

# DRIVERS OF INVESTMENT IN ADAPTATION

To effectively engage businesses on the topic of climate change and adaptation, policymakers need a good understanding of what businesses are already doing in response to (or in anticipation of) climate-induced changes. Policymakers need to take into account the level of skills, expertise, and knowledge that exist in the business sector and locale in question. Businesses will be motivated to invest in adaptation when they can see the impacts of doing so on their bottom line. Regardless of how the bottom line is defined—whether in terms of financial profitability or other objectives—private actors will logically seek to maximize their returns by exploiting opportunities, including those that emerge as a result of changing climate conditions.

Generally, businesses make investments in adaptation for two primary reasons:

- To increase the climate resilience of their business
- To harness new opportunities arising from a changing climate

Policymakers who wish to incentivize micro and small businesses to adapt need as thorough an understanding as possible of the effects that climate change will have on these particular businesses. This is necessary in order to design effective policies as well as provide the necessary incentives to internalize risk management practices and/or encourage the production and diffusion of risk-management-focused products and services. This section examines the two key reasons why MSEs might be motivated to increase their resilience in the face of climate change.

## Increase Climate Resilience of Businesses

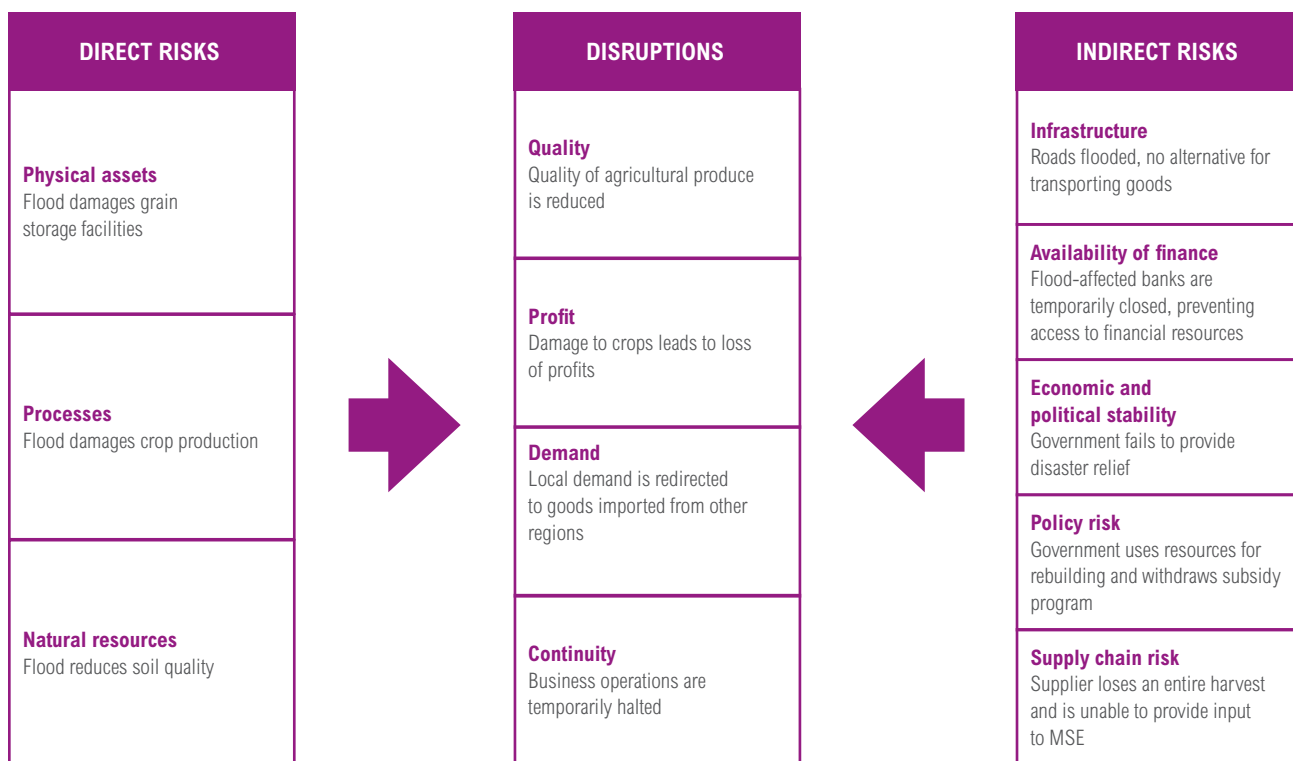
Climate risks faced by MSEs can be categorized in two ways, namely, direct risks and indirect risks (see Figure 3 for an example of direct and indirect risks arising from a flood event and the resulting impacts on an agribusiness).

**Direct risks** are risks related to assets and processes that are under the control of the MSE owner. These are risks of adverse impacts on physical assets such as damage to stores and factories; impacts to processes such as flooding in an artisan's workshop that halts production; and impacts on natural resources on which the business relies. In the case of MSEs in the agriculture sector, natural resource impacts include negative changes in water availability, soil moisture, air temperature, soil temperature, and soil quality (Reilly et al. 1996).

**Indirect risks** are influenced by disruptions to infrastructure, availability of finance, economic and political stability, policy risk, and supply chain risk. Indirect risks are difficult for any MSE to influence or avoid on its own. Benefits that come from acting on these risks are, by nature, indirect because they are diffused among the business that takes action and other stakeholders and companies.



Figure 3 | **Direct and Indirect Risks of a Flood Event to an Agribusiness**



MSEs need to increase their climate resilience in order to limit negative effects on the quality and availability of goods and services produced (which affect their supply chain), and on anticipated profits, both current and long term. It is already clear that MSEs will be driven to take action to keep internal operations functioning in the face of extreme or gradual weather events. For instance, after the 2001 floods in Thailand, Western Digital—a maker of computer hard drives—moved some of its operations to Malaysia and increased flood protection around its plant near Bangkok.<sup>7</sup> At the smallholder scale, similar adjustments take place. To prevent repeated crop failures, MSEs have invested in drought-resistant or flood-resistant seed varieties. For example, in Cambodia, with the support of UNDP, agricultural MSEs adopted scientifically improved seeds, which ultimately improved yields and profits (see Box 3).

Adaptation is intended to reduce vulnerabilities to future impacts of climate change; it therefore entails long-term planning. However, in some instances businesses might tend to look for cheaper, short-term adaptation options that bring immediate benefits but might actually increase vulnerability over time. Therefore, it is critical that businesses assess both short- and long-term risks and undertake cost-benefits analyses involving longer horizons.

Building up climate resilience of businesses can produce spillover effects that increase the adaptive capacity of the community. Climate-resilient investments on the part of MSEs can benefit employees, their families, value-chain actors, and other more indirect beneficiaries, all of whom might enjoy greater stability of income and livelihood. The community at large also benefits when MSEs become more resilient, because they are then more likely to support community organizations, or provide

### BOX 3 | CAMBODIA: REDUCING RISKS FROM FLOODS AND DROUGHTS WITH RESILIENT RICE CULTIVARS<sup>8</sup>

Sorn San had some doubts when asked to try new rice seeds that were thought to be capable of withstanding harsh weather conditions. After consulting his wife, the 63-year-old Cambodian farmer decided to allocate two 100-square-meter plots in his paddy field to the new seeds. The seeds for the trial were provided by Cambodian Agricultural Research and Development Institute (CARDI), a semiautonomous government institution.

Five months later, in December 2010, Sorn San harvested the crop and declared the trial a success. What impressed him most about the seed varieties—CAR3 and CAR4—was

that they had stronger and taller stems and gave higher yields than traditional varieties.

Sorn San's family was among the 15 households in the Kratié province that recently volunteered for the On-Farm Adaptive Trial (OFAT), an experiment with rice seed varieties that are more resilient to floods and droughts. The intervention is supported by UNDP, with funding from the Least Developed Countries Fund (LDCF).

The 15 households live in the Bos Leav commune, which is situated in the upper part of the Mekong River. The area is no stranger to floods in the rainy season and droughts in summer, making it ideal for testing the seeds.

Sorn San reports that he is pleased with how the new, scientifically researched seeds have performed: "I got 34 kg from the CAR3 seed and 45 kg from the CAR4 seeds. I usually got less than 30 kg from traditional seed on the same area of land." Sorn San says his family was lucky to be chosen to test the new seeds. "Many farmers nearby asked me if I could share the seeds with them." Cambodian Agricultural Research and Development Institute (CARDI) provided training in seed purification to Sorn San so that he does not need to buy the seeds on the market every year.

*Sources:*

UNDP. 2012. Annual project report 2011 – Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia (NAPA Follow-Up). LDCF Project Highlights (<http://www.thegef.org/gef/content/cambodia-promoting-climate-resilient-water-management-and-agricultural-practices-rural-cambo>).

in-kind services and goods to social causes (Jeppesen et al. 2012). In the Cambodian case (Box 3) the use of resilient seeds by MSEs directly benefited the community by increasing the availability of high-quality food, which is scarce in times of flood and drought. Similarly, with a loan from IFAD, the government of Kenya formulated The Mount Kenya East Pilot Project for Natural Resource Management. The project benefited the nearby community by providing improved access to water, which allowed more intensive crop production and increased yields (IFAD 2013). When policies contribute to overall development while addressing risks associated with climate change, they directly address adaptation and make communities more resilient.

### Leverage Business Opportunities Arising from Climate Change

Climate change could represent an opportunity for MSEs. Demand for new technologies, products, and services will increase, and new markets will emerge. MSEs engaged in developing products or services that can support, facilitate, or advance adaptive practices could gain a financial or strategic advantage. For example, as crops fail during droughts, floods, and storms, the market for crops that thrive under changing climate conditions can be expected to expand. Latent market opportunities, financial incentives, or mandatory drivers such as regulations, value-chain requirements, and standards all encourage businesses to innovate.



MSEs typically operate at the “bottom of the pyramid,” close to poor and vulnerable communities that are most impacted by climate change. Business opportunities exist in providing access to technologies, products, and services to communities (for example, climate-risk information and market information on mobile phones, risk-insurance products, and drought-resistant seeds); investing in ecosystem-based adaptation (for example, community-based wood lot management, and sustainable forestry-based enterprises); and co-venturing with local communities (distribution/sales networks, diversified supply chains, access to finance, etc.).

By making new products and services available, or extending existing products and services into new areas, MSEs can ensure some level of growth in the face of climate change. Businesses could also gain a market advantage from investing in new resilient products or processes. At the same time, local communities gain improved access to technically and financially accessible adaptation options. For example, in communities prone to drought, a business owner might sell rain barrels made of recycled products, promoting water-saving techniques. MSEs, business associations, or cooperatives are particularly well positioned to promote adaptive practices in their communities, among customers, employees, and members. Shop owners, for example, play a central role in most communities, and tend to know their customers personally. This close relationship gives them the chance to inform their customers about resilient goods and services, or relay information on weather and on practices that reduce the impact of flooding or drought.<sup>9</sup>

Some small enterprises have had success introducing new adaptation products into local and national markets. For example, in Zimbabwe, a brewery developed beer products using red sorghum, thereby stimulating demand for these resilient small grain varieties (see Box 4). Other businesses are also redesigning current products to prepare for future weather changes. For example, because cassava is more drought-resistant than maize or rice, street vendors, restaurants, and even breweries in

#### **BOX 4 | ZIMBABWE: CONNECTING SMALL BUSINESSES TO LARGE COMPANIES**

Resilient value chains will benefit both large and small companies as they face the growing disruptions of climate change. In Zimbabwe, for example, a beer-brewing company played its part in adaptation, with respect to red sorghum farming in the Chiredzi district. The brewery produced beer with small grains such as red sorghum, which are more climate resilient than the crops typically grown in the region. As a result, red sorghum production has grown considerably.



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Africa<sup>10</sup> are starting to incorporate more of this root vegetable into their food and beverage products (Sanni et al. 2009).

In urban areas where recurring flooding is an issue, sanitation businesses are redesigning pit latrines. For instance, Biofil Digester, a sanitation company located in Ghana, builds pit latrines above ground in areas where flooding occurs. Additionally, their pit latrines produce biofiltered water that owners can use on gardens and orchards to grow extra food, thereby helping to improve food security.<sup>11</sup>

### Policy Change Can Catalyze Private Sector Investment in Adaptation

Coordinated and clear policy actions and regulations can also help to drive climate-appropriate investments by MSEs. For example, enabling access to climate risk information as a public good and supporting investment in climate risk modeling in specific sectors (investment both in tools and in capacity building) can help MSEs to improve their risk management. Governments can stimulate markets through policy incentives for innovation, which lower the investment risks taken on by MSEs.



The use of financial instruments to correct market inefficiencies is another direct way to incentivize MSEs. When market inefficiencies are clearly identified, then targeted subsidies that remove those inefficiencies can be applied, at least in the initial stages, to reduce the costs of adaptation and lead to more firms investing in adaptive measures. Use of targeted tax credits or deductions can also result in businesses investing more in adaptation. For example, a business that implements a reusable water system might receive a tax deduction, because of the positive externalities on society. The United States Internal Revenue Service provides a tax deduction to small farmers who have an approved water conservation plan through the Natural Resources Conservation Service of the Department of Agriculture (IRS.gov 2013). However, these macroeconomic policies will be most effective if businesses operate in the formal economy.

Governments can directly increase investment in adaptation through regulations, provided that there is a well-functioning mechanism to enforce them and the regulations are well designed. In agriculture, property rights and land-use rights are vital to smallholder operations. A clear system of property

rights facilitates investment in irrigation or other improvements and ensures farmers' control over the land, which tends to limit degradation. In the construction and land-use planning sectors, building codes and zoning ordinances are examples of regulations that can drive businesses toward upgrading their operations or preventing them from inhibiting the adaptive capabilities of local communities. For example, creating zoning ordinances that require businesses to build a certain distance away from the beachfront can protect businesses and local communities from storm surges or sea level rise (Kousky et al. 2011).

The relevant set of policy and regulatory mechanisms to drive MSE investment in adaptation should be identified in consultation with business representatives from the sector in question. If there are clear incentives for MSE investment in adaptive measures, such as reduced exposure to risk, but MSEs are not investing, then government intervention could be necessary. The first step for policymakers is to identify barriers that might be holding MSEs back from taking action on adaptation.

