vulnerability Assessment* for the project; b) Used the findings in the assessment to undertake a *Financial Analysis of Relevant Adaptation Measures* ; c) Based on the Financial Analysis recommend Resilience Strategies relevant to the project design and operations that could be incorporated in the COFIDE's financing terms.

KEY RESULTS	KEY LESSONS/ WAY FORWARD
<ul style="list-style-type: none"> • Engaged CODIDE (a 2nd Tier Development Bank in Peru) as a collaborating partner to develop, improve, and promulgate the Bank's lending and portfolio regulations to include climate risk information. • Built capacity of COFIDE including Department Heads, Line Managers and Executives. Provided training and a substantive Climate Risk Guidebook, to support leadership and line managers in promulgating climate risk information into their lending and portfolio regulations. Subsequently the Chairman expressed (in writing) their commitment towards sustainability, and their intent to implement the recommendations. <i>To date COFIDE has not issued additional financing given the political context in country, but it is anticipated they will in the future.</i> • Completed a demonstration project – (AuNorte -a 283km toll road in Peru that is receiving financing from COFIDE) to illustrate application. Produced a Climate Vulnerability Assessment and Financial Analysis of relevant adaptation measures and recommend resilience strategies that could be incorporated in the financing terms. • Engaged Aleatica (a Mexican based, multi-national transport infrastructure operator receiving financing from COFIDE for 	<ul style="list-style-type: none"> • Respondents reported that this was a successful pilot project, as it demonstrated to COFIDE and Aleatica the process and value of incorporating climate change considerations (in their project finance transactions and into large infrastructure project planning) and illustrated that climate risk is an urgent credit risk. • The project illustrated the importance of not just engaging with the Bank but also directly with their concessionaires. Which proved particularly important given the political context in PERU, which stalled additional financing efforts from the bank, but the concessioner was able to move forward with the recommendations. • Respondents also shared that the demonstration project raised the awareness among syndicated parties (upstream investors and banks) who better realized the financial impact to them if climate change risks were not adequately identified and addressed in loans. • Respondents strongly believed that going forward Climate Risk Assessment should be included in all

highway construction) as a collaborating partner in the demonstration project. Subsequently, Aleatica reported (in their 2021 Sustainability Report) that they developed an Adaptation and Resilience Strategy for AuNorte, VB and ARM with an action plan starting in 2022, in order to anticipate and reduce the risks associated with the effects of climate change.

https://ungc-production.s3.us-west-2.amazonaws.com/attachments/cop_2022/515455/original/ENG_Conectamos_Aleatica_2021.pdf?1658163089

- Through these efforts PIER was able to claim \$45M in investment mobilized for climate change adaptation.
- Produced the Policy Brief “*Developing Climate-Resilient Infrastructure in Peru*” targeting donor and global development partners.

credit approvals and that work like this should also be done with 1st Tier financial institutions.

- Additional work is needed on the climate risk and financing models to improve scalability. Respondents suggested streamlining processes and procedures (perhaps by developing guidance by development sector and or geographic regions) and felt that a new type of financial instrument was needed that could incentivize a variety of financial actors to work together to fund resilience (particularly in infrastructure improvements).

6. Peru: Demonstrate to coffee stakeholders how to incorporate a path to increase producer access to necessary financial services in National Coffee Actions Strategies and Plans including a detailed implementation plan and mapping actions to domestic and international sources of finance. **July 2019 - Mar 2022**

KEY INPUTS

- Partnership with UNPD (NDA)
- Provision of technical assistance to promote innovative financing options for climate-resilient coffee production for smallholder coffee growers and their cooperatives in Peru.
- Proposed a financing strategy to support implementation of the National Coffee Action Plan to UNDP.

KEY RESULTS	KEY LESSONS/ WAY FORWARD
<ul style="list-style-type: none"> • Proposed a financing strategy to support implementation of the National Coffee Action Plan to UNDP. The strategy covers a stocktaking of the financing building blocks (enabling environment, capacity and information, and financing mechanisms and instruments), analysis of gaps and weaknesses, and recommendations to strengthen the financing building blocks, a methodology for developing a detailed implementation plan and mapping actions to domestic and international sources of finance. • Recommendations in the financing strategy were presented to the National Coffee Executive Council by UNDP and have been incorporated into UNDP's work plan to support implementation of the coffee action plan. These recommendations were endorsed by the Ministry of Agricultural Development and Irrigation in its presentation at the National Conference on Coffee and Cocoa in June. • Presented recommendations to the Ministry of Agricultural Development and Irrigation and coffee-sector stakeholders on revisions of the Action Plan. 	<ul style="list-style-type: none"> • Respondents reported that the project was well received and that the National Coffee Action Plan environs a more sustainable coffee sector for both the producers and the environment and includes a path to increase producer access to necessary financial services. • Map and support the Action Plan going forward. • Support capacity building within the Ministry of Agricultural Development to move the plan forward.

7. **Peru:** Demonstrate to the Peru Ministry of Finance; a supporting business association called the Alliance for Oxi (ALOXI); ProInversion (Peru’s private investment support agency); and private companies, how the private sector can be engaged in climate adaptation and resilience, with a long-term goal to incorporate climate risk analysis into the design of *Obras por Impuestos* (Oxi) infrastructure investments

April 2019 –
Sept 2020

KEY INPUTS

- Partnership with Alliance for Tax Works (ALOXI)
- Provision of technical assistance to ALOXI
 - Development of 3 climate resilience handouts on the topics of the impacts and options for addressing the risks of increased temperature and heat extremes, flooding and landslides, long term water scarcity, and sea level rise.
 - Provided 5 training workshops (with 92 staff and public service officers) on climate resilience for public and private sector stakeholders, covering the topics of climate variability and change globally, the impacts of climate variability and change in Peru, the concepts of climate vulnerability and climate resilience, and the types of actions that could be taken in Peru to reduce climate vulnerability and enhance climate resilience.
 - Presentation of the **rapid climate risk assessment** results developed for ProInversion to ALOXI staff and member companies to illustrate the methodology that could also be applied during the design of *Obras por Impuestos* (Oxi) infrastructure investments. Exploring how private and public actors can help reduce vulnerability and enhance resilience, primarily the types of infrastructure projects that would qualify under the Oxi mechanism are those that:
 - **Reduced exposure** to climate change impacts, such as relocating infrastructure to safer areas and accounting for climate risks when selecting sites for new infrastructure;
 - **Reduced sensitivity** to climate change impacts, such as design changes in infrastructure to reduce damages when exposed to disasters such as floods and landslides; and
 - **Enhanced adaptive capacity** to avoid, confront, or recover from climate change impacts, such as by augmenting water supply through infrastructure to collect and store rainwater and glacial meltwater to better prepare for periods of water scarcity.

KEY RESULTS	KEY LESSON / WAY FORWARD
<ul style="list-style-type: none"> • Raised knowledge and awareness related to climate risk incorporation in 25+ of Peru’s largest private sector corporations that participate in the Oxi mechanism and among public service officers. • Raised awareness among ALOXI staff and member companies how the rapid climate risk assessment tool (developed for ProInversion) could also be applied during the design of <i>Obras por Impuestos</i> (Oxi) infrastructure investments. 	<ul style="list-style-type: none"> • Respondents felt this demonstration was on the right track and that many key entities had become more knowledge about climate change and resilience and that this was relatively new concept prior to PIER’s engagement, but they also reported that beyond some trainings not much had been done to implement the ideas within ALOXI, citing COVID-19 and the political context in Peru being very disruptive to the process. However, it was through this project that ProInversion became interested in the subject and requested additional support from PIER (see # 7) • Respondents reported that not having budget to fund additional activities was detrimental to success. • Respondents felt that more political will was needed to engage the private sector, they suggested focusing on water infrastructure (projects to secure water) and that a media strategy was needed. In terms of ALOXI members more case studies and demonstration are needed to apply the climate risk assessment tool.

8. **Peru:** Demonstrate to ProInversion (Peru’s private investment support agency), how to analyze and address climate risks in PPP investments, while helping them build internal capacity in climate risk assessment and incorporate climate risk screening criteria in their institutional guidelines for PPP.

Oct 2020 -
March 2021

KEY INPUTS

- Partnership with Private Investment Promotion Agency (PROINVERSIÓN)
- Provision of Technical Assistance:
 - Reviewed a pipeline of ProInversión public-private partnerships (PPPs) to identify climate risks and impacts that might not have been accounted for in design and assessed options for assisting ProInversión in developing climate risk screening criteria for PPPs.
 - Presented alternative approaches for evaluating climate risks to infrastructure of PPP investments to ProInversion, including rapid and detailed risk assessment methods, and benefit/cost analysis of climate-resilient design options.
 - Developed a rapid climate risk assessment methodology, tailored to infrastructure investments, and applied the methodology for a wastewater treatment plant in ProInversion’s public-private partnership (PPP) portfolio.
 - Conducted a virtual training workshop, with the results of the rapid climate risk assessment to ProInversion staff
- At ProInversión’s request met with 25 Peruvian Regional Governors and conducted a workshop on climate risks and resilience for technical specialists representing Regional Government and made a presentation to Peru’s Ministry of Finance, providing an overview of the project’s work with ProInversion and throughout the country

KEY RESULTS	KEY LESSONS/ WAY FORWARD
<ul style="list-style-type: none"> • Engaged The Private Investment Promotion Agency (PROINVERSIÓN) in reflecting on methods for analyzing and addressing climate risks in PPP investments. PROINVERSIÓN is a specialized technical body, attached to the Ministry of Economy and Finance, Peru that promotes private investment in public services, public infrastructure. • Developed a <i>rapid climate risk assessment methodology</i>, tailored to infrastructure investments, and applied the methodology for a wastewater treatment plant in ProInversión’s public-private partnership (PPP) portfolio. Results indicated, climate changes were not considered a threat to the original location and plant design proposed by ProInversion, even though climate models suggested increments in the intensity-duration-frequency of high temperatures, precipitation, and flooding. Trained 3 people at ProInversion in model application • Increased awareness among ProInversion, Peruvian Regional Governors, and Peru’s Ministry of Finance staff on climate risks and resilience assessment. 	<ul style="list-style-type: none"> • Respondents reported this project did demonstrate to ProInversion a new method for analyzing and addressing climate risks in PPP investments. Winrock staff reported that as a result of the pilot, the agency is now assessing how to incorporate the RCRA methodology into its PPP guidelines, but this has not yet happened (due in part to the current political context in country). • Local and International consultants reported that ProInversion benefitted from a wealth of technical data that was collected during the pilot project. • Local consultants reported they are now routinely applying climate risk analysis (they learned through PIER) to their work (outside of PIER). • Going forward additional support is needed to build capacity and guidance materials at ProInversion.

9. **Vietnam:** Demonstrate to Vietnam's Ministry of Natural Resources and Environment (MONRE) how to integrate Climate Risk Screening into Vietnam's National Environmental Impact Assessment policy which is a part of the Law on Environmental Protection (LEP) and build capacity among staff to ensure implementation.

April 2019 -
March 2021

KEY INPUTS

- Partnership with MONRE (MOU)
- Provision of technical assistance: Provided 13 local consultants to support this activity, who:
 - Conducted a review of the scientific basis for incorporating climate risk assessment into EIA processes, reviewed related case studies in similar country contexts
 - Interviewed stakeholders—including provincial officers from five provinces and representatives from 40 Vietnamese businesses—to assess baseline awareness and capacity to address climate challenges.
 - Reviewed current regulations and related guidelines,
 - Identified policy gaps and shortcomings in the current EIA regulations
 - Provided recommendation for MONRE on how to integrate EIA and climate change regulations.
 - Delivered policy analysis and draft amendments to Vietnam's Law on Environmental Protection and Environmental Impact Assessment (EIA) policy to the Ministry of Natural Resources and Environment (MONRE).
 - Developed a decree providing detailed guidance to provincial governments and partners on implementing national policy changes) to support implementation of new policy.
 - Conducted training workshops of provincial staff in climate risk assessment.

KEY RESULTS	KEY LESSONS/WAY FORWARD
<ul style="list-style-type: none"> • The revised Law on Environmental Protection was approved by MONRE's Department of Legal Affairs, Trần Hồng Hà, Minister of MONRE, the National Assembly (e.g., the Communist Party), and was signed by Prime Minister Nguyen Xuan Phuc in November 2020. Overall, the updated LEP is an improvement for mainstreaming adaptation and engaging the private sector in Vietnam. • Respondents reported improvement in MONRE's view of the private sector (from "wanting to control them to now advocating for them"). • Respondents reported that the space for private sector to engage in adaptation has increased in Vietnam because of PIER. • Mobilized \$90,000 from MONRE (in-kind donation of time) for the development of a legal framework to incentivize private sector entities to invest in resilience building measures. 	<ul style="list-style-type: none"> • A variety of respondents (donors, Winrock staff and local and international consultants) reported this was among the most successful and important PIER projects. • Respondents cited the importance of having local consultants who networked among stakeholders and facilitated meetings was key to success, as was engaging private sector in the process and bringing private and public stakeholders together. Flexibility and a doing lot of "leg work" were also cited as keys to success. • More clarity is needed to ensure there is a driver within MONRE for fully addressing adaptation into the EIA process and for MONRE to use the technical recommendations and guidance from PIER to provide guidance to law enforcement. Respondents were concerned process could stall. • More practical application in piloting the guidance is needed. Vietnam needs a pilot project. Companies still need support to understand the value of investing in resilience and need to understand how to access green finance. More recognition by government of good corporate practices would be helpful. • Going forward, a financing investment strategy and financing mechanisms are needed, respondents reported confusion among stakeholders as to who is being targeted to fund resilience. Find ways to de-risk investments by providing some type of guarantee. Focus on delivering a portfolio of projects versus one-offs. • Going forward, maximize the strong government interest and support them in developing incentives including tax structures and subsidies.

10. Vietnam: Demonstrate to the Office for Business Sustainable Development under the Vietnam Chamber of Commerce and Industry (VCCI), the impact of climate change on the business sector and increase knowledge and strengthen the capacity of businesses in Vietnam to respond to impacts from climate change by integrating resilience into their business strategy, policies, and day-to-day operations

Jan 2020 –
March 2021

KEY INPUTS

- Partnership with the Office for Business Sustainable Development under the Vietnam Chamber of Commerce and Industry (VCCI)
- Provision of a technical assistance to the Office for Business Sustainable Development under the Vietnam Chamber of Commerce and Industry (VCCI). Engaged the Business for Social Responsibility (BSR)’s Asia Regional Office to provide support, who:
 - Identified barriers, responses, and opportunities to climate risk
 - Interviewing companies and practitioners to collect information on their recent efforts to reduce climate risk, their challenges and successes, any gaps in their knowledge or capabilities, and the opportunities they see to build resilience in Vietnam.
 - Drafted three mini scenarios of plausible futures in Vietnam with clear implications on Vietnam’s private sector using scientific data from the Intergovernmental Panel on Climate Change, The World Bank’s Climate Change Knowledge Network, and ND-GAIN among others to depict different plausible futures affecting Vietnam’s leading sectors.
 - Developed reference materials such as a list of publicly available tools on climate hazards for Vietnam and a step-by-step guide for business professionals. Completed and distributed the “Building Climate Resilience in Vietnam Handbook” to VCCI and its members. The handbook presents tools and resources for Vietnam’s private sector to manage climate risk and make investment decisions
 - Hosted a virtual workshop in collaboration with the Vietnam Chamber of Commerce and Industry (VCCI) on “Managing Climate Risk and Building Resilience Among Vietnam’s Private Sector.”

KEY RESULTS	KEY LESSONS/ WAY FORWARD
<ul style="list-style-type: none"> • Refined and deployed tools and resources to guide businesses on how to identify climate risks and assess the impact of climate change on their business • Increased awareness/knowledge of educators/trainers, business associations, and business professionals in Vietnam on how the physical impacts of climate change can affect the country’s private sector. 	<ul style="list-style-type: none"> • Local consultant report delays in delivering on this project due to COVID-19 but felt business were interested in this subject and knowledge had been increased particularly on understanding climate risks and impact to business and wellbeing. • Going forward the climate risks scenarios / models need to adjust for the size of business presenting stratified scenarios. Alos need distinction between sectors, risks for rice, fisheries, tourism are different, need different scenarios. • Continuous engagement is seen as key to success “we need to continue to chip away” at engaging the private sector. • Projects for building capacity among the private sector in climate adaptation and risk analysis should be networked “connect this project to others.” • SME’s need more capacity building to better access insurance • A large CBA is needed with ROI short and long term • More should be done by policy.

11. Jamaica: Demonstrate to the Jamaica Agricultural Commodity Regulatory Authority (JACRA) a coffee farm sustainable landscapes, deforestation, and carbon traceability methodology, mapping carbon emissions and building resilience within Jamaica’s Blue Mountain Coffee Value Chain, and build a carbon sequestration tool for use by JACRA for certification of sustainable coffee.

**May 2021 -
Aug 2022**

KEY INPUTS

- Partnership with the Jamaica Agricultural Commodities Regulatory Authority (JACRA) (MOU)
- Provision of technical assistance who:
 - Designed and implemented a survey and collect data on practices that lead to greenhouse gas emissions and sequester carbon from the atmosphere. in the coffee value chain.
 - Using the data to assess the carbon footprint of the Blue Mountain Coffee value chain.
- Procured 6 tablets and 6 GPS units for JACRA

KEY RESULTS	KEY LESSONS/WAY FORWARD
<ul style="list-style-type: none"> • Finished field work and analyses. 	<ul style="list-style-type: none"> • Project is very desired in country by JACRA and the producers, they want a carbon mapping exercise in coffee so they can determine interventions and position as carbon neutral in Europe but don’t quite feel they own the effort... “the project is being done for us not with us.” PIER has substantial data, but this should be seen as a public good and owned in-country. • Existing coffee data is in poor state and a lack of ready access to quality pools of information (along with lags on procurement) delayed activities. Respondents reported that even now data gathered is more anecdotal in nature and more needs to be done to improve data. Respondents noted that some processors won’t disclose info to JACRA (who were helping collect data), as they were seen as the “regulators.” • Effort was not viewed as being connected in any way to the NAP • Concern that once PIER departs the project lacks an owner who can forward the effort. • A road map and more capacity building is needed at JACRA. • Money/ budget is need for implementation.

KEY INPUTS

- Partnership with the Grenada Co-Operative Nutmeg Association (GCNA) (MOU)
- Provision of Technical Assistance to:
 - Conduct and inception workshop with representatives from various ministries and associations as well as independent farmers to secure buy-in and to develop a work plan
 - Collect necessary data to develop an agro-economic and carbon baseline of the nutmeg sector
 - Develop climate-smart, resilient scenarios and conduct modeling to determine feasibility and carbon impact of each scenario.
 - Capacity building of GCNA and lead farmers (training scheduled)

KEY RESULTS	KEY LESSONS / WAY FORWARD
<ul style="list-style-type: none"> • Collected and analyzed data and developed an agro-economic and carbon baseline of the nutmeg sector. • Devised climate-smart, resilient scenarios and conducted modeling to understand (i) the techno-economic feasibility, and (ii) carbon impact of those models and the carbon impact 	<ul style="list-style-type: none"> • A pool of data is need for modeling, can't assume this exists and project needed to plan for sufficient time to gather and validate data. Still have a lot of weak data, will need to continue to finalize baseline data over the next 2 years. • Association and lead farmers need capacity building. • Need financial support to respond to scenarios. Need a coordinated financial mechanism. • Need government to provide policy support, infrastructure support and incentives to land-owners and farmers (to plant). • Concerns raised about ownership of the program once PIER leaves. Need to identify the key drivers (individuals) to move the program forward. Not clear who will manage implementation and who is accountable for implementing recommendations. Project design in nice but implementation arrangements are not arranged. Need extension. • Need procedures for selecting projects and protocols for implementation. • Project should be scaled up to other spice crops.

13. Cross cutting: Demonstrate to the global coffee sector, a cost-benefit analysis methodology that models the potential net benefits for coffee yields under alternative management and climate regimes.

**Nov 2019-
Dec 2020**

KEY INPUTS

- Partnership with University of Wisconsin-Madison graduate students
- Development of a CBA model (using Indonesia Arabica coffee production as a case study), identifying the baseline conditions of the supply chain for average farm-level economics, value chain economics, expected climate-change impacts on coffee farms, and access to finance
- Analysis of specific costs and benefits for two potential adaptation options
- Documentation and dissemination on findings.

KEY RESULTS	KEY LESSON/ WAY FORWARD
<ul style="list-style-type: none"> • Developed CBA methodology and analyzed two sets of measures to encourage smallholders to adopt climate-resilient strategies to maintain Arabica coffee yields in the face of rising temperatures and changing precipitation patterns. The first activity is to implement training campaigns for smallholders on good agricultural practices (GAP), including appropriate use of fertilizer. The second combined the training campaign with financial assistance to farmers to help them invest in farm-level renovation measures (such as replacing old trees with new seedlings) and/or farm-level rehabilitation (such as extensive pruning of low yielding branches). • University of Wisconsin-Madison mobilized \$9,237 USD in University support (student and staff time). • Published findings and lessons including recommendations 	<ul style="list-style-type: none"> • The costs and benefits of all scenarios were modelled over a 20-year period using a discount rate of 10 percent, showed that implementing a training campaign (in addition to providing financial assistance to farmers to pursue 100 percent renovation of their land) yielded the greatest net benefits. • Respondents felt this was a successful project as it was very scalable, clarified the barriers farmers face beyond costs and clarified which solutions would provide the most benefits to them. • Going forward this method is customizable and could be applied by donors, government actors, cooperatives, and other decision-makers to identify adaptation solutions.

14. Crosscutting: Demonstrate to CORETVA how to integrate the topics of climate risks and resilience decision making into Corteva’s ongoing agronomic training programs.

**Jan 2021-
March 2022**

KEY INPUTS

- Partnership with CORTEVA (MOU)
- Provision of technical assistance to explore Corteva’s exposure to climate risks and options for integrating climate resilience into Corteva’s business model and activities to implement corporate sustainability goals, including several focused on strengthening capacity of partners in developing countries to increase sustainable, climate resilient productivity and incomes.
- Provision of technical assistance to create a work plan and timeline to implement training -of-trainer workshops in Tanzania and Indonesia on climate resilient maize production with special emphasis on integrated pest management focused on management of the fall army worm infestations. Developed materials and conducted capacity trainings

KEY RESULTS	KEY LESSONS / WAY FORWARD
<ul style="list-style-type: none"> • Engaged Corteva (the largest American agricultural chemical and seed company, providing services and crop inputs to farmers in 140 countries) in co-designing a training for their agronomists on the topics of climate change, climate risks, climate adaptation and resilience. • Co conducted virtual Training of Trainers on climate resilient agriculture in Indonesia, Participants from 9 institutions were trained: Corteva Agriscience Indonesia; Corteva Agriscience Philippines; Corteva Agriscience Malaysia; Corteva Agriscience Korea; Corteva Agriscience Pakistan; Corteva Agriscience Thailand; PISAgro; Ministry of National Development Planning; PT Great Giant Pineapple. • Co- conducted virtual Training of Trainers on climate resilient agriculture in Tanzania: Participants from 7 different regional offices of Corteva Agriscience were trained: Corteva Agriscience Tanzania; Corteva Agriscience Kenya; Corteva Agriscience Zambia; Corteva Agriscience Ethiopia; Corteva Agriscience Ghana; Corteva Agriscience Nigeria, and Corteva Agriscience Ivory Coast. • Co-conducted virtual Training of Trainers on climate resilient maize production with special emphasis on integrated pest management focused on management of the fall army worm infestations: Training of trainers for 28 people in Tanzania. Corteva then conducted a similar training of trainers for 17 people in Indonesia. 	<ul style="list-style-type: none"> • Respondents believed this to be a successful project given the reach of CORTEVA and the buy in from the global headquarters • Corteva welcomed the opportunity to engage and felt that more opportunities for public and private sector actors to work together (like this) were needed. • Corteva reported that they would have been very unlikely to have developed and conducted this type of training themselves, but after being approached by PIER they saw how this fit with their priorities and became very interested in doing so and found the knowledge useful. • Going forward it is anticipated that each trainer participating will be able to reach 10 farmers with the information learned on climate resilient agriculture across Tanzania, Kenya, Zambia, and Ethiopia. • If the training was to be done again it should be designed and delivered in a manner that it could be sustained (like posting it to a platform or YouTube channel).