
Agricultural Supply Chain Adaptation Facility: Pilot Proposal and Implementation Plan

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GOAL — *Catalyze private investments to improve the climate resilience of agricultural value chains*

IMPLEMENTING ENTITIES — *Inter-American Development Bank (IDB) in partnership with Calvert Investments*

SECTOR(S) — *Agriculture and forestry*

PRIVATE FINANCE TARGET — *Intermediate: Agribusiness corporations — Ultimate: Small- to medium-sized*

SUMMARY

Climate change threatens agricultural production, posing challenges to the stability of supply chains. Farmers will need to adapt their practices to become less vulnerable, but the lack of adequate skills, incentives, and access to medium- to long-term finance at affordable interest rates can constrain their ability to invest in climate resilience.

The Agricultural Supply Chain Adaptation Facility (ASCAF) is a credit enhancement and technical assistance facility that aims to strengthen small- to medium-sized farmers' and processors' ability to make climate-resilient investments. To this end, the Facility backed by a donor trust fund would cover a portion of potential first-losses to reduce Multilateral Development Banks' and third-party lenders' credit default risks, thereby mobilizing medium- to long-term commercial capital in conjunction with technical assistance. Through ASCAF, Multilateral Development Banks would partner with agribusiness corporations to provide technical and financial capacity assistance for climate-resilient investments through the corporations' supply chains.

This brief reports progress made during Phase 3 toward a concrete implementation path for the ASCAF pilot, which the Inter-American Development Bank (IDB) is interested in implementing with the support of Calvert Investments. Progress includes:

producers and/or processors in agribusiness corporations' value chains

GEOGRAPHY — *In pilot phase: One or two Latin American and Caribbean countries – In the future: The objective is to expand to African countries*

CURRENT STAGE — *Advanced concept stage – laying the foundation for a pilot*

- Testing the ASCAF model with agribusiness corporations, two of which are particularly interested in being part of a potential pilot;
- Gaining better understanding of the technical and financial gaps ASCAF could fill in specific contexts;
- Exploring opportunities for expanding the Facility's geographic reach.

Further outreach and work with potential partner agribusinesses is needed to define the structure and nature of farmer resilience investments that ASCAF could support.

The pilot kick-off is dependent on the engagement of one or two corporations and third-party co-financiers, and on donor funding. The Facility would require an indicative USD 10-30 million in reimbursable and USD 5 million in non-reimbursable resources from donors, and a further USD 100 million post-pilot to achieve scale. For the pilot, IDB anticipates contributing a portion of its USD 5 million Global Environment Facility-supported Climate-Smart Agriculture Fund as reimbursable seed funding. Donor support is essential to demonstrate the viability of this market-driven model for financing climate resilience.

The Lab is a global initiative that supports the identification and piloting of cutting edge climate finance instruments.

It aims to drive billions of dollars of private investment in developing countries.

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INTRODUCTION

The key features of the Agricultural Supply Chain Adaptation Facility (ASCAF), its merits, and the possible challenges to its implementation were outlined in [The Lab's Phase 2 analysis](#). Since then, The Lab Secretariat has worked with ASCAF's proponents – the private sector Structured and Corporate Finance Department of the Inter-American Development Bank (IDB) and Calvert Investments – to:

- Further define the ASCAF model for potential funders, co-financers, and other implementing entities;
- Secure the commitment of one to two corporations to participate in the pilot;
- Understand the financial and climate resilience needs ASCAF could fill in corporations' supply chain(s);
- Engage another Multilateral Development Bank to expand the Facility's geographic reach;
- Gain donors' interest and commitments to support the piloting of ASCAF in the Latin American and Caribbean region.

These are the key building blocks for kicking off an ASCAF pilot and setting the conditions for future scale up and replication in other contexts. In particular, in the medium- to long-term, IDB in partnership with Calvert Investments, who is supporting the business engagement strategy, aims to: i) pilot ASCAF with one or two corporations in one or two markets in the Latin American and Caribbean region, and ii) develop and execute a pipeline of 3-4 projects each year under the full Facility.

This document first outlines the progress made on each building block. It then presents the implementation plan toward a pilot. Finally, it outlines the potential impact of the Facility and the donor contributions needed to get ASCAF off the ground.

PILOT DESIGN: PROGRESS AND LESSONS LEARNED

The proponents are committed to piloting ASCAF, but considerable work is needed to secure corporations' engagement and define the climate resilience measures that could be supported.

The funding structure and risk allocation of ASCAF have been further defined.

ASCAF would be privately and publicly financed by donors, IDB, third party lender(s) and one or more agribusinesses. Risk allocation arrangements would mobilize commercial capital while discouraging possible moral hazard behavior.

Donors would fund the technical assistance and first-loss components of the Facility with grants and concessional loans respectively. These resources would be held in the ASCAF Trust Fund that would be administered by IDB through a Fund Advisor:

- The technical assistance component would enable IDB – through contracted technical organizations – to identify specific climate resiliency investments and build the capacity of agribusinesses and their suppliers. Training would aim to build the deal flow and improve corporations' credit risk assessment and loan management capabilities, as well as farmers' agricultural practices and business skills.
- The first-loss position would cover the credit risks that IDB and other public and/or private financiers would otherwise be unable to absorb.

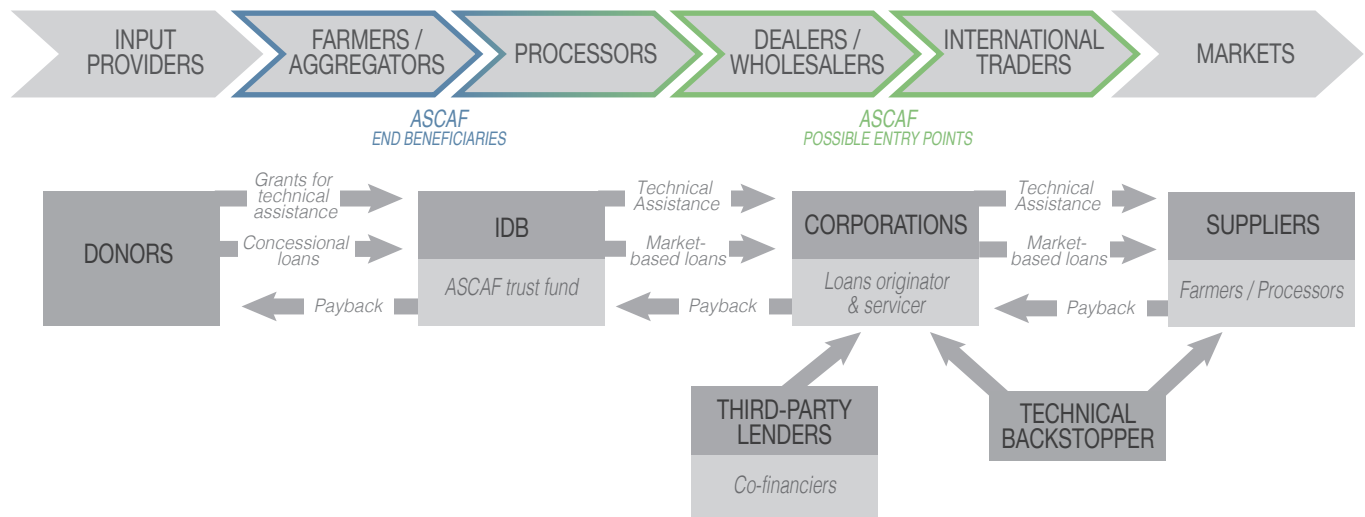
IDB, third-party lenders and agribusinesses would provide market-based¹ loans to farmers / processors at tenors aligned with the identified climate-resilient investments. Agribusinesses would be responsible for loan origination and servicing, but the majority of the loan portfolio would reside on IDBs' and co-lender's balance sheets. Agribusinesses participation in the lending facility would ensure they have 'skin in the game'. Agribusinesses credit officers and extension agents would determine the size and terms of loans, and farmers' capacity building needs through site visits aimed at evaluating production/processing capacity, cash flow, and technical skills. Technical backstopping organizations could support agribusinesses, helping to improve and expand their existing capacity to perform such tasks.

Figure 1 depicts the structure of the Facility, key stakeholders, and the relationships between them.²

The first-loss protection could be deployed as i) guarantee reserve or ii) subordinated debt, shielding IDB and third-party co-financiers from a portion of losses. In the form of subordinated debt, the same amount of donor money could be used to support a larger number of projects or reach out to a larger number of farmers rather than being 'immobilized' in a loss reserve, in instances where lenders' liquidity is constrained.

- 1 Consistent with IDB and other Multilateral Development Banks private sector lending policies, the term "market-based" as opposed to "market-rate" indicates that pricing, and other terms and conditions are determined with reference to local and/or international markets, explicitly so as not to crowd out local financial institutions. As long-term loans to small farmers structured according to their cash flow profiles are assumed to be non-existent, or in very short supply in any market, there may be no exact market comparable for this product. The terms and conditions of the loans will be structured around the farmer's anticipated cash flows and ability to repay, and the value of his or her assets. As the senior lenders (including any participating local financial institutions) will benefit from the security of first-loss protection provided by the ASCAF Trust Fund, that security may translate into improved pricing for farmers.
- 2 This is a simplified representation of ASCAF's functioning. In reality, a special purpose vehicle or project trust would be created to manage the debt. The trust would have an account agreement — the "waterfall" — that would dictate the flow of funds to the various lenders and parties, and in which sequence and under what conditions. Case-by-case considerations will apply to the allocation of the credit risk coverage among parties.

Figure 1. The structure of the Agricultural Supply Chain Adaptation Facility



Agribusinesses would be unprotected for their portion of the investment to discourage possible moral hazard behavior. The credit risk allocation among parties would be determined on a case-by-case basis, depending on the nature of the entities involved in the loan deal, and the negotiations between them. Figure 2 illustrates the allocation of possible credit default losses among parties.

The governance structure of ASCAF’s donor Trust Fund has been outlined.

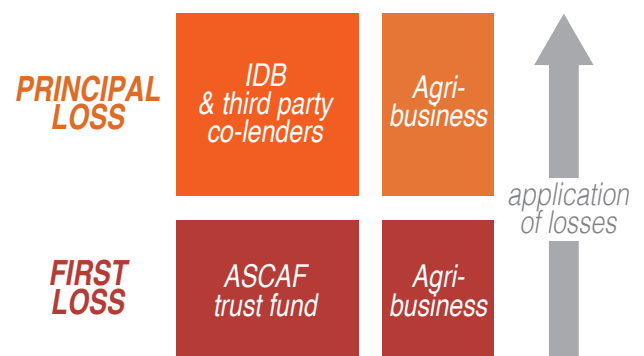
For the pilot, the IDB’s Board of Executive Directors is expected to approve the use of the ASCAF resources, which would be deployed and managed according to the following proposed parameters and criteria:

- **Trust Fund parameters:** eight-year investment period, local currency without hedging available.
- **Project lending parameters** (Fund participation portion): from USD 1 million to USD 30 million, with tenors up to 15 years.
- **Project eligibility criteria:** projects would be considered for financing if they:
 - Comply with the IDB’s Environmental and Social safeguards and credit risk due diligence requirements;³
 - Demonstrate contribution to addressing context- and location-specific climate vulnerabilities to climate variability and change;
 - Contribute to other IDB development objectives, including improving local livelihoods and the development of small to medium-sized businesses;

- Demonstrate both financial additionality, i.e. to fill a gap in the local market, and the need of donors’ concessional support to make transactions financially viable.

- **Monitoring and evaluation:** IDB’s Portfolio Management Unit would monitor the pilot project(s) throughout the lifetime of the loan agreement with agribusinesses. This would include an expanded project supervision report 18 months to three years after it is operational. **A set of development effectiveness indicators will be defined to measure the climate-resilience impacts of ASCAF**, and will be included in an annual monitoring plan of portfolio performance. These may include the number of producers reached (disaggregated by gender); number of hectares with improved resiliency; yield improvements achieved per hectare; volume of water savings in case of water efficiency measures; income variation at the farm level; and volume of financing catalyzed. Results would be reported annually.

Figure 2. Illustrative - Allocation of credit default losses among parties.



3 The due diligence would typically follow the requirements established for financial intermediaries given that agribusinesses would act as co-lender. Therefore, IDB would verify agribusinesses’ capacity to manage environmental and social issues and risks, including the ability of existing credit appraisal, approval, and monitoring procedures to manage such risks in sub-borrower operations.

The ASCAF business model has been tested with eleven agribusiness corporations, whose interest in “climate-smart” practices is increasingly driven by opportunities to improve productivity and the security of supply.

As a result of the outreach activities, discussions are advanced with two corporations interested in playing a role in a pilot. However, it still needs to be determined in detail how ASCAF could fit in their business structures and the specific investment opportunities within their particular operational and business contexts.

To prove the concept, IDB, Calvert Investments, and The Lab Secretariat consulted a wide range of organizations, specifically:

- Eleven corporations involved in the procurement, processing and trading of, inter alia, coffee, cocoa, sugarcane, maize, and dairy products in the Latin America and Caribbean Region.
- Three business organizations and initiatives aimed at promoting “climate-smart” or sustainable agricultural practices: the World Business Council for Sustainable Development, the TNC-Latin America Conservation Council, and members of the Global Alliance on Climate-Smart Agriculture.⁴

Several of the eleven corporations have shown interest in the ASCAF model because supporting the long-term viability of their supply chains, it aligns with their sustainable procurement strategies, Corporate Social Responsibility objectives, and existing initiatives in support of producers (technical and/or financial). These companies see ASCAF as providing an opportunity to address the context-specific issues they face in the countries where they procure raw materials. Closer and more direct relationships with farmers could help them safeguard adequate quantity and quality of supplies, gain competitive advantages in their markets, and meet an increasingly sophisticated consumer demand. It could also help support traceability efforts and/or ensure compliance with quality standards (e.g. organic, fair trade, etc.).

Consultations have highlighted that:

- Improving agricultural productivity and the long-term sustainability of supply chains are high on the agenda of both public and private organizations. This may reflect the growing awareness about climate risks, and the key role of producers in ensuring the quality and availability of agricultural products and land conservation.
- Considerable time and effort is needed to build business buy-in, from sustainability to core operation departments, before opportunities can be identified and explored in necessary detail.
- Input providers or international buyers could also be potential partners, albeit by design ASCAF is envisaged as most suited to traders and large processors.

ASCAF could add the most value where climate vulnerability is high, and where the structure of value chain and crop characteristics aligns with agribusinesses’ interest and MDBs’ development mandate.

ASCAF’s business model is well-suited to agribusiness corporations dealing with high-value crops including fruits and dairy products in ‘tight’ value chains. ASCAF would prioritize corporations with pre-existing short-term credit and training operations that can be built upon.

The selection of priority crops and countries for ASCAF support is ultimately driven by opportunities for partnerships with agribusiness corporations and the ease of partnerships with their producers. However, in order for ASCAF to successfully meet its objectives, variable supply chain structures, crop characteristics, and climate change vulnerabilities across different countries must be considered.

First, crops’ specific vulnerability to climate variability and change can influence agribusinesses’ and farmers’ incentives to invest.

An initial climate vulnerability scoring of coffee, cocoa, maize, soybean, sugarcane, rice, and wheat carried out by The Lab highlights that climate vulnerability is determined by a country’s economic dependence on a given crop, and the sensitivity of this crop’s yields to projected climate change. It is also influenced by the level of adaptive capacity (see Appendix 1).

The scoring, for instance, indicates that coffee is particularly vulnerable due to its sensitivity to temperature changes and its specific rainfall requirements (see e.g. Rahn et al., 2013; Läderach, 2012), while Nicaragua’s and El Salvador’s vulnerability stand out among coffee producing countries (see Appendix 1).

Second, the structure of value chains and crop characteristics influence agribusiness interest to engage with suppliers, the level of credit risks for lenders and, for the specific pilot, IDB’s development mandate. They can also influence ASCAF’s entry points and implementation.

In terms of structure, in ‘looser’ value chains such as those of annual crops like rice, the higher risk of side selling reduces the incentive for corporations to engage in close relationships with suppliers, and increases the risk for lenders.

The number and type of actors, and the relationships between them, matters for the ASCAF model, particularly in terms of entry points and opportunities for partnerships (see Figure 6 in Appendix 2). Aggregators such as producer organizations (e.g. cooperatives) or collectors can be important actors to engage to ensure the effective implementation of a pilot. This is particularly the case if aggregators are well-functioning and are already providing technical or financial services to their members.

⁴ The Latin America Conservation Council and the WBCSD’s Climate-Smart Agriculture Business Solution Group involve significant players of the Food and Beverage industry such as Coca-Cola, Nestlé and PepsiCo (see e.g. WBCSD.org; Nature.org).

Table 1. Potential climate-resilient investments options in two exemplary supply chains

Coffee (El Salvador) ¹	Sugarcane (Belize)
Investments	
Farm level - Replanting of aging coffee plantations - Planting stress resilient varieties - Switch to other more climate-resilient crops (i.e. cocoa) - Investment in processing equipment and new technologies to modernize farm production - Investment in building water storage systems Processor/cooperative level - Investment in processing equipment	Farm level - Investment in rehabilitation and / or continual replanting of sugarcane fields with improved cultivars ² - Drip irrigation (depending on changes in rainfall) - Improved drainage systems on farm (depending on changes in rainfall) Processor/cooperative level - Drip irrigation (depending on changes in rain-fall) - Investments towards certification to ensure and mainstream application of best practices along supply chain
Technical Assistance	
Farm level - Training on-farm resilience specific and investment best practices, and management of resilient varieties. Corporate/processor/cooperative level - Training on long-term credit analysis and procedures, training in application of environmental management systems, certification schemes. - Training for technical teams on agricultural best practices, standard extension procedures and sensitization on target vulnerable farmer groups - Acquisition, analysis and application of climate data (historical, real-time and down-scaled long-term projections) to support decision making across credit and training systems.	

Sources: Ruiz and McLachlan (2015); Baca et al. (2014); WCR (2014); Baca et al. (2012); IFC (2011); EU (2010); Santos and Garcia (2008); and interviews with experts.

1 Investments options may vary depending on farm-size. Investment in processing equipment may include e.g. water saving wet mills.

2 The ASR estimates that 3,000 hectares of sugarcane need to be re-planted every year (at a cost of roughly USD 10 million per year), but also that such investments to improve productivity for sugarcane farmers should be coupled with investments for increased sugar mill capacity, better transportation and port infrastructure, and a farm credit working group to help farmers better manage debt (see Ruiz and McLachlan, 2015).

In addition, the payoff profiles vary by crop, including the lead-time between input investment and the harvest-related revenue. This variation influences the associated financial needs of farmers, and their credit risk profiles. Annual crops, for instance, have shorter growing cycles, allowing farmers to more easily switch between crops depending on price expectations, and require relatively short-term credit. On the other hand, perennial and semi-perennial crops such as sugarcane and coffee, which have longer lead-times, require longer-term capital, and farmers cannot so easily switch crop. Price volatility can also influence lenders' credit risk.

Multilateral Development Banks' ability to meet their development mandate is linked to the market targeted and producers' characteristics. Coffee, for instance, is typically produced by small-scale farmers – representing more than 70% of all coffee producers worldwide (Rahn et al., 2013). Sugarcane production, instead, tends to be large-scale in the major producing countries such as Brazil, but in lower income regions the share of small-holders increases significantly. Small-to medium-sized farmers, who are particularly credit constrained and have significant

potential for catalyzing growth (Grace et al. 2014), represent for Multilateral Development Banks an important opportunity for achieving development goals.

Third, climate resilience needs vary by crop and country, requiring a tailored set of investments, training programs, and customized financial support.

Literature reviewed⁵ suggests that annual crops could benefit from the adoption of 'soft' measures such as stress-resilient varieties and/or training on improved farm management practices. 'Soft' adaptation strategies have also been suggested for perennial crops (see Baca et al., 2012; Santos and Garcia, 2008), but carry greater risk of failure of new techniques since time to maturity is usually several years. Table 1 shows the set of relatively more capital intensive and longer-term investment options for potential climate-resilient ASCAF investments that we identified in El Salvador and Belize.⁶

5 See e.g. Prasanna et al. (2014); de la Torre et al. (2010); WB (2009); Walter et al. (2010) and Lacambra et al. (2014); [IFAD.org](http://www.ifad.org); Rahn et al. (2013).

6 Bacha et al. (2012); Läderach (2015); MAG (2012) and Santos and Garcia (2008).

Specific crop/country circumstances and market demand can determine the urgency for agribusiness and farmers' investments in climate-resilient measures.

In El Salvador, for instance, whose coffee production will be hit hard by climate change,⁷ the urgency for investment is driven by current coffee disease outbreak (coffee rust) – the recent extent and intensity of which has been partially attributed to changes in local climatic variables – and a decade-long decline in productivity due to outdated agricultural practices and aging coffee plants. In Belize, market conditions (the end of the preferential treatment of sugar exported to the EU) coupled with low modernization and low productivity levels are driving the industry to find ways to make itself competitive to survive in the global sugar trade.⁸

Fourth, the existing financial landscape influences the financial role and strategy of ASCAF.

A number of actors actively make finance available to the agricultural sector in Latin America and the Caribbean. National Development Banks providing subsidized credit, impact investors (e.g. Root Capital), multi-actors funds⁹ and, in some cases, members of the value chain also provide credit (see Grace et al., 2012; PROCAFE, 2015).

Nevertheless, The Lab case studies and interviews with experts have highlighted that in Latin America and the Caribbean, finance is often not accessible, adequate, or sufficient to meet farmers' needs in a timely fashion.¹⁰ Access to finance is particularly constrained for small- to medium-sized farmers, who may lack access to formal credit markets,¹¹ or be neglected by financial institutions (so-called "missing middle").¹² Medium to long-term lending at reasonable rates is also particularly scarce, impeding farmers' ability to implement climate change adaptation strategies (see Baca et al. 2012), and/or to achieve their yield potential.

In the coffee sector, experts interviewed noted that ASCAF could most usefully target small- to medium-sized farmers with

long-term finance needs in the range of USD 50,000 to USD 2 million per farmer.

In countries such as El Salvador and Belize, ASCAF could most usefully build on existing value chain relationships to reach unmet demand for finance, with terms and conditions mindful of farmers' indebtedness and targeted at fostering investments in climate resilience (see Appendix 2).

PILOT IMPLEMENTATION PLAN BEYOND APRIL 2015

Once corporations are on board, considerable work is still needed to identify specific climate resilience investments opportunities, capacity building needs, and the implementation pathway.

Donor resources and agribusiness corporations' engagement are prerequisites to kick-off the pilot.

ASCAF's proponents are advancing conversations with prospective partner corporations, and would continue outreach beyond April 2015 until suitable partners are identified. Figure 3 shows the tentative implementation plan.

Going forward, further value chain analysis for specific corporations and climate vulnerability assessment are needed. Partnering with technical organizations already active on the ground¹³ could help to develop the knowledge base needed to strengthen the business case, develop a sound pilot, and streamline the implementation of the full Facility. Analyses are also needed to determine the finance strategy best aligned with existing initiatives and to ensure ASCAF will add the most value.

7 40% of El Salvador's cropland will be affected by decreases in climatic suitability for coffee production, the highest within the Mesoamerican region (Baca et al., 2014).

8 Industry experts estimate that yield per hectare will have to roughly double in order for Belize's sugar industry to be competitive after the EU's preferential treatment of Belize sugar ends in 2017 (ASR & BSI, no date).

9 For instance, the recently established Coffee for Resilience Fund or the AgroLAC2025 (see Rootcapital.org and Agrolac2025.org).

10 Access to credit is hindered by a number of requirements that small and medium-sized farmers have difficulties meeting. See e.g. Bandedal (2012), MAG (2012), WFP (2010) and Centralamericadata.com (2014).

11 See e.g. Fairtrade, 2013; EU (2012); MAG (2012).

12 See e.g. Milder (2008) and IFC (2010). The "missing middle" is a notional segmentation that serves to illustrate the gap, but that does not always translate into practice.

13 For instance, e.g. national agricultural research institutions; Technoserve, Chemonics and CGIAR / CCAF i.e. the Research Program on Climate Change, Agriculture and Food Security, research Program on Climate Change, Agriculture and Food Security (CCAFS). CCAIAR is led by the International Center for Tropical Agriculture (CIAT).

Figure 3. High-level implementation plan beyond April 2015

	2015	2016	2017	2020 & BEYOND	SPECIFIC ACTIVITIES
SET UP ASCAF	■				<ul style="list-style-type: none"> • Get donors' commitments • Define eligibility criteria for financing • Determine climate-resilient development indicators
ENGAGE AGRIBUSINESSES	■	■			<ul style="list-style-type: none"> • Corporate outreach and engagement • Advance discussions with the current two prospects • Undertake market study to identify prospects & define engagement strategy
BUILD PARTNERSHIP w/ TECH-BACKSTOPPING ORGANIZATION	■	■			<ul style="list-style-type: none"> • Carry out context-specific climate vulnerability analysis • Support the development of the TA package and the finance strategy • Collect baseline data for performance monitoring
KICK-OFF PILOT		■	■		<ul style="list-style-type: none"> • Gain agribusiness(es)' commitment, perform due diligence, define the scope • Carry out supply chain analysis to identify gaps to climate resilience • Define program design (e.g. target farmer portfolio) & monitoring criteria • Identify sources for co-financing
EXECUTE PILOT			■		
FULL IMPLEMENTATION OF THE FACILITY (>1 project / year)			■	■	

Well-designed contractual arrangements with agribusiness corporations will ensure that ASCAF achieves its intended objectives. Agribusinesses' loan origination and servicing role will be critical to fostering and ensuring climate resilience investments at the farm level. To this end, loan agreements between IDB and agribusinesses would specify the lending criteria and technical assistance services that the corporations would provide to its suppliers.¹⁴

The identification and engagement of co-financiers is another future milestone to achieve. Early partnerships with local financial institutions could help the implementing entity to avoid pipeline constraints and strengthen local financial markets.

Beyond the pilot, additional MDBs should be involved to expand ASCAF's geographic reach. IDB has been exploring opportunities for partnership with the AfDB, which would allow ASCAF to be extended to African countries. This, in addition to providing geographic diversity, would allow for additional scale across corporations with supply chains spanning several continents. Discussions are ongoing to define how ASCAF would fit to the African context, and the possible operating structure.

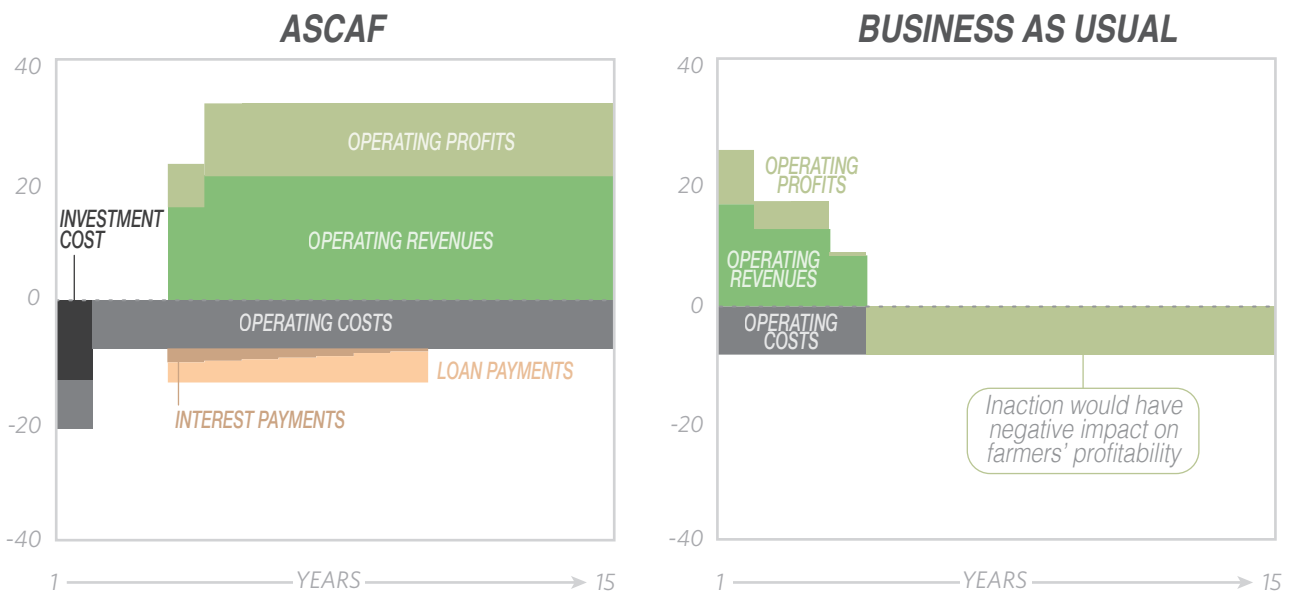
ROLE & REASONS FOR PUBLIC FINANCE

The ASCAF pilot would require about USD 10-30 million in concessional loans and USD 5 million in grant resources from donors to fund the credit enhancement and technical assistance components of the Facility, respectively. This is an indicative estimate by proponents considering a loan package in the range of USD 40-60 million and a first loss ranging between 25-50%. Post-pilot it would need further USD 100 million to achieve scale. The depth of the first-loss, and technical assistance funding requirements, however, may vary depending on context-specific circumstances, commodity, and geography.

IDB expects to use a portion of its USD 5 million Climate-Smart Agriculture Fund for the Private Sector provided by the Global Environment Facility as credit enhancement seed funds for the pilot. Additional financing from other co-lenders willing to finance the senior loan package is required.

¹⁴ Lending criteria would define, for instance, eligibility and portfolio criteria, including use of proceeds (eligible climate-resilient investments), client segmentation, commodity and geographic focus, farm-holding size, loan size and terms (including grace period), debt service capacity ratios, as well as any obligations to provide, contract, and/or monitor technical assistance provided to farmers, etc.

Figure 4. Illustrative – farmer's cash flow in case of investment with ASCAF support or no investment



Note: Graphs show the cash flow of a farmer in two scenarios: (i) in a hypothetical pilot in El Salvador aimed at supporting the renovating a portion of its coffee cropland (ASCAF scenario), and (ii) in case of no investments i.e. Business as Usual. ASCAF support has positive impacts on farmer's cash flows over the life of the investment.

The potential impacts of an ASCAF pilot are difficult to estimate until corporations come on board. But, the expectation is that ASCAF will increase climate resilience, demonstrate the viability of long-term commercial financing to farmers and, possibly, achieve mitigation co-benefits.

More specifically, through ASCAF, know-how on improved farm practices and access to low-cost and longer-term finance tailored to capital investment needs and farmers' cash flows could help achieve the following main benefits per stakeholders:

Farm level

- Enhanced knowledge on climate-resilient farm management
- Enhanced adaptive capacity by maintaining or improving production capacity (yield) and land value, and by maintaining or improving household income (reduced inter-seasonal income variability) (see e.g. Figure 4).¹⁵

Agribusiness / intermediary level

- Safeguarded quantity and quality of supplies
- Improved ability to meet market demand

Donors

- Mobilization of commercial finance to improve resilience of the agricultural sector at scale across supply chains
- Increased small-to medium-sized farmers' access to more affordable loans
- Demonstration of a market-driven model for financing climate resilience which could extend beyond the Facility without or with less public support.
- Potential mitigation co-benefits.¹⁶

Multilateral Development Banks and third-party lenders

- Demonstration of the viability of long-term financing to farmers and mobilization of private capital.

¹⁵ The analysis considers a hypothetical pilot in El Salvador aimed at renovating 9 hectares of coffee plants (about 35% of farm holding) which results in a net present value of about USD 53,000 over the life of the investment, as opposed to a negative one in case of no investment. It assumes: (i) a Facility disbursed over three years with a loan package of USD 40 million, 25% first-loss guarantee and a 20% (USD 8 million) contribution from agribusiness; (ii) an investment life of 30 years; a loans with 7 years maturity, 3 years grace according to IDB (2015) and Rootcapital (2015), and interest rates at 8% based on MAG (2012) and BCR.gov.sv; (iii) farmers' debt service coverage ratio is set at 1.3 and the discount rate at 10% (iv) 20% yields increase achieved with renovation. It also assumes that the farmers' payoff profile in case of climate-resilient investment is 0 for the initial 3 years, at 75% at the 4th year, 100% between the 5th and 20th years and then declining between beyond the 20th year of the investment. The BAU pay-off profile, instead, declines over time from current levels. Data on annual investment cost in renovation are set at \$1,500/ha and derived from IFC (2013) and IDB (2014); Base line data on operating costs and returns are

derived from CSC (2013) and, as a simplifying assumption, not changing over time.

¹⁶ See Rahn et al. (2013) on synergies between adaptation, mitigation and livelihood benefits in coffee production.

APPENDICES

APPENDIX 1.

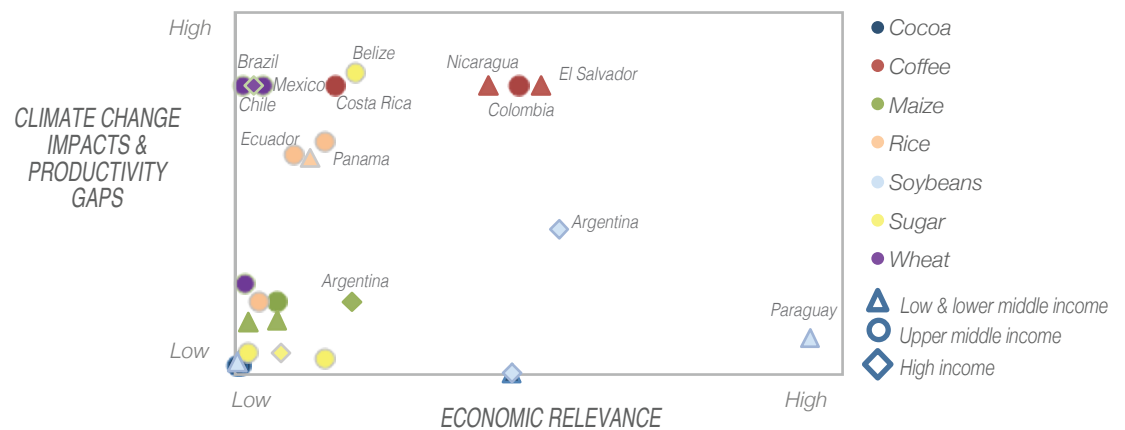
Methodology for prioritizing countries and crops

In parallel to the corporate outreach led by ASCAF proponents, The Lab Secretariat has screened for possible priority crops and countries by identifying the combination of countries and crops relatively more vulnerable to climate change. We scored climate vulnerability considering a country's relative economic dependence on specific crops, the potential for crop yield improvements (productivity gap), and projected climate change-induced impacts on yields.¹⁷

To score the economic relevance and productivity gaps of each country-crop combination we used FAO agricultural and economic statistics (FAO, 2015).

- For economic relevance we used FAO's "value of agricultural production" and crop contribution to a given country's total export (by value and averaged over the latest five data years);
- For productivity gap, we computed it as the difference between a country-specific crop yield and the regional average yield for each crop (using the latest five year average excluding outliers). A more robust analysis should consider the difference between actual and potential yields achievable in a given agro-ecological area.
- For evaluating the likely severity of impacts of climate change on crop yields, we relied heavily on the meta-analysis of crop models featured in the latest IPCC reports (Magrin et al., 2014; Porter et al., 2014). Where possible, we supplemented IPCC's findings with secondary literature review.¹⁸ We ranked physical crop vulnerability in a given country from low to high.¹⁹

Figure 5. Climate vulnerability screening



Note: the graph also shows countries' income level as a proxy for adaptive capacity i.e. as an indication of the resources possibly available for invest (see e.g. Yohe and Tol, 2002).

Acknowledging the subjectivity of the scoring system, we applied variable weightings to each dimension to reflect their level of relevance, as follows: export value (15%), value of agricultural production (10%), productivity gap (25%), and climate change impacts (50%).

In Figure 5 below the distribution of climate vulnerability is shown for the top four most vulnerable Latin American and Caribbean countries by crop. In the upper right quadrant are the country-crop combinations most vulnerable according to our scoring, while the lower left features the least vulnerable.

APPENDIX 2. Case studies

Selection

Taking into account the interest of corporations, ASCAF's proponents selected coffee and sugarcane for more in-depth analysis. We explored the potential technical and financial gaps that an ASCAF pilot could fill in El Salvador's coffee and Belize's sugarcane value chains. We chose these countries and crops for their prominence in our screening process detailed in Appendix 1. More specifically, for the economic and social relevance of coffee and sugarcane for these countries,²⁰ respectively, and because of the negative climate impacts affecting these value chains could be minimized through better farm management and investment,²¹ which ASCAF is well-suited to fund.

¹⁷ Carroll et al. (2012) use similar methodology and data to screen for country-crop combinations for potential small farmer finance schemes (see Annex II of the report).

¹⁸ Our review of crop yields under varying climate change scenarios carries forward any biases or omissions the IPCC authors may have had in their meta-analysis. Secondary literature reviewed includes e.g. Baca et al. (2014) and Ramírez et al. (2013).

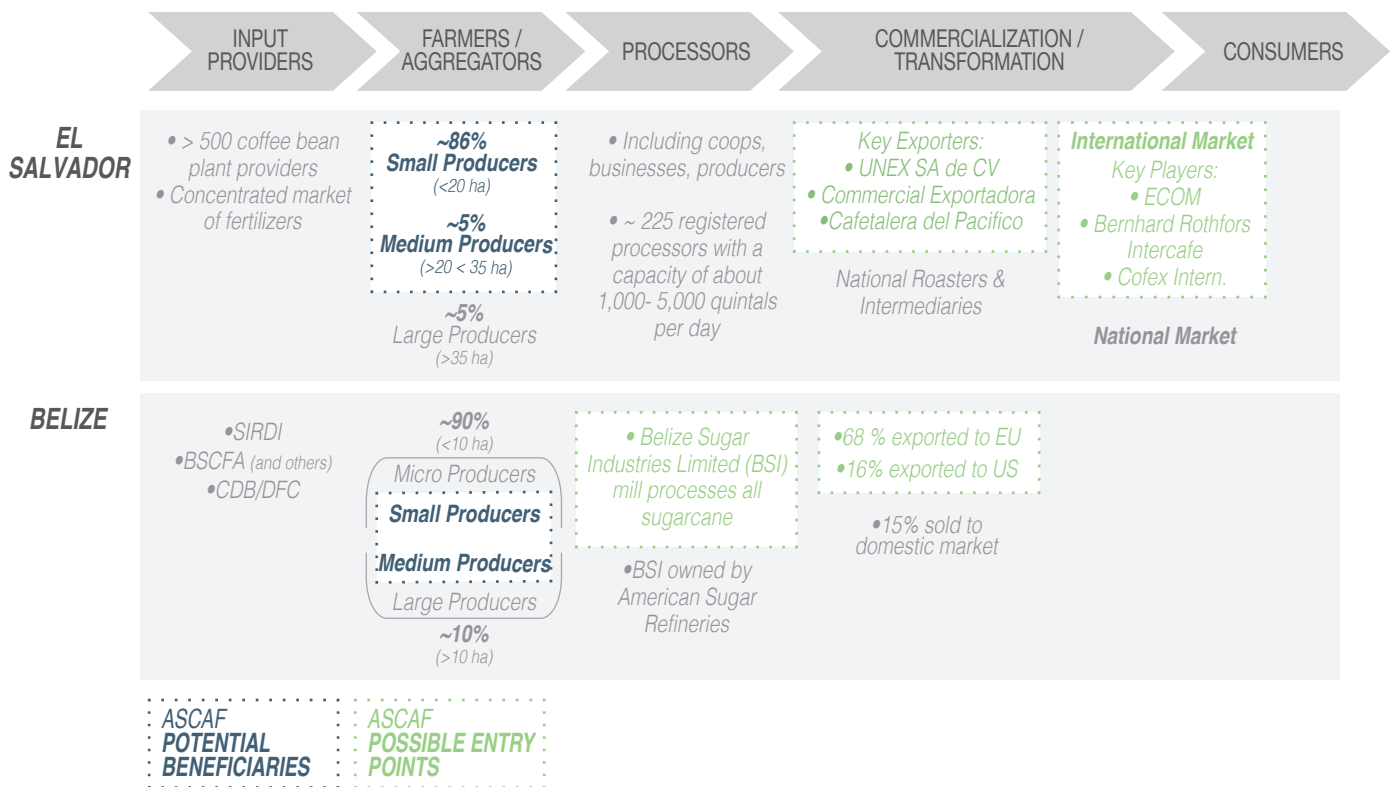
¹⁹ We used the following scale: high: agreement in the available literature that short-term effects are negative; medium/uncertain: mixed and contradictory predictions across timescales; medium: agreement that yield will be impacted in the medium term, but in the near term, some positive yields; low/no information: predicted positive yields from climate change, but not a lot of research to cite; low: crop models predict positive impacts. It is worth noting that our assessment is influenced by the inherent uncertainties of existing

climate and crop models, and our lack of detailed information per country.

²⁰ In El Salvador coffee is economically, socially and environmentally relevant, contributing 31% to the country's export (see FAOSTAT, 2015, CSC, 2013 and MAG, 2012). Sugarcane production represents 60% of Belize's export, involving more than 6,000 farmers. In the Northern district, 85% of the population is dependent on the sugar industry (EU, 2012).

²¹ In El Salvador productivity has fallen 62% from 1992/93 to 2009/2010 (MAG, 2012). Coffee plants are on average, 36 years old, when coffee plant life is typically between 20-30 years.

Figure 6. The structures of two exemplary supply chains, coffee in El Salvador and sugarcane in Belize.



Sources: CSC (2013); MAG (2012); EU (2012), industry news articles; interviews with experts.

Context-specific vulnerabilities and current technical gaps

Long-term mismanagement, poor modernization at farms, and poor processing and transport infrastructure currently challenges the sustainability of the coffee and sugarcane sectors in El Salvador and Belize (see BCFA, 2011; MAG, 2012; EU, 2010).²² Technical assistance to farmers is currently lacking or not adequate, thereby affecting farmers' production capabilities and the agronomic conditions of plants (see MAG, 2012).

Projected climatic changes further threaten these sectors. In El Salvador, 40% of the cropland will become unsuitable for coffee production (the highest within the Mesoamerican region) due to climate change (Baca et al., 2014). In Belize, sugarcane production is at risk from extreme events, flooding, droughts, and heat waves, or a prolonged dry season due to climate change (Santos and Garcia, 2008; BEST, 2009; FAO, no date).²³

Supply chain structure and partnership opportunities for ASCAF

The supply chain of coffee in El Salvador is made up of many actors, has limited vertical integration, and is dominated

by global traders.²⁴ Sugarcane production in Belize is less fragmented as all sugarcane is sold to the only processing plant currently operating in the country (though there is some discussion of building a second sugar mill).²⁵ (See Figure 6 for a visual representation of supply chains).

The majority of coffee and sugarcane farmers in these countries are smallholders. In El Salvador, 86% of the about 19,500 growers has 7 hectares or less (CSC, 2013). In Belize, 90% of the about 6,000 growers' farms are of less than 10 hectares and 35% are around 2 hectares (EU, 2012).

In El Salvador, potential ASCAF corporate partners could be exporters or international traders such as Unex or Bernhard Rothfos, but also international companies such as a Mondelez, Nestlé or Starbucks who buy from these companies and have sustainability targets and responsibility commitments. In Belize ASCAF could partner with the only processor (sugar mill) currently operating in the country, owned by American Sugar Refineries (ASR) group, or with international corporations interested in sourcing climate resilient raw sugar.

22 In fact, transportation makes up to 62% of production costs in Belize's "sugar belt" (EU 2012).

23 Depending on changes in rainfall patterns, sugarcane yields could decrease by 11.9% by 2028 and 17.4% by 2050. An increase in temperature shortens the growth periods of the crops, and therefore decreases their yield (Ramírez et al., 2013; CCCC, 2009).

24 Large producers (with about 70 hectares or more), which represent about 2% of the total, are more vertically integrated as involved from production to commercialization (PROCAFE, 2015).

25 Belize Sugar Industries Limited (BSI) negotiates prices and quantities directly with growers' associations on behalf of smallholder farmers. The most established and with highest membership association is the Belize Sugarcane Farmer Association (BSFA).

Access to credit for small- to medium-sized producers

Small farmer access to credit is often constrained in Latin America and the Caribbean for systematic reasons (see Grace et al. 2014).

In El Salvador, credit to coffee growers as a share of overall credit to the agricultural sector decreased from 40% in 2006 to 25% in 2011 (MAG, 2012). In general, small and medium-sized Salvadorian coffee producers typically get short-term working capital financing from processing companies and exporters in exchange of coffee supplies (PROCAFE, 2015). Baca et al. (2012) highlights that long-term finance at affordable interest rates is a constraint to the implementation of climate change adaptation strategies in the country.

Formal access to credit is technically available in El Salvador²⁶ and Belize,²⁷ but in reality is not accessible because of numerous lending requirements that small farmers cannot meet (Centralamericadata.com, 2014), or because financing is offered only at unfavorable conditions (Kavas, 2015; Ruiz and McLachlan, 2015). In addition, previous lending schemes in Belize and the international coffee price crisis in El Salvador have left farmers with high levels of debt, posing a risk to lenders and further credit access issues to farmers. Longer-term loans through ASCAF (coupled with farmer-debt consolidation and other industry-wide improvements) might help boost productivity and resilience at the farm level in both country-crop contexts.

26 For instance, the Development Bank of El Salvador (BANDESAL) has a dedicated product for supporting investments in coffee farms, with terms up to 6 years (Bandesal, 2012). See also MAG (2012). WFP (2010) notes that the country's Agricultural Development Bank provides credit to farmers, but the terms are not sufficient to bridge the gap between planting and harvest.

27 Smallholder sugar farmers in Belize have had access to credit through a revolving fund supported by the EU in 2008 and 2010 through its Accompanying Measures for Sugar Protocol countries program. The Development Finance Corporation (owned by the Belizean government) administers loans to farmers for sugarcane replanting (EU, 2012).

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