

INTERVENTIONS TO CATALYZE PRIVATE SECTOR ENGAGEMENT

This section describes a number of successful interventions based on case studies and a review of climate change and development literature. The content will be most useful to policymakers who are interested in implementing similar efforts to catalyze private sector investment in their respective countries.

The section outlines six types of interventions:

- Business-relevant climate information and risk analysis
- Technical assistance and training
- Government policies that enable investments in adaptation
- Market and business development
- Partnerships and cooperatives
- Financial instruments

The section is far from providing a blueprint; it offers key ideas, considerations, and examples that will require further elaboration and planning depending on the country’s specific context.

Table 1 provides an overview, linking each of the barriers described in the previous section to a selection of potential interventions. To catalyze MSE adaptation in their own countries or regions, policymakers should choose the interventions that best address the barriers in a given sector. In reality, policy interventions always encounter a complex set of challenges, and effective solutions will usually involve a variety of policy instruments targeting a variety of objectives.

Business-Relevant Climate Information and Risk Analysis

MSEs could benefit from targeted information on climate science and what it means to the business that they focus on, in terms of associated risks and

Table 1 | **Interventions addressing barriers to MSE investment in adaptation**

INTERVENTIONS					
	Business-relevant climate information and risk analysis	Technical assistance and training	Government policies		
			Laws and policies	Public utility pricing	Subsidies and tax relief
Lack of climate knowledge and risk assessment	✓	✓	✓	✓	✓
Weak evaluation and selection of cost-effective adaptation measures	✓	✓			✓
Limited technical capacity to implement adaptation measures		✓			
Limited financial capacity to implement adaptation measures					✓
Policy and regulation that hinder adaptation	✓		✓		
Social dimensions that hinder adaptation	✓	✓	✓	✓	

impacts (as well as opportunities), and analytical tools to help determine what interventions would strengthen their resilience. Governments can also invest in cost-benefit analyses for adaptation based on sectors; this might involve support for analytical work valuing ecosystem services, which are often excluded from traditional cost-benefit analysis.

Since MSEs typically have few resources to invest in researching and understanding specific climate risks to their business, the public sector, with the necessary assistance from donors, NGOs, and international organizations, can facilitate the generation and dissemination of climate change modeling and risk and impact information related specifically to that particular business area.

For short-term horizons and extreme events, MSEs and communities alike would benefit from early warning systems that deliver current information on impending serious weather or natural disasters. This would allow MSEs to prepare as much as possible before a severe event occurs. Similarly, meteorological services could provide similar services to MSEs, alerting them of upcoming weather so they can properly prepare and make well-informed decisions. Much of this information should be developed by the public sector, essentially as a public good, but other services might require public-private partnerships or might be fully private in nature. The information should be in a business-friendly format and actionable.

Table 1 | **Interventions addressing barriers to MSE investment in adaptation (continued)**

INTERVENTIONS						
	Market and business development		Partnerships and cooperatives		Financial instruments	
	Demand-driven products and services	Public spending on infrastructure	Business partnerships and cooperatives	Public-private partnerships	Risk transfer instruments	Risk-compensating instruments
Lack of climate knowledge and risk assessment			✓			
Weak evaluation and selection of cost-effective adaptation measures	✓	✓	✓			
Limited technical capacity to implement adaptation measures			✓	✓		
Limited financial capacity to implement adaptation measures	✓	✓	✓	✓	✓	✓
Policy and regulation that hinder adaptation	✓	✓		✓	✓	✓
Social dimensions that hinder adaptation	✓					

BOX 12 | CAMBODIA: CLIMATE INFORMATION SYSTEMS

An intervention in Cambodia established a community-based early warning system on flooding and drought events. Volunteers received technical and logistical support and were given information on weather events to disseminate across 52 villages. Approximately 11,073 households (representing 55.5 percent of the target households) received timely weather forecasts that enabled them to cope with events such as severe floods. The commune of Bos Leav, Kratié province, which is highly sensitive to extreme weather events, used the early warning system most often. In response to the new information, farmers changed their farming practices, for example, by adjusting planting dates, preparing, and replacing late-mature rice varieties with varieties that can be harvested more frequently throughout the year to better fit with seasonal changes and protect yields from the effects of extreme weather events.²⁷

Risk analyses undertaken to benefit MSEs should be quantified wherever possible to make clear the costs and benefits of investing in different adaptation options (Turpie et al. 2014).

- Governments, development partners, and other groups can disseminate climate change information through educational programs, the media, demonstration projects, skill-development trainings, and by publicizing opportunities for adaptation projects. Even access to the most basic weather information through word-of-mouth, radios, or cellphones can have life-changing impacts on certain communities.
- In Cambodia, small farmers were unaware of impending extreme weather events such as severe floods. The information gap was successfully addressed through a community-based system, whereby volunteers disseminated weather-event information to villages. The new information channel has had direct, positive effects on farming practices (See Box 12).

“Introduction of different crops such as pigeon pea and cassava is good because these are drought tolerant and can survive without fertilizers and yield a good harvest. But people are not used to these crops. There is need to popularize them to deal with hunger.”

—Daniel Maringa, Manager,
Chiredzi Research Station

Technical Assistance and Training

The public sector should support information sharing, research and development, and skill-building through demonstrations and trainings about adaptation options. Capacity building on the use of climate-related information and tools to incorporate risks in planning, budgeting, and implementation of measures is critical to engaging MSEs in adaptation. Business development and management skills are also necessary to encourage MSEs to invest in new business opportunities and commercialize climate-friendly products and services. MSEs will also benefit from entrepreneurship development and trainings that teach them how to access new technologies and commercialization techniques, develop their technical and practical skills, and improve their market networking.

Technical assistance and training can be implemented through regular, in-depth consultations, awareness raising, and events involving the business community in vulnerable regions. Technical assistance should ensure that training is accessible equitably to MSEs and to the

communities in which they operate; in particular, gender considerations and local knowledge should be taken into account. Technical training programs to build specific adaptation skills should not try to replace traditional knowledge but should harness and support further development of traditional knowledge in support of adaptation objectives (Nyong et al. 2007; Swiderska et al. 2011).

Technical assistance and training is of particular importance in the agriculture sector, as tools to enable income and crop diversification. The poorest households tend to have less diverse incomes; many depend on one agricultural crop as their sole source of income. This increases income volatility and exposure to climate change. In response, the public sector can provide support for development of risk-management guidance and tools. In Nicaragua, a successful intervention by UNDP worked with MSEs to implement “best horticultural and agro-forestry practices,” including water management practices, soil erosion controls, and new crop varieties (see Annex 4). In Cambodia, farmer field schools were used to raise the technical capacity of local farming families (see Annex 2).

- The public sector can use media resources to share best practices on adaptation. Resources include agricultural programs and local and community media channels, which can disseminate technical information in relevant and engaging formats and share best practices to help scale up those that have been successful. These media resources can act as a powerful incentive for behavioral change and for MSEs to invest in new practices. In Tanzania, the BBC aired adaptation programming for MSEs in agri-dependent communities to create awareness of climate change and encourage people to invest in new resilient agricultural practices (see Box 13).
- The public sector can partner with NGOs, the private sector, or international organizations to organize events that showcase the most effective adaptation technologies available to MSEs in specific vulnerable sectors and geographical locations. Such initiatives can provide training opportunities around these technologies and, potentially, financial mechanisms to facilitate their deployment.

BOX 13 | TANZANIA: RADIO PROGRAMS FOR RESILIENCE

BBC Media Action is partnering with radio stations in the Monogoro and Dodoma regions in Tanzania to help increase people’s resilience to climate change. Mentors broadcast talks on training, program management, and planning and discuss topics such as climate-smart agricultural practices. Weekly discussion programs connect listeners with experts in the field and community. The broadcasts are well established, and the BBC’s research shows that many people have taken action as a result of listening in. One woman from the Dodoma region says, “I have been able to learn what to cultivate when there is scant rainfall, and what to cultivate when the rains are heavy.” Another significant outcome of these radio programs is that people are now demanding support from the government on these resilience issues (BBC Media Action 2014).

- Governments can forge partnerships with other stakeholders who can provide training and support to MSEs adapting to climate change, such as research and academic groups, technical colleges, field-based NGOs, chambers of commerce, and larger businesses working in the sector in question.
- Agricultural extension services can serve as a model for transferring technology and know-how to MSEs in other sectors.

Government Policies

Laws and Policies

Governments should consider integrated planning across various ministries to implement adaptation plans that conserve resources, improve productivity, and strengthen the resilience of communities. Integrated planning can be effectively formulated in the National Adaptation Plans (NAPs) being developed under the UNFCCC. Successful implementation of these plans would assess the country’s vulnerabilities, and it would mainstream climate change risks and adaptation in development planning. According to the UNFCCC LDC Expert Group (2012), it would “facilitate the integration of

BOX 14 | RWANDA: MAKING CLIMATE ADAPTATION A NATIONAL PRIORITY

In October 2011, the Government of Rwanda released its National Strategy for Climate Change and Low Carbon Development, outlining existing and future efforts to tackle climate change through a holistic approach. It incorporates all of the country's climate change development projects and policies in one document, providing a long-term strategy for the nation to combat climate change. Through this initiative, Rwanda is attempting to create sustainable economic growth while building resilience to climate change. The strategy has three main objectives: (1) to guide national policy and planning in an integrated way; (2) to mainstream climate change into all sectors of the economy; (3) to position Rwanda favorably in terms of access to international funding for climate resilience and low-carbon development (UNDESA, Sustainable Development Knowledge Platform, 2014).

climate change adaptation, in a coherent manner, into relevant new and existing policies, programs, and activities, in particular development planning processes and strategies within all relevant sectors and at different levels.”

National governments should involve multiple sectors in adaptation planning to ensure inclusive progress and development. As one example, Rwanda launched a national climate change strategy that incorporates energy security, sustainable land use, water resource management, and health and disaster risk reduction to create sustainable economic growth (see Box 14). Because sectors are interlinked in many ways, establishing a national plan provides a practical way to help avoid the effects of one sectoral policy creating negative impacts on another sector. A national plan or strategy should also aim to include all sectors that are vulnerable to climate change.

Many possibilities exist in the realm of enabling policies (incentives and compliance measures) to motivate MSEs to undertake investment in climate resilience and business development. Regulatory and fiscal incentives can stimulate risk reduction among private sector actors, especially when combined with climate information and capacity building.



- Governments can set goals, require actions, and provide incentives to encourage MSEs to take part in climate adaptation. These can include emissions targets to encourage a shift from carbon-intensive fossil fuels to less carbon-intensive fossil fuels or renewables, or tax breaks for the adoption of water-saving technologies. National standards, combined with incentive structures, can have a positive effect at the local level. For example, governments can provide tax incentives to promote more efficient building standards or zoning regulations that are more climate resilient.
- Governments can implement policies that protect or restore ecosystem services. Coastal development regulations can motivate long-term planning and risk management in the tourism sector. When property rights are not clearly defined, land reform to establish or recognize clear land rights, including customary rights, and recognition of titles for men and women alike, would contribute to a more open business environment. Land reform can also promote investment in long-term sustainability (Deininger et al. 2003) and stimulate investment in adaptation.

Public Utility Pricing

In most countries, public utilities govern critical resources, such as energy and water, to regulate prices and avoid possible market failures. In many countries, utility prices are heavily subsidized, which tends to encourage high and wasteful levels of consumption, especially among the rich (Clements 2013). During extreme weather events, people who have not invested in adaptation will experience a shock to their regular livelihoods if energy or water services are interrupted, or if prices are suddenly raised. Proper pricing can influence MSEs to increase efficiency and reduce their vulnerability to climate-sensitive resources such as water and energy.

Many governments provide huge subsidies for water use, especially in the agriculture sector. Although this is a politically sensitive issue in many countries, there can be no doubt that this policy distorts the price signal that would otherwise drive farmers to invest in conservation measures as water becomes increasingly scarce. Programs that focus on efficient drip irrigation, for example, are not viable when water is heavily subsidized (IFC and EBRD 2013). If prices are allowed to rise,



water access for the poor can be safeguarded by increasing block pricing (charging increasingly higher amounts for larger consumption units) when water prices increase above certain thresholds. Additional measures are still needed to help MSEs overcome the effects of rainfall variability and drought but correct pricing at least sends a signal to users that water should be used wisely (Savenije and van der Zaag 2002). In the case of Honduras, water pricing is embedded in national legislation, making this type of reform difficult (see Box 15).

- Governments sometimes provide large subsidies for electricity, largely to assist low-income households. The negative side effect of improper pricing is that it discourages business owners from investing in new ways to reduce electricity use. As energy use increases, and as extreme weather events threaten energy sources and electricity infrastructure, it will be beneficial for MSEs to invest in alternative sources of energy that should eventually be cheaper. Gradually increasing electricity pricing can stimulate investment in energy-saving technologies, while strengthening resilience as a co-benefit. It can also redirect the budget for subsidies to programs that help MSEs and poor communities adapt to climate change. However, until the cost of alternative energy sources is comparable to fossil-based options, these adjustments will not easily be made. Interventions to raise electricity prices will need to be paired with other policies, such as targeted cash transfers to the poor, to offset adverse social impacts.

Subsidies and Tax Relief

Through national legislation, subsidies and tax relief are tools that can stimulate MSEs to invest in risk reduction or emerging opportunities. Where risks cannot be directly mitigated, such interventions can increase the return on an investment, making it financially viable. Countries can offer subsidies for research and development of adaptation options, environmental protection, energy efficiency, and renewable energy. This type of intervention can be instrumental in the early stages of catalyzing MSE investment in adaptation and supporting market demand for climate-friendly technologies. However, investment in adaptation should not be dependent on these subsidies over the long term, and they should gradually be phased out.

BOX 15 | HONDURAS: PROPOSED WATER PRICING REFORMS

In Honduras' capital, Tegucigalpa, high water demand is straining available water sources. Climate change will likely exacerbate water scarcity in the area. The urban poor have the least secure access to public water. To address water demand, the government has proposed politically sensitive reforms to water pricing in the city. The suggested reforms incorporate climate change risks into the price of water, while protecting access to water for the most vulnerable populations. These reforms are still working their way through the political system. Despite the apparent availability of political will and the pricing reforms recently passed by President Lobo's administration,²⁸ it has proved difficult to amend the methods of water use allocation and pricing. The issues are particularly complex and difficult, because they require negotiations with multiple stakeholders and vested interest groups in key economic sectors.²⁹

Governments can use tax relief to assist the most vulnerable and resource-constrained sectors with adaptation. For example, an information campaign could be followed by tailored tax breaks to those MSEs that invest in adaptation. The agriculture sector might benefit from tax credits to grow new climate-resilient crops or invest in irrigation systems. The public sector can also offer tax breaks to stimulate research for new adaptation goods and services (Ingirige et al. 2008). However, many developing countries have large informal sectors and weak tax collection systems; in these cases, implementing tax breaks would not benefit MSEs. There would also be the risk of further undermining an already small tax base.

- The United States government implemented agricultural policies that provide subsidies for protection of soil and water resources to preserve and expand ecosystem services. This improves the quality of the surface water and the soil to help with agricultural production, while also supporting wildlife (Antle 2010).

Market and Business Development

Businesses need market demand to support the production of goods and services that help society adapt. They also need physical infrastructure to access markets, in the form of energy systems, transport links, and telecommunications. To fully benefit from the market at large, many MSEs need additional support. Empowering these businesses would allow them to increase their revenue, invest in adaptation, and provide goods and services that help communities adapt.

Demand-Driven Products and Services

An adaptation marketplace is emerging for goods and services targeted at businesses as well as consumers (Fry 2013). MSEs need support to assess, access, and develop the goods and services that will be most profitable in a changing climate. With capacity and/or financial support from public and private stakeholders, MSEs can produce or offer what people want, from services that boost resilience to certified products. Support can encompass funding for research and development, pilots to demonstrate business value and stimulate market demand, development of market linkages across the value chain, and scale-up through larger investments. Access to finance and risk management instruments can ease the burdens of upfront investments and uncertainties related to adaptation measures.

“When one does not have a market, it is difficult to grow more crops. But if you know there will be a market, you grow more knowing you will be able to sell. We need the money to take children to school and buy some other goodies.”

—Farmer interviewed
in Chiredzi, Zimbabwe



For example, the Alliance for a Green Revolution in Africa (AGRA) supported a project in Kenya to provide mixed seed packets for poor farmers to diversify their crops at low costs. The aim was to encourage these MSEs to adopt more resilient farming practices, boost yields, and reduce the risk of crop failure. The public sector can provide incentives for agricultural MSEs to switch to these types of seeds by stimulating market demand, scaling up the distribution of the seeds, providing demonstrations of the benefits for businesses, and possibly offering initial subsidies to reduce the costs of implementation.

Following a UNDP-supported intervention in Tajikistan, the government introduced packaging, certification, and labeling standards to help improve the market appeal of local and adaptive produce (see Box 16).

- MSEs would benefit from receiving support with entrepreneurship development and from learning how to meet market demand for adaptation; how to gain access to financiers, businesses, and value chains; and how to build a sustainable and resilient business.
- Governments can implement regulations and fiscal policies that stimulate business diversification to mitigate economic shocks caused by climate change. Policymakers can try to correct market failures that hinder access to certain markets through tariffs, quotas, subsidies, price floors, etc. These instruments need to be designed and implemented with care.
- It is important for the public sector to encourage demand for new goods and services by offering financial incentives and information about opportunities. Opening access to

BOX 16 | TAJIKISTAN: SUPPORTING AGRIBUSINESS TO GROW RESILIENT SEEDS

ISMAIL FAIZOV'S STORY³⁰

Ismail Faizov tends a farm at high altitude in the mountainous Dashtijum Jamoat of Tajikistan. The region is rich in a diverse selection of indigenous fruits and legumes, which have become naturally resilient to drought and cold weather, diseases, and other environmental stresses. However, until the intervention, Faizov did not cultivate these traditional species. Like most other Tajik farmers, his business focused on imported cultivars. These imported crops did not fare well in Tajikistan's changing climate, and Faizov struggled to support his family.

The intervention sought to help local farmers, such as Faizov, make use of the genetic material of climate-resilient Tajik

species. A project expert helped Faizov to establish a 1.5 ha nursery of local fruit species that were well adapted to the particular climatic and geographical conditions of his land, including elevation. Because of the adaptive abilities of the new seedlings, Faizov's nursery became highly productive and, because he had a market for his goods, highly profitable as well. He was able to scale up reproduction and distribution of the seedling varieties. The intervention assisted Faizov with expanding his business, by offering finance for the creation of an orchard where nine species of well-adapted fruit trees were planted; by assisting with the labeling and certification of grown seedlings; and by supporting Faizov in

selling his seedlings at local fairs in his district and in neighboring Afghanistan. The initial efforts of the intervention would not have resulted in success if Faizov had not been able to sell his seedlings. Fortunately, Faizov's certified seedlings gained popularity at the fairs, and Faizov established a reputation as a manufacturer of sustainable, well-adapted crop genetic material. He has since reinvested his profits in the construction of a café and shop where he plans to sell products from his garden. To guarantee the quality of his fruits, he intends to take out a micro-loan to fund a workshop for constructing solar dryers. Solar dryers are used to dry various types of foods, such as grain, corn, and rice.

markets for adaptive goods and services is one of the biggest factors affecting scaling up or replication of an intervention.³¹

- Consumer and community engagement is critical to dissemination and adoption of new products and services. Engagement can be facilitated through surveys, focus groups, demonstrations, or community campaigns.

Public Spending on Infrastructure

Public spending on the development of physical and market infrastructure encourages further adaptation, through diversification, economic growth, sustainability, trade, and attraction of additional foreign investment.

Governments can finance or seek finance to strengthen existing physical infrastructure, energy access, and communication services. The better the infrastructure, including roads, rail, water, and electricity, the more easily MSEs will be able to grow and support themselves to invest in adaptation. Access to water is a major priority in climates where seasonal variability and extreme weather is increasingly prevalent due to climate change. Cambodia, for example, successfully implemented an irrigation scheme benefiting many MSEs with external funding to cover the upfront costs (see Box 17).

- The government, with the financial support of donors or international organizations, can invest in resilient transport, electricity, communication, sanitation, and water systems, among other infrastructure. These projects would be part of larger national adaptation plans that would benefit society as a whole.
- There is opportunity for public-private partnerships to attract large-scale investments in infrastructure supporting adaptation, as part of economic development planning and investment (see below).

BOX 17 | CAMBODIA: COVERING THE UPFRONT COSTS OF IRRIGATION

The intervention in Cambodia determined that it would be cost-effective to rehabilitate irrigation schemes in two farming communities to assist local agribusinesses with a reliable water source through the dry seasons. While the irrigation schemes required an investment of US \$235,000 (including auxiliary elements such as water gates, spillway, concrete lining, pumping stations, and culverts), the costs were outweighed by the benefits to the 2,000 households in the Bos Leav and Teuk Krahom communes. Two medium-sized systems covered an area of over 733 ha, more than doubling the original area of irrigated land. The farmers in these areas now harvest rice twice yearly. The farmers are also able to save time and reduce the amount of fuel needed to pump water. Despite this progress, the sustainability of the irrigation systems is in doubt, because they require relatively high fees to maintain. To avoid the need for ongoing external support, the intervention (in Phase 2) is exploring whether it would be viable to implement a group fee-collection system, in user groups of 100 farmers, to maintain irrigation equipment.

Partnerships and Cooperatives

A cost-effective way for MSEs to overcome their limited resources is to collaborate with other businesses or public entities to form partnerships and cooperatives in a similar sector or region, pool resources and funding, and self-insure against economic and weather-related shocks.

Business Partnerships and Cooperatives

MSEs can partner with other businesses, NGOs, or communities to benefit from local and sectoral knowledge, better understanding of targeted consumers, improved dissemination and delivery of their goods and services, co-financing, and risk sharing. They can also partner with much larger multinational corporations.

BOX 18 | COOK ISLANDS: INDUSTRY STANDARDS ON CLIMATE RESILIENCE IN TOURISM

With rising sea levels, more frequent dry spells, and more extreme weather events, the low-lying Cook Islands are particularly exposed to climate change and will need to invest intensively in adaptation. Although tourism is a major industry, it has, until recently, been slow to build its resilience to the likely challenges ahead. The Cook Islands Tourism Corporation (CITC) has expressed interest in making climate adaptation “part of their accreditation criteria for tourism accommodation” in some parts of Pa Enua.³² With the assistance of UNDP, the CITC has proposed to carry out a consultation, training, and mentoring program to “improve and enhance the accreditation standards including environmentally sustainable best business practices for tourism industry operators on Aitutaki, Atiu, Mauke, Mitiaro and Mangaia.”³³ The CITC intends to develop industry standards on environmental and sustainable business, including climate resilience, in addition to the existing minimum standards for tour operators operators developed in 2013. It has yet to be seen whether these new standards will be implementable and serve to improve the climate resilience of tourism in the Cook Islands.

Governments can promote collaborations and partnerships among MSEs and agribusinesses with larger stakeholders. There is an opportunity for high-impact collaboration between local suppliers and large multinational retailers at the top of the supply chain. Multinational corporations (MNCs) stand to gain, or at least reduce their own climate-risk burden, from building adaptive capacity in the value chain made up of MSEs. Working with small, climate-sensitive suppliers and other local businesses in these ways will strengthen both MSEs and the MNC in the long term. IFAD established the Adaptation for Smallholder Agriculture Programme (ASAP), which provides climate finance directly to smallholder farmers and also places a strong emphasis on partnership building (IFAD 2013). In the Cook Islands, the tourism industry, supported by UNDP, led its businesses to form a well-organized and well-respected industry group to develop industry guidelines and standards on climate adaptation and help businesses to implement them (see Box 18).

- Agricultural cooperatives can help MSEs to access credit, relief, subsidies, and technical knowledge, and they can provide them with outlets to sell their products. They can also facilitate credit to individual MSEs from various financial institutions such as banks and microfinance institutions by providing guarantees. Some even have devised their own credit mechanisms to ensure that MSEs pay back the money they have borrowed (FAO 2012).
- Governments can provide information about, and promote collaborations and partnerships with, other stakeholders. For example, local or international NGOs can work alongside local MSEs to develop adaptation plans.
- The public sector, with the assistance of NGOs and other partners, can offer trainings, tax credits for start-up cooperatives, or direct assistance by partnering with MSEs.

Public-Private Partnerships

Public-private partnerships (PPPs) allow for complementary cooperation between the public and private sectors (Public Private Partnerships in Developing Countries, 2013). Generally, governments do not have the capacity to innovate or fully understand the needs of the market, while small businesses lack the reach to scale up ideas. In most cases, larger private sector players provide innovation and finance to implement government projects. CSOs may also get involved to ensure accountable financial practices and implementation of projects (Asian Tiger Capital Partners 2010). In Africa, UNDP initiated an intervention to establish partnerships between different private sector entities and meteorology departments to disseminate climate information to rural households engaged in agriculture production (see Box 19).

- PPPs can be used in infrastructure projects, where the public sector contracts projects with private sector companies to build climate-resilient infrastructure.
- MSEs could work under government contract to complete various adaptation projects and communities would benefit from employment opportunities, income, and on-the-job training.



BOX 19 | AFRICA: REGIONAL CLIMATE INFORMATION AND EARLY WARNING SYSTEMS PROJECT

Recognizing the need for access to climate information to enable adaptation, UNDP is supporting efforts in a number of countries to introduce early warning systems that inform households and planners of extreme weather events. Assistance is currently being provided to 10 countries in Africa (Benin, Burkina Faso, Ethiopia, Liberia, Malawi, São Tome and Príncipe, Sierra Leone, Tanzania, Uganda, and Zambia). Part of the initiative involves building partnerships with the telecommunications sector to “establish effective and sustainable funding streams that can be used for the maintenance of [Early Warning System] infrastructure.”³⁴ Although the intervention is still in its early stages, the targeted governments plan to develop PPPs for both the operation and maintenance of the early warning systems. Among the options currently being explored is support for the development of weather index-based insurance products. Another involves engaging mobile phone companies to disseminate climate information packages through SMS. With the help of PPPs, multiple actors are benefiting, including the government, private businesses, and households receiving the new weather information.³⁵

Financial Instruments

Governments can improve the risk-reward profile of an investment in order to catalyze finance from investors, whether from the public or private sector. Depending on the type of risk, there are a number of instruments that can be used.

The most common instrument is a **de-risking instrument**. This is any kind of policy instrument that creates a more enabling investment environment by addressing underlying barriers that create investment risk in the form of uncertainty or cost.

Risk transfer instruments shift risk from the private to the public sector. Examples might be insurance products or loans from financial institutions backed by a government guarantee. Sometimes these are referred to as “non-grant instruments” or instruments with reflows.

Risk compensation instruments offer investors a higher financial return through grants, seed capital, and other instruments that provide benefits for innovation and investments in adaptation. These are sometime called “direct financial incentives” or “on-granting.”



Risk Transfer Instruments

MSEs in vulnerable communities usually take on significant risk, environmental, technological, or economic, making it difficult for financial institutions to provide loans or insurance coverage. The public sector, with the assistance of international donors or large financial institutions, can initiate policies that provide insurance products that transfer risk to another entity and make private financial interventions possible.

Guarantees

Financial assistance need not be in “hard cash” but can take the form of public sector guarantees over cash exposure, which involve less public money pledged upfront and encourage greater involvement from the private sector. A guarantee can be on climate bond coupons, such that a better rating justifies a lower rate. Guarantees can also be on the return of a direct adaptation investment or loan. Guarantees benefit a private financial institution because it receives the backing of the public sector in the event of a default, but it can also benefit the MSE if it cannot repay its debt. Guarantees help reduce the risk taken on by the private sector, allowing for investments that would otherwise have been deemed too risky or uncertain.

MSEs should seek insurance coverage for climate risks, such as crop micro-insurance, catastrophe insurance, and risk pools. As a regulator, provider, or insurer of last resort, the public sector can influence the development of private insurance products by providing guarantees or working with other international institutions to conduct pilot projects that could then be scaled up. Public intervention might be necessary, for example, to reduce premium levels for flood insurance if flood protection is built. The public sector, with the help of international institutions, can also provide capital capacity to insure against risks that are unfamiliar to the private sector insurance industry. In addition, the insurance premium might be paid partially by public funding. Governments may also pool their risks. Box 20 describes how African countries pool drought risks under one organization.

- Insurance and financial companies are identifying business opportunities in meeting the need for insurance solutions related to climate change. The public sector can help MSEs to access these products, thereby enhancing private sector engagement in adaptation measures. Munich Re is an insurance company working in this sector, providing insurance products to developing countries. The company is looking at how to manage disaster risk and innovate on risk transfer solutions.
- Microfinance institutions are starting to provide micro-insurance products, although there are significant challenges to the infant industry. It is difficult to offer products that provide adequate services at a price that low-income households are willing to pay (Ruchismita 2009).

Risk-Compensating Instruments

Private investment in adaptation still usually needs some catalytic public sector support. Instruments used include public loans, grants, seed capital, and investments.

Public Loans

Government loans provide finance to MSEs to invest in adaptation. The public sector can guarantee some of the risk involved and encourage financial institutions to offer loans with reasonable

BOX 20 | INNOVATIVE RISK FINANCING THROUGH THE AFRICAN RISK CAPACITY

The African Risk Capacity (ARC) was established as a specialized agency of the African Union. Its specific purpose is to shift risks from governments to the ARC, an organization that can pool and handle risk management more efficiently.

ARC uses satellite weather surveillance software—Africa Risk View (ARV). ARV brings together information from existing rainfall-based early warning models with data on vulnerable populations and forms a standardized approach to estimate food insecurity response costs across the continent. Information on weather data, such as rainfall estimates and

information about crops, is used to estimate how many people have been affected by drought or lack of rainfall. Using a cost per person, ARC then calculates the likely response costs.

Members of the ARC risk pool receive a payout when the estimated costs response crosses a certain threshold. Countries receive the payment within two to four weeks of the end of the rainy season so that early intervention programs targeting vulnerable populations can begin within 120 days of the beginning of the dry season. This is usually the time at which farmers start depleting their assets after a drought.

The ARC addresses a major gap in insurance management on the African continent because it allows households and MSEs to remain solvent during times of crisis. This supports long-term resilience because it ensures that gains made in strengthening resilience are not lost during a particularly bad year. It also reduces the reliance of governments on emergency aid and provides a dedicated contingency to scale up safety nets. Risk facilities like ARC provide governments with the opportunity to pool risks that affect the region and to lower individual insurance costs.

Sources:

<http://www.wri.org/blog/2013/10/qa-african-risk-capacity-how-innovative-financing-models-can-build-climate-change>

<http://www.africanriskcapacity.org/about/how-arc-works>

interest rates. Commercial banks will work with MSEs to determine which instrument is best, based on initial capital, earnings, and future gains. Governments, multilateral development banks, and climate funds can provide debt financing to commercial banks for on-lending for specific types of activities. Many of the Pilot Program for Climate Resilience (PPCR) private sector projects have an on-lending component that also contributes to building the capacity of financial institutions in terms of working with the MSE segment, as well as evaluating adaptation investments (Trabacchi and Stadelmann 2013).

In countries where financial markets are more developed, the public sector can work with banks to offer other types of tools including mezzanine financing, conditional loans, or convertible loans. Mezzanine financing can be structured as debt or preferred stock and is a claim on a company's assets slightly more senior than common stock. While conditional loans are loans with conditions set by the lender, a convertible loan can be converted into an equity position at the lender's discretion.

Grants and Seed Capital

In environments where access to capital is challenging for MSEs, grants and seed capital from the public sector can be effective mechanisms to finance their investments in adaptation. Grants are non-repayable funds—which may be conditional or unconditional—that MSEs could apply for and access in order to invest in adaptation. Grants are important mechanisms to support innovation that would otherwise be too costly to undertake. Because MSEs might be reluctant to invest in adaptation given the uncertainties of climate change and potential paybacks, grants could be an effective mechanism for governments to use to kick-start investments that support resilience. Grants can sometimes build a competitive environment for businesses in the application process, facilitating an environment of innovation and creativity. They could be particularly effective if they are conditional on achieving specific adaptation target impacts.

Seed capital can achieve a similar outcome, because it can help start investments in new innovative ideas that entrepreneurs would otherwise be

reluctant to undertake. It provides financing to the early stage of an investment in a new business, which would otherwise be unable to attract investors because of high transaction costs and heightened risks due to uncertainty (SCAF 2008). In many developing countries, the business environment is not attractive to new ventures. The potential for new business concepts that incorporate climate change adaptation might not be realizable without the support of seed capital.

Investments

The two types of investments most commonly used when investing in MSEs are equity investment and debt investment. Equity investment involves the investor buying an ownership stake in the business, by providing cash, and in return receiving a percentage of profits or losses. A debt investment involves the investor lending money in exchange for interest income and repayment of the principal. There are various other mechanisms that investors can use including angel investing, crowd-funding, peer-to-peer lending, and sustainable banks (WWF 2012).

Most loans, grants, seed capital, and investment projects to date have been implemented by multilateral organizations and supported by governments. Governments can assist or subsidize investment funds that invest in climate-resilient businesses by taking a first-loss position in the capital structure of the fund so that private sector debt investments are protected. Grants can be provided directly in the form of research and development (R&D) support, or they can be provided indirectly through intermediaries as first-loss position in a larger fund or through specialized agencies that manage the funding on behalf of the government.

Endowment funds and revolving funds can also serve to finance grants for MSEs. These are mechanisms to collect donor funding to finance grants for projects and activities selected by fund trustees. The difference between the two is that the former generates income in perpetuity, while the latter relies on ongoing donor funding. The Green Fund is an example of an endowment fund in South Africa. The Green Fund was established by the Department of Environmental Affairs and funded by the Treasury to facilitate investment in initiatives that will support South Africa's transition toward a green economy (that is, a low-carbon, resource-efficient,

and climate-resilient growth path). It supports initiatives that would otherwise have been too expensive and time-consuming to implement, such as innovative green projects, climate policy objectives, building an evidence base for expansion of the green economy, and attracting additional resources for green economy development.

The public sector can highlight the investment gap between finance and projects and make financial and international institutions more aware of investment opportunities. There is a need to make potential adaptation projects clearly visible, including those adaptation priorities already articulated by developing countries—in National Adaptation Programmes of Action (NAPAs), for instance. International financial institutions that have experience in financing projects in developing countries can facilitate this process.

- The Pilot Program for Climate Resilience (PPCR)—a fund under the Climate Investment Funds—in Niger has a component that focuses on leveraging private sector finance to build climate resilience of Nigerien agricultural MSEs. It will use grant funding in the first phase to develop the capacity of over 500 Nigerian farmers to operate drip irrigation equipment and to manage loan finance to purchase the equipment (PPCR Niger Irrigation Program 2013).
- In Zimbabwe, UNDP's "Coping with Drought" intervention took the lead on providing seed capital to new farmers, helping to kick-start seed multiplication businesses promoting climate-resilient seeds.
- A form of international finance for development of new products and services can come through Development Impact Bonds (DIBs). DIBs link private investors, non-profit and private companies, governments, and donors to achieve development results. Through this mechanism, investors provide upfront funding for development programs, and are later remunerated by the donors and earn the return if the program achieves agreed-upon outcomes. Although still in its infancy, DIBs have the potential to stimulate investment in private sector adaptation. The Center for Global Development (2013) highlights several case studies of uses of DIB models for issues such as

energy efficiency and SME pipeline generation, models that can also be used for investment in adaptation.

- International funds also provide grants such as the Global Environment Facility (GEF), the Least Developed Countries Fund (LDCF), and the Special Climate Change Fund (SCCF), which are mostly targeted to larger projects and could be used to scale up MSE investments in adaptation.
- The Seed Capital Assistance Facility (SCAF) provides seed capital to entrepreneurs in developing countries to start businesses in clean energy. This facility is implemented by UNDP, the AfDB, and the ADB.
- Governments can work with international organizations to lead matchmaking adaptation opportunities with potential investors. In particular, this includes venture capitalists, angel investors, or social entrepreneurs locally or internationally who have invested in environmental projects and will be open to the level of risk and complexity involved in investing in adaptation projects. For example, the International Development Research Centre (IDRC) suggests establishing an Adaptation Financing Facility (AFF) that promotes adaptation activities by assisting with matchmaking and coordination between funders and projects in Africa (Tippmann et al. 2013).

- The World Bank and UKAid launched “Climate Innovation Centers” (CIC) to create a business hub to boost locally sourced green technologies and offer financing and other services to a growing network of climate innovators and entrepreneurs. CIC initiatives exist or will be launched in Ethiopia, India, Kenya, Morocco, South Africa, and Viet Nam. This is a good example of how development partners and governments can create business incubators to support development of new adaptation products and services tailored to the local market.

Summary

This section describes various policy, strategy, and project interventions that could be used by governments, NGOs, or multilateral development organizations to create a more enabling environment for MSEs to invest in adaptation. Some of the interventions have been implemented, such as those showcased in text boxes, while others are taken from literature reviews. Due to the imprecise definition of adaptation, researchers do not have enough results to recommend one intervention more than another. Much will depend on the national and local context of each intervention. In addition, some interventions might be more successful when paired with others, while others might be more successful alone. Careful analysis of the social, economic, environmental, and climate context of the region in question will be imperative.



