



Global Innovation Lab
for Climate Finance

Climate Resilience and Adaptation Finance and Technology Transfer Facility (CRAFT)

Instrument Analysis
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The Global Innovation Lab for Climate Finance 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 into climate change mitigation and adaptation in developing countries.

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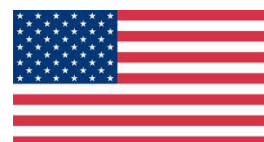
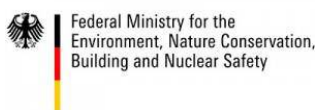
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Climate Resilience and Adaptation Finance and Technology Transfer Facility (CRAFT)

DESCRIPTION —

CRAFT blends commercial and concessional capital into a private equity fund that offers strategic support to, and invests growth capital in, 10-20 companies offering climate resilience products and services.

GOAL —

To expand the availability of products and services for climate adaptation and resilience, in order to reduce the vulnerability of individuals and businesses to climate impacts.

SECTOR —

Climate change adaptation and resilience.

PRIVATE FINANCE TARGET —

Global institutional investors, endowments, family offices, and impact investors.

GEOGRAPHY

Global, with an emphasis on technology transfers in developing countries.

1. CONTEXT

Between 2003 and 2013, disasters triggered by natural hazards caused USD 1.5 trillion in economic damages worldwide, with USD 550 billion of these damages in developing countries. Floods and storms caused 90% of these damages, which are expected to increase in frequency and/or intensity due to climate change.

Different economic sectors have varying exposure to climate change. The agricultural sector absorbs 25% of the losses caused by climate related disasters. For example, in 2010, flooding in Pakistan caused USD 5 billion in agricultural losses and slowed sector growth from 3.5% to 0.2% as well as GDP growth from 2.8% to 1.6% (FAO, 2015). Beyond production losses, climate related disasters can have a significant impact along the food value chain, affecting the cost of agricultural commodities and sectoral growth. In the energy sector in the U.S. alone, the estimated economic cost from extreme weather related power sector service interruptions is between USD 25 and USD 70 billion annually. After Hurricane Sandy, power companies in the affected region allocated USD 1.3 billion to make power distribution infrastructure more resilient to climate change (OECD/IEA, 2015).

As stakeholders in these and other economic sectors face increasing physical risks from climate change, a market opportunity is created to offer services and solutions to help customers both assess and manage these risks and reduce costs. In particular, there is a significant market opportunity to invest financial and intellectual capital to grow and scale companies that already have climate risk analysis capabilities or offer products and solutions to increase climate resilience. Investment is especially needed to bring existing technologies and solutions to new sectors, geographies, and users, particularly in developing countries.

CONCEPT

2. INSTRUMENT MECHANICS

As a growth equity fund, CRAFT will invest in privately owned companies that have proven technologies and solutions for climate resilience and typically have significant revenues, but need extra financing and strategic support to expand into new sectors and geographies.

The Climate Resilience and Adaptation Finance and Technology Transfer Facility (CRAFT) will be the first dedicated commercial investment vehicle to focus on expanding the availability of technologies and solutions for climate adaptation and resilience¹. To do so, CRAFT will establish a USD 500 million global private equity fund (“the Fund”) that invests growth capital and strategic support into companies that already offer climate resilience products and services. A complementary USD 20 million Technical Assistance Facility (“TA Facility”) will enable the provision of technical support to companies in developing countries through grants.

¹ In practice adaptation and resilience are used interchangeably. This report primarily uses the term “resilience” which is more commonly understood by private investors.

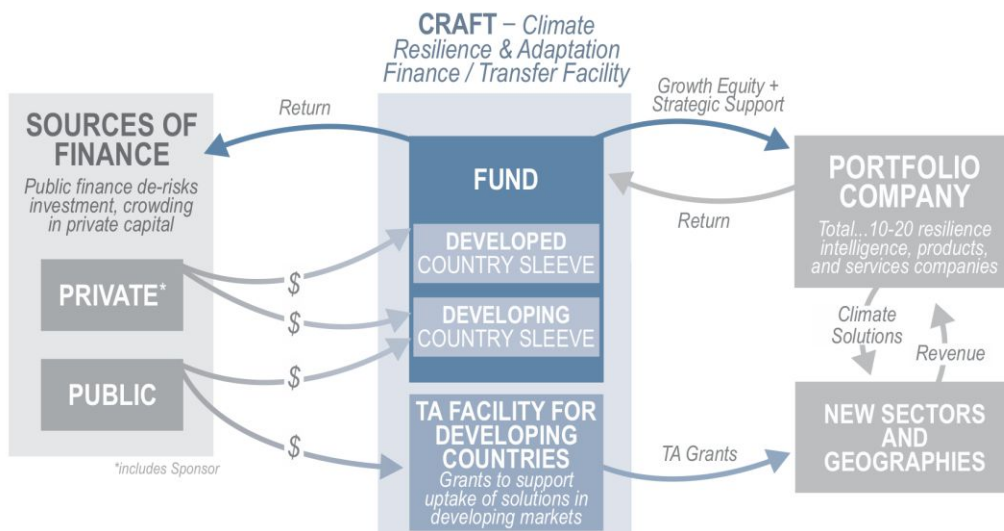
2.1 MAIN COMPONENTS

As can be seen in Figure 1, the Fund will be structured as a single global fund with two legally and financially separate sleeves for developed countries and developing countries. Each investment sleeve is targeted to have USD 250 million of capital, for a total fund size of USD 500 million. The Fund is targeting USD 250 million of private, commercial equity investment for the developed country sleeve. For the developing country sleeve, the Fund is targeting USD 150 million of commercial investment and USD 100 million of concessional investment (see Section 2.1.2 for further discussion of the two sleeves)². Concessional equity investors will receive repayment and returns after commercial investors³.

The Fund will invest this capital in a portfolio of 10-20 companies in the climate adaptation and resilience sector, divided roughly equally between the two sleeves of capital. The investee companies targeted would typically offer proven resilience technologies and business models and have demonstrated market demand and revenue but require additional financing in the form of growth equity to fund expansion.

For investee companies, the Fund will provide financing as well as a broad array of strategic support to help them enter and expand into new sectors and geographical markets. The Fund will help target investees to: expand the sectors into which they market their products; improve, if needed, their products or services to meet a broader set of market needs; expand their reach within and into developing countries; connect with development finance institutions, governments, and corporate customers demanding climate resilience solutions and projects; and provide strategic business development support through Board-level engagement. The Fund will also help investee companies to access grant funding via the Technical Assistance (TA) Facility to help facilitate developing country expansion (see Section 2.1.3 below).

Figure 1: Summary of CRAFT's structure



² Concessional investment is investment at better than commercial terms. Commercial investment can be provided both by private investors as well as public and impact investors, as long as the financing is provided on the same terms.

³ Similar blended finance structures have been deployed for other first-time funds, particularly in the clean energy space, e.g., the EIB's Global Energy Efficiency and Renewable Energy Fund (<http://geeref.com>). Annex 3 provides further detail and analysis of different potential blended finance structures

The Fund could take a wide range of stakes in investee companies but expects that most investments will be minority stakes (i.e., less than 50%). The Fund will target 20-25% gross returns.⁴ It will have a 10 year lifetime, with a 5 year investment period and 3-5 year holding period before investment exit, and a possible 2 year extension period. The Fund will charge an annual management fee of 2.5% on committed capital for the first 5 years and on net invested capital thereafter⁵. Both sleeves will incorporate a 6% preferred return threshold, until which only commercial limited partners receive returns. Above this threshold, returns will be distributed at a ratio of 80% to limited partners and 20% to the Sponsor, in line with other private equity funds. The developing country sleeve will additionally incorporate a concessional equity layer (see Section 2.1.2 for further details).

The Fund will be managed by a Sponsor entity established in 2016, the Lightsmith Group, which will also invest capital into the Fund in line with best market practices. Lightsmith partners have a track record in private growth capital and expertise in both developed and developing country investments. Finally, the Fund will measure and track its resilience impact at both the fund level and individual investment level (see Section 5.2).

2.1.1 CRAFT targets both “resilience intelligence” and “resilience products & services” companies

The Fund targets companies that provide resilience intelligence, products and services that help customers assess and manage climate risks and impacts.

Resilience intelligence companies provide data analytics, modeling, forecasting, engineering, consulting, or other actionable, asset-specific information that helps assess risks and impacts exacerbated by climate change so customers can manage those risks and impacts and become more resilient. Resilience intelligence includes, among others, climate and catastrophe risk modeling, weather modeling and forecasting, precision agriculture data analytics, climate resilience consulting, water efficiency analytics, supply chain management software, infrastructure risk analysis, and parametric insurance incorporating climate change impacts.

Resilience products & services companies help address and manage the risks and impacts exacerbated by climate change. This category includes, among others, flood abatement equipment and services; precision agriculture sensors and equipment; some irrigation technologies; drought resistant seeds and crops; micro-grid and energy storage systems for companies, communities and critical infrastructure like hospitals; business continuity services; and insurance services. The Fund will strategically use its investments in intelligence to better inform the targeting and expansion of products & services companies.

The Fund’s proponents have identified an initial pipeline of over 450 resilience intelligence, product, and service companies in both developed and developing countries. These include, for example, catastrophe risk modeling companies based in India and Mexico; cold chain logistics services based in South Africa; and weather and supply chain analytics companies based in the U.S. seeking to expand into emerging markets. The Fund’s proponents expect that their database of companies will ultimately number in the thousands and that the Fund would review at least 100-200 companies per transaction that is completed.

As most companies do not self-identify as “climate adaptation” or “climate resilience” companies, the Fund has established minimum criteria for identifying eligible companies (see Annex 1 for full list of investment criteria). The Fund will focus on companies for which either the majority of revenues (last 12 months or projected next 12 months) come from climate

⁴ Please see Annex 4 for detailed discussion of target returns and comparisons to industry benchmarks.

⁵ Net invested capital, and thus management fees, decline as investments are exited.

adaptation or resilience solutions; or the Fund’s investment and technical support would be used to significantly increase the proportion of revenues from climate adaptation or resilience solutions.

2.1.2 Differences between the developed and developing country sleeves

Investors can select to invest in either the developing or developed country sleeve, or can invest in the Fund overall. The separation of the two sleeves will provide flexibility to investors and allow for differentiation of approaches to risk reduction – for example, both concessional and non-concessional public finance can be deployed in the developing country sleeve to mitigate the higher risks typically associated with investing in developing countries.

The developing country sleeve will invest both in companies based in developing countries, as well as in companies based in developed countries where the investments will be used for expansion into developing countries (see Table 1). The Fund will use governance mechanisms to direct and monitor the expanded application of technologies, products, and services in developing countries as envisioned. These governance mechanisms may include management side-letters agreeing on the use of proceeds on a reasonable commercial efforts basis; governance and oversight via a Fund-held Board seat; investor information rights and company reporting requirements; subsidiary or joint venture mechanisms; or as last resort, divestment or exit from the investment.

Table 1: Developed vs Developing Country Sleeves

	Developing Country Sleeve (Higher Risk)	Developed Country Sleeve (Lower Risk)
Source of funds	USD 150m of private and non-concessional public finance USD 100m of concessional public finance	USD 250m of private finance
Use of funds	Companies located in developing countries, and companies located in developed countries that will expand their services to developing countries.	Companies in developed countries that are not planning expansion to developing countries.

Based on their review of potential investments, the Fund’s proponents have identified synergies that support the objective of raising a single global fund with two sleeves, rather than two entirely separate funds. First, while a number of resilience-relevant companies are based in developed countries, international expansion is often part of the core growth strategy for these companies and many in the investment pipeline have the potential to expand, or expand further, into developing countries. Second, there are also many solutions in developing countries, already commercialized at appropriate price points, which can and should be applied in other developing countries or in developed countries as well.

2.1.3 Technical Assistance Facility to accompany developing country sleeve

The TA Facility will only be available to companies in the Fund’s developing country sleeve and will have a separate governance structure from the Fund. It will provide grants, funded by public investors, to support the preparation and implementation of commercially-driven projects or business operations that leverage further investment. The structure of the TA Facility is based on a review of successful initiatives, including the U.S. Government’s Africa Clean Energy Facility that was subsequently replicated in India.

The TA Facility will provide grants for three possible categories of technical assistance:

- **Market studies** –The TA Facility can support market studies to identify the opportunity and need for specific climate resilience solutions in new countries, applications and/or industries, and therefore inform the growth strategy of the Fund’s investee companies. This category could include, among others: Market studies to assess potential market size, identify key market segments and customers, evaluate customer needs and requirements, and identify distribution and service channels and key partners; and Technical and techno-economic studies supporting the business case for adoption of technology in a new country or application.
- **Preparation and implementation support activities** – The TA Facility can provide assistance in scoping, evaluating, designing, and developing specific projects to increase the likelihood of successful commercial implementation and therefore the transfer of technology and knowledge into a developing country. This could include site assessments, project design and engineering studies, resource studies, or environmental impact analysis.
- **Knowledge and capacity building** – The TA Facility can help to build capacity in the public or private sector of a developing country to use specific climate resilience technologies, products, or services. For example, this could include trainings on incorporating climate risk into decision making, or trainings on how to use climate products and services. This category also includes the development of case studies showing the results of previous implementations of the technology, product, or service in relevant countries and applications.

2.1.4 Rationale for public finance

Concessional and non-concessional public investment in the Fund will act as anchor capital that can “crowd in” commercial private capital. The good reputation of a well-known public investor can provide a ‘certification effect’ that can persuade other investors to join the fund, particularly for a new fund strategy with first time fund managers. Public investors also magnify the demonstration effect of a fund because they ensure that results and learning will be disseminated publicly, enabling the acceleration of the speed at which the new market develops (Escalante et al., 2017 forthcoming).

Concessional capital will enable the Fund to invest in companies in regions and sectors that would otherwise not have access to growth finance. The Fund may be able to deliver a typical growth equity risk-return profile both with and without concessional capital, yet without concessional capital, the fund is likely to focus on larger, relatively more stable developing economies (such as China, India, Brazil, and South Africa). Concessional capital allows the Fund to adjust the investment mix to include a wider range of geographies.

2.2 INVESTORS TARGETED AND STRATEGY TO PHASE OUT PUBLIC FINANCE

2.2.1 Investors targeted

As stated above, each investment sleeve is targeted to have USD 250 million of capital, for a total fund size of USD 500 million. Both the developed and developing country sleeves will target private investors, including institutional investors such as pension funds, insurance companies, endowments, foundations, and family offices. The developing country sleeve will also target public investors, including multilateral and bilateral development banks and government official development assistance (ODA) agencies for both non-concessional equity and concessional equity and grants. The TA Facility will target grant funding from public investors and foundations.

2.2.2 Strategy to phase out public finance

The Fund aims to catalyze a new market by creating a demonstration effect that will eventually reduce the need for public finance. The Fund will aim to establish a track record of the financial performance of adaptation and resilience investments for the first time. The financial

performance of the fund as well as the dissemination of data and key findings from investments will be crucial to raise awareness of the market opportunity and to crowd other private equity funds into the sector until investments become mainstream and are picked up by more conservative investors⁶.

3. INNOVATION

CRAFT will be the first dedicated commercial investment vehicle to focus on expanding the availability of technologies and solutions for climate adaptation and resilience.

3.1 CRAFT AIMS TO ADDRESS BARRIERS TO THE TAKE UP AND SCALING OF EXISTING SOLUTIONS

Investment into climate adaptation and resilience requires an understanding of climate vulnerability, as well as the availability of effective solutions to manage exposure and build resilience (GARI, 2016). In fact, technologies addressing both problems – understanding of risks, and the solutions to manage them – do exist, but are not being applied to the adaptation challenge at the scale needed due to the following barriers (UNEP, 2016):

- **Low awareness about climate resilience as a sector and investment opportunity.** Many companies, although they offer products and services that address or have the potential to address the impact of climate change, do not directly market these products and services as such (CPI and OECD, 2015). As a UN Global Compact report noted, “There is not yet widespread understanding even among Caring for Climate signatories⁷ of what climate adaptation is and what it means for them or for the markets they serve” (UNGC et al., 2011). In a study focused on organizations operating in the United States’ power sector, Acclimatise and NCEI (2016) found that while climate and weather data had significant value to the private companies consulted, the market value of such data products and services is not well understood.
- **Lack of actionable, asset-specific information about climate risks and impacts.** This leads to the inability to build a business case for climate resilience measures and investments (PwC, 2010; Climate-KIC and LGI Consulting, 2016). Members of the Global Adaptation and Resilience Investment Working Group (“GARI”) identified building an understanding of physical climate risk as highly important and identified a number of existing approaches and tools, but also highlighted gaps in the transparency and practicality for decision-making of these approaches (GARI, 2016). In addition, matching commercial investment time frames with the uncertain time-frames for the effects of climate change is noted as a particular challenge to investing in adaptation (2 Degree Investing Initiative, 2015).
- **Lack of operating and financing capacity for companies to expand resilience-related business lines, including into adjacent sectors and geographies.** UNEP’s (2014) Adaptation Gap report notes both a critical need to accelerate uptake of resilience technologies within developing countries in which they are already present, as well as a need for international technology transfer, particularly of new crop varieties, water efficiency technologies, and monitoring systems. Yet even in instances where companies have identified climate resilience as an opportunity for expansion, businesses often lack the operating and/or financing capacity to capitalize on such opportunities for growth (PwC,

⁶ This theory of change is also the rationale for the UK’s Climate Public Private Partnership Programme (CP3) and can be observed in the global renewables market.

⁷ A group of 453 organizations endorsing Caring for Climate, the UN’s initiative for business leadership on climate change.

2010). A gap in equity finance for new as well as more established small and medium enterprises (SMEs) in developing countries also impedes growth (Divakaran et al, 2014).

3.2 CRAFT ADDS VALUE BY LEVERAGING CLIMATE INTELLIGENCE AND INCREASING UPTAKE IN NEW MARKETS AND GEOGRAPHIES

3.2.1 Comparative assessment of CRAFT with similar funds

The Lab's analytical team mapped a total of 40 energy and clean technology funds in order to assess CRAFT's innovation. Twenty-four of these are growth equity funds, of which six have a Technical Assistance component. The other 16 are private equity funds that have a TA component.

There is no other private equity vehicle focusing exclusively on adaptation and resilience investments. In addition, no other vehicle identifies climate resilience intelligence specifically as an investment opportunity. The 24 growth equity funds that the Lab mapped invest in energy, energy efficiency, water, waste, agriculture, food, clean-tech, and/or adaptation and resilience projects and companies, but none has an exclusive focus on adaptation and resilience or highlights resilience intelligence for investment.

Investing in both resilience intelligence and resilience products and services companies allows the Fund to take advantage of synergies among the two sets of companies. For example, an investment into a resilience intelligence company could provide the analytical basis for a decision to invest in a resilience products and services company⁸. In addition, services from the Fund's resilience intelligence companies could be sold to the Fund's resilience products and services companies and customers in order to help them increase sales.

The intentional inclusion of technology transfer from developed to developing countries into the fund will help bring technical skills, particularly in resilience intelligence, to developing countries. For example, many developing countries do not currently have catastrophe risk models available for their country that decision-makers can employ to understand and act on climate risks (CPI, 2016). Equity investments in small and medium enterprises in developed countries can be used to adapt existing risk management and resilience technologies to developing market needs through joint ventures and other transfer mechanisms.

3.3 CHALLENGES TO INSTRUMENT SUCCESS

CRAFT will need to demonstrate that an investment strategy centered on climate resilience, a new sector, can return investment on par with growth equity funds in other sectors. Investee companies, many of which are not explicitly focused on adaptation and resilience, will need to be convinced of the new investment strategy. Investors will need to be convinced of both the first time fund strategy, as well as first time fund managers. In addition to deploying a highly experienced team, local and/or regional partnerships with other organizations can help with origination and manage relationships, and the TA Facility can support the development of clear business cases rooted in well-researched market studies.

⁸ The proponents of CRAFT cite similar strategies in other private equity funds, for example in homeland security, mobile networks, and wind energy markets.

PILOT AND BEYOND

4. IMPLEMENTATION PATHWAY AND REPLICATION

CRAFT's developing country sleeve is best suited for middle income countries already experiencing, and expecting further, economic losses from climate change. As experience and demand builds, investee companies can also begin to expand into lower income countries.

4.1 TARGET COUNTRIES AND SECTORS

The Lab's analysis demonstrates that Chile, China, Colombia, Mexico, the Philippines, Thailand, and Vietnam are the most attractive geographies for the Fund's developing country sleeve to target (see Annex 2 for analysis details). These countries have a record of economic losses from climate change while also having relatively lower-risk investment environments. Further, Bangladesh, India, Indonesia, Kenya, Mozambique, and Morocco are attractive countries to target based on their economies and need for adaptation, but have riskier investment environments than the first group of countries. The final list of countries for the Fund's investment will depend on the quality of individual investment opportunities, as well as any requirements of investors into the fund. Finally, to further refine the selection of the target countries, future analyses should also consider projections of future economic losses.

The most attractive sectors for the Fund to focus on are water, agriculture, health, and disaster risk management. These sectors are disproportionately represented in the target countries' Nationally Determined Contributions (NDCs) and are the four sectors that are mentioned most by countries that have included adaptation goals in their NDCs (World Bank Group, 2016). As NDCs guide policy and are based on needs, they should reflect potential demand for adaptation products and services in these sectors.

4.2 IMPLEMENTATION TIMELINE

The Fund's primary investment team is in place, with regional partnerships being developed to assist with investment pipeline origination and due diligence. These include partnerships with a number of fund managers in the targeted countries with which the Fund's Proponents have existing relationships as well as regional and global development banks operating in the targeted countries⁹.

For the Fund to move forward, the developing country sleeve in particular will benefit from the identification of one or more "anchor" investors. An anchor investor is likely to be a development finance institution that will invest non-concessional capital, enhancing the credibility of the Fund to private investors. The Fund will seek to enter into the due diligence process of such an investor in the fall of 2017, after which private and further public investment could be more easily secured (in 2018).

In parallel, the CRAFT Proponents will further the design of, and seek donors to, the TA Facility. The final governance structure of the TA Facility will be determined once donors have been identified. See Figure 2 for further information on the implementation timeline.

⁹ <http://www.v-20.org/>

Figure 2: Implementation Timeline

MILESTONES	2017	2018	2019	2020	ACTIVITIES
Raise capital and set-up fund					<ul style="list-style-type: none"> • Legal & financial set-up • Enter due diligence process of one or more anchor investors • Expand investment pipeline, including through establishing partnerships with organizations in target geographies
TA Facility Development					<ul style="list-style-type: none"> • Further the design of the TA Facility and identify donors
Fund close					<ul style="list-style-type: none"> • Donor, DFI, and private sector finance raised for USD 500 million global fund (split between developed and developing countries) • Launch TA Facility
Establish Investment Track Record					<ul style="list-style-type: none"> • Make first investments • Begin reporting on impact indicators
Replication & Scale-Up					<ul style="list-style-type: none"> • Start planning for a possible follow on fund (e.g., "CRAFT 2"), which would incorporate a lower ratio of concessional investment

4.3 IMPLEMENTATION CHALLENGES

The primary implementation challenges for the Fund will be:

- **The Fund's global nature** – Most funders, both public and private, typically differentiate between developed and developing countries, or even specific regions within these, in their investments. In particular most development-oriented institutions will require that their funds be invested solely in developing countries, or particular regions within developing countries. Some, but not all, will consider technology transfer investments. Once investors are identified, the Fund will need to develop governance mechanisms that satisfy their geographic requirements.
- **The Fund's large size** – The Fund is larger than the average size of funds run by first time managers¹⁰. It will therefore need to convince investors of the need for the large fund size in order to make meaningful growth capital investments with enough diversification across the portfolio. In addition, pipeline origination across multiple geographies and sectors will require a relatively large team and/or strong partnerships with locally-based organizations. Some funds have addressed this through joint ventures with a highly networked organization¹¹.

¹⁰ EMPEA (2015)

¹¹ For example, the Asia Climate Partners private equity firm is a joint venture of a private firm and the Asian Development Bank.

5. IMPACT

For every one dollar of concessional financing and technical assistance grants, CRAFT will leverage 3.3 dollars of direct commercial investment to enhance the resilience of individuals, businesses, and critical infrastructure, while also catalyzing a broader global resilience market. In doing so, CRAFT will also contribute to rapidly evolving resilience standards and metrics.

5.1 FINANCIAL IMPACT

5.1.1 Modeling results – with and without concessional capital

Based on the planned structure outlined in Section 2 and financial modeling and assumptions detailed in Annex 4¹², without concessional capital the Fund will return an average expected net internal rate of return (IRR) to the Fund’s commercial investors of 17.1% (15.7% and 18.2% for the developed country and developing country sleeves respectively)¹³. The provision of concessional equity with a lower level of “seniority” on returns, so that concessional investors receive returns on their capital only after the preferred return¹⁴ is met for commercial investors, reduces their risk of failing to meet minimum IRR expectations by an average of 5-35%. A more concessional structure, with no return to public investors other than capital reimbursement, would lower the risk by 35-50% on average. While the first scenario would enable both risk reduction for commercial investors and positive average expected returns for public investors, the second scenario would significantly enhance average expected returns for private investors in the high-risk sleeve. The final structure will depend on the aims and requirements of concessional capital providers and risk tolerance of commercial investors.

5.2 ENVIRONMENTAL AND SOCIAL IMPACT

CRAFT’s Fund and TA Facility seek to have environmental and social impact by (1) reducing the vulnerability of individuals and businesses to disruptions and losses from climate impacts, (2) creating new opportunities for climate resilient development and employment, and (3) demonstrating that investments in resilience and adaptation can deliver social, environmental and financial returns, thereby catalyzing a broader market for resilience products and services. CRAFT’s direct outputs, outcomes, and impacts to meet these objectives are detailed in the Theory of Change in Annex 5¹⁵.

¹² Instrument impact analysis relies heavily on CPI Finance Modeling which consolidates more than 5 years of experience on project-level, ex-ante, and ex-post analysis of climate-related projects, fund-instruments and related portfolios, as well as financial instruments and policies supporting them. CPI Finance Modelling applies to a wide range of low-carbon technologies and climate-resilient projects, allowing for in-depth analysis of how external technology and country-specific conditions and risks, as well as specific design aspects of policy and financial instruments, can impact on target metrics for private and public actors.

¹³ These figures represent higher than the average upper quartiles observed for private equity and venture capital investment in the years 2010-2015, which were as follows, according to Cambridge Associates research: 15.99% for emerging markets private equity & venture capital, 16.86% for US private equity, 13.08% for other developed markets private equity & venture capital, 16.31% for US buyout & growth equity.

¹⁴ The Lab initially modeled 4% as the preferred return. However, Proponents determined a 6% preferred return was more in line with current practice of private equity funds, and this threshold is now incorporated in the instrument mechanics. Future modeling should incorporate the 6% return.

¹⁵ In this section we use “CRAFT” to discuss the environmental and social impact because the impact is an outcome of both the Fund and TA Facility.

As the first commercial fund for climate adaptation and resilience, CRAFT’s role will be significant in advancing impact indicators for individual investments, as well as knowledge and acceleration of private adaptation finance more generally. Tracking climate adaptation and resilience impact is complicated by the broad array of sectors and geographies to which adaptation applies, as well as a lack of commonly agreed impact indicators given the nascence of adaptation as an investment opportunity. The impact potential of each investment is likely to differ depending on a number of factors, including the specific vulnerability addressed, sector of investment, investment strategy, and baseline characteristics of the target market(s) for expansion, among others. Therefore, through practitioners’ initiatives such as the Global Adaptation and Resilience Investment Working Group, CRAFT will seek to stay consistent with best practices in the tracking of adaptation impact as it evolves. CRAFT will also contribute to the development of common resilience standards and metrics through its own experience.

At the fund level, CRAFT will measure its impact on climate change adaptation finance mobilized, consistent with the Multilateral Development Bank (MDB) Adaptation Finance Tracking Methodology and Guidance¹⁶. At the individual investment level, the Fund will track three to five Key Performance Indicators for each of its investments, which will be established once the investment is identified and its strategy for impact is defined. These indicators will include data underlying impact, such as the increase in adoption of the solutions offered by these companies. CRAFT will also undertake “look back” studies that analyze how customers’ vulnerability to climate impacts was reduced.

The Lab has considered several case studies of the types of impacts the Fund’s investments could have (see Annex 6). For example, in many regions, food scarcity, food import dependence, and declining agricultural productivity from temperature rises, droughts, and extreme weather events are a significant climate risk. In South Africa, the total cost of food waste was approximately USD 4.69 billion, or 2.1% of the country’s GDP, in 2012, with estimates that 70% of these costs were related to issues directly linked to the absence of cold chains (i.e. post-harvest handling and storage, processing, packaging, and distribution) (Oelofse, 2013; Winkworth-Smith et al., 2015). Therefore, investment to expand the availability and use of cold chains in South Africa represents a significant opportunity for CRAFT impact. Such an investment could help decrease food waste, increase food security, and help stabilize the volatility of incomes for agricultural and supply chain participants in South Africa.

5.3 FINANCE MOBILIZATION AND REPLICATION POTENTIAL

A ratio of 3.3:1 of commercial capital leveraged by concessional capital could be achieved if USD 100 million of concessional equity capital and USD 20 million of TA Facility grant funding were matched by USD 400 million of commercial capital in the CRAFT Fund. The commercial capital could come from both fully private investors as well as development finance institutions (e.g., the International Finance Corporation) investing on a commercial basis. Further illustrative analysis of a sample investment illustrates that the additional capital leveraged by the Fund including co-investments, follow-on investments, and company-level debt could increase the overall leverage ratio of the Fund to more than 6:1.

¹⁶ For an investment to be considered by the MDBs, it must meet the following criteria: (1) set out the climate vulnerability context of the investment, (2) make an explicit statement of intent to address climate vulnerability as part of the investment, and (3) articulate a clear and direct link between the climate vulnerability context and the specific investment activities.

6. KEY TAKEAWAYS

CRAFT is the first private equity vehicle to target exclusively companies offering climate change adaptation and resilience products and solutions. It meets the Lab's key criteria for endorsement in the following ways:

- **Innovation:** CRAFT leverages resilience intelligence investments to inform resilience products and services investments. It also facilitates transfer of technologies from developed to developing countries.
- **Financial sustainability:** It follows the progression of climate mitigation funds by demonstrating the business case of adaptation and resilience investments in emerging markets, allowing follow-on funds to reduce concessionality.
- **Catalytic impact:** The fund will leverage USD 400 million of commercial investment with USD 120 million of concessional finance.
- **Actionability:** Immediately actionable once investment is raised, with a highly experienced team in place, an initial pipeline of investments identified, and regional partnerships under development.

7. REFERENCES

2 Degree Investing Initiative. 2015. *The Long-term signal valley of the death – exploring the tragedy of the horizon*. Available at: http://2degrees-investing.org/IMG/pdf/the_tragedy_of_the_time_horizons_-_leaflet_-_light.pdf

Acclimatise and NCEI (National Centers for Environmental Information). 2016. *NCEI Climate Products and Services Market Analysis: Power Sector Engagement*. Available at: https://ncics.org/ncics/pdfs/events/energy-sector-resilience/Acclimatise_NCEI_Jan8.pdf

AON. 2016. *Annual Global Climate and Catastrophe Report*. Available at: <http://thoughtleadership.aonbenfield.com/Documents/20170117-ab-if-annual-climate-catastrophe-report.pdf>

Carrier. 2016. *Cold Chain Development for Fruits and Vegetables in India: Kinnow Cold Chain Study*. Available at http://naturalleader.com/wp-content/uploads/2017/01/Kinnow-report_Read.pdf

Climate-KIC and LGI Consulting. 2016. *Market Research for a Climate Services Observatory (MARCO): Analysing the European climate services market to unveil opportunities for growth*. Available at: http://cordis.europa.eu/news/rcn/137056_en.html

CPI. 2016. *Oasis Platform for Catastrophe and Climate Change Risk Assessment and Adaptation*. Climate Policy Initiative. Available at: <https://climatepolicyinitiative.org/wp-content/uploads/2016/12/Oasis-Platform-Instrument-Analysis.pdf>

CPI and OECD. 2015. *Estimating mobilized private finance for adaptation: Exploring data and methods*. Available at: <https://climatepolicyinitiative.org/wp-content/uploads/2015/11/Estimating-mobilized-private-finance-for-adaptation-Exploring-data-and-methods.pdf>

Shanthi, D., McGinnis, P. and Shariff, M. 2014. *Private Equity and Venture Capital in SMEs in Developing Countries – The Role of Technical Assistance*. The World Bank. Available at: <http://documents.worldbank.org/curated/en/336471468155132454/pdf/WPS6827.pdf>

EMPEA (Emerging Markets Private Equity Association). 2015. *Private Investing in the Power Sector in Emerging Markets*. Available at: <http://empea.org/research/empea-data-insights-q4-2016-2-2/>

Escalante, D., Abramskiesh, D., Hallmeyer K. and Brown, J. 2017 forthcoming. *Assessing the Additionality of Climate Investments*. Climate Policy Initiative.

FAO (Food and Agriculture Organization of the United States). 2015. *The impact of disasters on agriculture and food security*. Available at: <http://www.fao.org/3/a-i5128e.pdf>

FAO (Food and Agriculture Organization of the United States). 2017. *World Food Situation*. Available at: <http://www.fao.org/worldfoodsituation/foodpricesindex/en/>

GARI (Global Adaptation and Resilience Investment Working Group). 2016. *Bridging the Adaptation Gap*. Available at: <http://427mt.com/wp-content/uploads/2016/11/GARI-2016-Bridging-the-Adaptation-Gap.pdf>

GEEREF (Global Energy Efficiency and Renewable Energy Fund). 2017. *Bringing Clean Power to Developing Countries*. Available at: <http://geeref.com>

IFC (International Finance Corporation) and EBRD (European Bank for Reconstruction and Development). 2013. *Climate Risk Case Study – Pilot Climate Change Adaptation Market Study*. Available at: <http://www.ebrd.com/downloads/sector/sei/turkey-adaptation-study.pdf>

OECD and the IEA. 2015. *Making the energy sector more resilient to climate change*. International Energy Agency. Available at: https://www.iea.org/publications/freepublications/publication/COP21_Resilience_Brochure.pdf.

Oelofse, S. 2013. *Food waste in South Africa/Africa: Opportunities and Challenges*. Available at: <http://www.gdard.gpg.gov.za/Services1/Opportunities%20and%20challenges%20of%20food%20waste%20in%20SA%20final.pdf>

PwC. 2010. *Business leadership on climate change adaptation – Encouraging engagement and action*. Available at: <http://pwc.blogs.com/files/encouraging-engagement-and-action-full-report-publication.pdf>

United Nations Environmental Programme. 2016. *The Adaptation Finance Gap Report*. Available at: <http://www.unep.org/adaptationgapreport/sites/unep.org.adaptationgapreport/files/documents/agr2016.pdf>

UN Global Compact, UN Environment Programme, Oxfam, and the World Resources Institute. 2011. *Adapting for a Green Economy: Companies, Communities and Climate Change*. Available at: http://pdf.wri.org/adapting_for_a_green_economy.pdf

World Bank. 2015. *Joint Report on Multilateral Development Bank's Climate Finance*. Available at: <http://pubdocs.worldbank.org/en/740431470757468260/MDB-joint-report-climate-finance-2015.pdf>

World Bank. 2016. *The NDC Platform: A Comprehensive Resource on National Climate Targets and Action*. Available at: <http://www.worldbank.org/en/topic/climatechange/brief/the-ndc-platform-a-comprehensive-resource-on-national-climate-targets-and-action>

Winkworth-Smith, C., Foster, J. and Morgan, W. 2015. *The Impact of Reducing Food Loss in the Global Cold Chain*. University of Nottingham. Available at: http://naturalleader.com/wp-content/uploads/2016/04/UTC-Nottingham-Report_3-30_FINAL.pdf