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Economic Growth

Introduction

Purpose: This annex to the Climate Risk Screening and Management Tools is designed to provide you with more information on climate change¹ implications for economic growth. The information is grouped into the following sub-sections, with the corresponding step from the Tools shown in parentheses:

- Climate Risks to Economic Growth (Step 2)
- Adaptive Capacity Related to Economic Growth (Step 3)
- Opportunities Related to Economic Growth (Step 5)
- Climate Risk Management Options for Economic Growth (Step 6)
- Additional Key Resources Related to Economic Growth

The questions and examples provided in this annex are illustrative and designed to stimulate thinking about climate risks, adaptive capacity, opportunities, and climate risk management options. Actual climate risks will depend on the context and anticipated climate changes for particular geographies.

Sectoral focus of this annex: The material in this annex focuses on economic growth, and aligns with the following Program Areas of the Standardized Program Structure: EG.1 Macroeconomic Foundation for Growth, EG.2 Trade and Investment, EG.4 Financial Sector, EG.5 Private Sector Productivity, and EG.6 Workforce Development. Note, you may want to consult annexes related to key sectors of the economy such as [Agriculture](#). If any construction is anticipated, referring to the [Infrastructure, Construction, and Energy annex](#) is highly recommended.

¹ In this document, the term “climate change” refers to both climate variability and climate change. “Climate variability” refers to variations in climate (including the normal highs and lows, wet and dry periods, hot and cool periods and extremes) and can refer to month-to-month variability, year-to-year variability, and even decadal scale variability. In this document, “climate change” refers to those variations as well as persistent change in climate over decades or longer (USAID, 2014. *Climate-Resilient Development: A Framework for Understanding and Addressing Climate Change*).

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Tool Step 2: Climate Risks to Economic Growth – Illustrative Examples and Questions

Once you have reviewed this section, you can navigate back to the Tool by clicking on the relevant hyperlink in the header.

| Macroeconomic Foundation | Trade and Investment | Financial Sector | Private Sector Productivity | Workforce Development |
|---|---|---|---|---|
| <ul style="list-style-type: none"> ● Strained public health budgets and access to health services due to increasing incidence of vector-borne and waterborne diseases from higher temperatures. ● Reduced tourism revenues due to extreme temperatures and increased frequency and intensity of storms. ● Increased expenditures for coastal infrastructure due to sea level rise, saltwater intrusion, and more frequent and/or intense coastal storms. ● Reduced environmental and public use of coastal wetlands due to sea level rise. ● Reduced national tax base, increased deficit spending or inflation, increased unemployment, and other important macroeconomic | <ul style="list-style-type: none"> ● Changes in foreign exchange earnings at both summer and winter tourist destinations due to higher temperatures. ● Stressed roads and rail lines used for commerce and trade due to higher temperatures. ● Reduced trade and investment in coastal goods and services due to damaged ports, coastal infrastructure, and natural resources, caused by sea level rise and coastal storm surge.² ● Closed or damaged ports and transport routes critical to trade due to extreme weather events in coastal areas such as hurricanes. ● Disrupted trading patterns and international investment flows due to floods and droughts. | <ul style="list-style-type: none"> ● Increased vector-borne diseases and liability costs of insurers due to increased morbidity and mortality caused by rising temperatures. ● Increased risks to bank lending portfolios with coastal infrastructure vulnerable to sea level rise and coastal storm surge. ● Increased costs for property and infrastructure insurers due to increased frequency or magnitude of extreme events. ● Increased loan default rates due to floods. ● Increased financial market losses due to economic disruption and damage caused by extreme weather events. ● Disrupted financial markets due to floods and droughts. | <ul style="list-style-type: none"> ● Power outages, decreased worker productivity, and reduced industrial output due to increased heat. ● Reduced production, increased costs, and reduced availability of natural resources, other inputs, and labor due to increases in flooding and droughts. ● Reduced competitive advantage of affected businesses due to a range of possible climate stressors affecting certain locations or economic sectors more than others. | <ul style="list-style-type: none"> ● Decreased worker health and productivity due to heat stress. ● Changes to workforce from migration of people related to severe flooding or prolonged drought. ● Unsafe building conditions for workers due to extreme weather events. ● Workforce required to learn new skills and technologies to achieve employment in other sectors due to reduced productivity of sectors such as agriculture caused by climate stressors. ● Gender inequalities exacerbated due to livelihood impacts that affect women’s livelihoods more severely. |

² A temporary sea level rise associated with a storm.

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| Macroeconomic Foundation | Trade and Investment | Financial Sector | Private Sector Productivity | Workforce Development |
|---|--|------------------|-----------------------------|-----------------------|
| effects due to extreme weather events and more gradual climate changes. | <ul style="list-style-type: none"> ● Reduced trade and investment in agriculture to due prolonged drought. ● Increased investment uncertainty due to increased market volatility from climate variability. | | | |

The consideration of risk may be approached in two different but related ways: by climate stressor and by programming or system element. It can be useful to consider both if time permits.

Illustrative questions by climate stressor:

Temperature:

- How may temperature extremes affect work scheduling and workforce productivity for women and men? How might this be different for marginalized populations?
- How may increasing health risks due to higher temperatures or heavy rainfall affect public financing?
- Would higher temperatures increase business costs related to cooling work areas, materials, or products?

Flooding:

- How may flooding due to sea level rise increase liability costs for the insurance/reinsurance sectors?
- How may flooding affect movement of labor, materials, services, and access to markets?
- How might floods disproportionately affect marginalized populations,³ requiring greater public financing to support recovery?
- How may flooding and other extreme events decrease the attractiveness of the region for tourism?

Drought:

- How will prolonged drought reduce production?
- How may drought affect the availability of natural resources that support economic activity?

³ Marginalized populations are groups of people who are excluded, based on their identity, from political, social, and economic power and participation. Often they include women and girls, at-risk youth, the elderly, LGBTI individuals, persons with disabilities, people in linguistic minorities, indigenous people, and/or a combination of any of these identities. (LGBTI individuals refers to lesbian, gay, bisexual, transgender, or intersex individuals. Further information can be found in the LGBT Vision for Action, <https://www.usaid.gov/sites/default/files/documents/1874/LGBT%20Vision.pdf>.)

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- Might drought disrupt supply, transport, and distribution chains, increasing costs of trade?

Sea level rise and storm surge:

- How might losses of coastal resources due to sea level rise and storm surge affect economic growth?
- To what extent could climate-related internal displacement or migration away from coastal zones affect worker availability, political stability, and economic growth?
- How might sea level rise and/or coastal storms affect international and domestic trade?

Illustrative questions by programming or system element:

Macroeconomic Foundation for Growth:

- How might climate change affect key sectors of the economy?
- How might climate change affect long-term public spending needs for infrastructure construction, relocation or adaptation of industrial facilities, utilities, or human settlements?
- How might climate change affect national and subnational domestic revenue mobilization?
- How might changes in government revenues and spending in response to climate change affect the macroeconomy, including fiscal deficits, unemployment, and inflation rates?
- How might climate change affect political stability?
- How might extreme weather events affect government priorities for spending and/or development assistance?

Trade and Investment:

- How might climate change affect trade and investment in the specific sectors and locations that are expected to be most relevant for USAID programs?
- Are the commercial⁴ and industrial sectors equipped to respond to changes in the supply and demand for goods and services?

Financial Sector:

- How might climate change cause banks to become more risk averse in lending?
- How might climate change affect equitable access to financial markets? Would women, the elderly, at-risk youth, LGBTI,⁵ and other marginalized populations be disproportionately affected regarding access to financial markets? Would small and medium enterprises (SMEs) and women-led companies be disproportionately affected?

⁴ Commercial sector is defined as non-manufacturing business establishments, including hotels, restaurants, wholesale businesses, retail stores, warehouses, storage facilities, and health, social and educational institutions.

⁵ LGBTI refers to lesbian, gay, bisexual, transgender, intersex individuals. Further information can be found in the LGBT Vision for Action, <https://www.usaid.gov/sites/default/files/documents/1874/LGBT%20Vision.pdf>.

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Private Sector Productivity:

- How might climate change affect the competitiveness of the private sector or its ability to produce and deliver goods and services, including financial services? Are micro, small and/or women-led enterprises, especially those operated by marginalized peoples, expected to be more affected by changes in economic opportunities as a result of climate change than medium and large enterprises?
- How may climate change affect the viability of economic activities based on natural resources, including tourism and agriculture? How might this impact women and other marginalized populations considering they often rely heavily on natural resources for livelihoods?
- How might climate change impacts on one sector affect other sectors (e.g., impact of storms on electricity distribution, thereby affecting tourism)?
- How might climate change affect the value of land or otherwise put pressure on property rights? What are the gender implications of this impact?

Workforce Development:

- How is climate change expected to affect the productivity of the workforce (temperature limits, changes in disease incidence, etc.)?
- How might training needs change as a result of climate impacts, in terms of skills within sectors and potential need to emphasize new sectors? What are the implications of climate change for public and private workforce development efforts?

Tool Step 3: Adaptive Capacity Related to Economic Growth – Illustrative Questions

Once you have reviewed this section, you can navigate back to the Tool by clicking on the relevant hyperlink in the header.

Information Capacity

- What is the capacity to collect, analyze, and disseminate information on climate change and economic growth?
 - What is the country's ability to identify and address projected climate-related effects on economic growth? What critical information gaps exist? To what extent is planning based on historical averages, and to what extent are planning systems dynamic and able to adjust to new information?
 - To what extent is climate information incorporated into economic planning?
 - How well are surveillance information and economic indicators (e.g., the cost of resources in key economic sectors, the time it takes to move goods to market) used?
 - Are women and other marginalized populations adequately represented in and participating in decision-making around solutions developed to address climate risks?

Social and Institutional Capacity

- What is the capacity of institutions and civil society to take action and to adjust to climate impacts on economic growth?
 - What is the current state of awareness/knowledge within government fiscal and monetary policy systems about risks and/or opportunities of climate change?
 - How is the capacity to carry out commercial activities (tourism, trade and investment, financial services, GDP, and employment) expected to be affected by climate change?

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- o Are institutions and leadership in place to support the planning and implementation of economic growth policies and programs that consider climate change? To what extent do governments and the private sector have the capacity to address climate change impacts and opportunities?
- o Are government policies in place that support increased adaptive capacity as an aspect of economic growth, such as tax incentives for relocation/protection of factories or businesses?
- o Are the general public and marginalized populations sufficiently protected by inclusive economic laws and property rights?
- o What risk reduction strategies have been implemented by the private sector?
- o To what extent are economic planning systems able to take into account both gradual changes (e.g., droughts) and rapid onset events (e.g., floods)?
- o Are civil society organizations (CSOs) that represent marginalized populations sufficiently empowered to be able to insulate the local communities that they represent from the impacts of climate change on economic opportunities?

Human Capacity

- Do individuals and organizations have the capacity to respond to climate impacts on economic growth?
 - o To what extent have traders and investors considered climate risks and opportunities?
 - o To what extent is the work force's capacity, resilience, and access to resources sufficient to support the changing demand for labor? How might this be different for women and men?
 - o To what extent are technical and research organizations in place to train and support workforce development, especially for individuals from marginalized populations that are likely to be disproportionately affected?

Financial Capacity

- Are there adequate financial resources to support key economic sectors in preparing for and responding to climate change impacts?
 - o To what extent are investments being made to reduce climate risks to economic growth?
 - o To what extent are public-private partnerships being fostered that can help to finance climate resilience?
 - o How sufficient are existing or planned mechanisms to channel financial resources to economic actors in the event of severe disruptions from climate change?
 - o How sufficient are financial products and services to address increasing risk (e.g., insurance, credit and savings)? Will responding to climate change require new financial products or policies to protect vulnerable resources (e.g., payment for ecosystem services, pricing strategies)?

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Tool Step 5: Opportunities Related to Climate Risk Management for Economic Growth – Illustrative Examples

The need to address climate risks to economic growth may provide a number of additional opportunities. For moderate/high risk strategic elements, projects, and activities, the important types of opportunities to consider are climate change mitigation,⁶ potential co-benefits for non-climate development objectives, leveraging political will, and opportunities to enhance gender equality and female empowerment, and other development issues. For Washington-based and low-risk strategic elements, projects, and activities, opportunities should focus more on how to support resilience more broadly.

Once you have reviewed this section, you can navigate back to the Tool by clicking on the relevant hyperlink in the header.

Develop low-emission development strategies (including green industries to provide benefits for climate change mitigation/adaptation and sustainable economic development)

- Incentives provided by financial institutions and governments can encourage the private sector to develop and deploy technologies in renewable energy and energy efficiency; waste, water and sanitation; and transport. There are opportunities across the entire value chain and to reach a wide variety of beneficiaries – in design, manufacturing, operations and maintenance (O&M), installation, retail and distribution, and research and development (R&D).
- Emphasize the potential of O&M to improve equipment and system performance without the need to invest in new capital. O&M training is less expensive than capital investment, can be implemented promptly, can include simple protocols such as regular filter cleaning that workers of all skill levels can implement, and may extend the life of current equipment. Improved performance means the same output is achieved with fewer inputs. To the extent that energy inputs are reduced, greenhouse gas emissions will be reduced.

Use public finance mechanisms to mobilize and leverage private capital for promising adaptation and climate change mitigation technologies

- Carbon finance can be used to monetize future cash flows from the advanced sale of carbon credits to finance investment costs for climate resilience investment (e.g., resilient infrastructure) or renewable energy and energy efficiency projects.
- Ensuring public infrastructure projects consider climate information and/or can contribute to climate resilience of the economy.
- Encourage investment in cost effective “smart” technologies such as meters, light sensors, and motion detectors that reduce energy and greenhouse gas emissions in residential, commercial, and industrial facilities.
- Explore new sources of financing such as green bonds to raise capital for climate-resilient infrastructure that will improve services while strengthening resilience and directly or indirectly enhance economic growth by making a municipality or other jurisdiction a more attractive place to invest. If used to support infrastructure such as public transit, green bonds can reduce emissions growth in the transportation sector.

⁶ In this document “climate change mitigation” refers to efforts to reduce greenhouse gas emissions.

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Develop financial services for underserved populations

- Mobile banking, Village Savings and Loan Associations (VSLAs), and microfinance can help build the adaptive capacity of smallholders, entrepreneurs, women-owned businesses, economically disadvantaged persons, or other groups that otherwise lack access to financial services.

Create synergies with existing or planned reforms

- Reforms to public utility pricing and management can increase efficiency and reduce the vulnerability of climate-sensitive resources. For example, subsidies for electricity and water use can distort price signals that would otherwise encourage investment in conservation (e.g., drip irrigation in agriculture, alternative sources of energy, and energy-saving technologies). Increased rate collection can help to ensure wise use of resources.

Develop public-private partnerships to achieve multiple economic objectives when addressing climate impacts

- For example, challenges caused by climate change such as disruptions in power supply may provide opportunities to diversify the supply of services to be more inclusive of the private sector (e.g., distributed energy and energy service companies). Distributed energy systems often use renewable energy sources and energy service companies typically provide energy-saving services or equipment that are paid for by the energy cost savings. Both help mitigate climate change.

Encourage governments to place a higher priority on related development objectives and realize co-benefits

- Climate-proofing infrastructure and infrastructure services can support economic growth in a changing climate.
- Government policies that support increased adaptive capacity as an aspect of economic growth, such as tax incentive for relocation or protection of factories or businesses, can support economic growth while increasing resilience.
- Strengthening civil society and engaging broader sectors of the population – including marginalized populations – in development can increase democratic participation and government accountability while simultaneously bolstering economic capacity and resilience of those groups to the impacts of climate change.

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Tool Step 6: Climate Risk Management Options for Economic Growth – Illustrative Examples

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Consider climate information relevant to economic growth

- Analyze climate information to determine vulnerabilities and risks to key economic sectors for this stage of the program cycle. Consider the climate risk management options for the sectors described in the other annexes.
- Increase awareness of various stakeholders about implications of climate change for economic growth and increase understanding of how these implications may impact women and men differently, as well as how marginalized populations may suffer disproportionately.

Strengthen economic policies and planning systems

- Improve coordination of government economic policies and green growth opportunities.
- Determine adaptation needs and opportunities to sustain private sector productivity.
- Increase availability and access to finance to reduce climate risks.

Improve risk management

- Develop new insurance instruments to address climate risks.
- Make financial markets more inclusive to help build the adaptive capacity of marginalized populations.
- Encourage new development away from high-risk locations.

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Additional Key Resources Related to Economic Growth

The following **resources** provide additional information related to climate risks to economic growth and corresponding climate risk management options.

| Title | Author(s) | Organization | Date | Length | Intended Audience | Unique Value |
|---|---------------------------|--|------|---------|---|--|
| <i>Adapting from the Ground Up: Enabling Small Businesses in Developing Countries to Adapt to Climate Change</i> | L. Dougherty-Choux et al. | World Resources Institute | 2015 | 88 pp. | Development practitioners, small businesses, and policymakers | Can be used as a next step after the Tools to enable small businesses to adapt to climate change, while also taking advantage of new markets for climate-resilient technologies, products, and services. Also discusses policy actions and regulations that can stimulate new markets. Includes framework for engaging small businesses in adaptation. |
| <i>Innovative Insurance Solutions for Climate Change: How to Integrate Climate Risk Insurance into a Comprehensive Climate Risk Management Approach</i> | K. Warner et al. | UN University Institute For Environment And Human Security | 2013 | 52 pp. | Development practitioners, climate-sensitive businesses | Provides practical guidance for developing risk transfer instruments that can be used to address climate-related financial risks faced by poor communities that are vulnerable to extreme events, such as floods that can destroy harvests and other sources of income. |
| <i>Climate Resilience and Financial Services</i> | A. Haworth et al. | Braced Knowledge Managers | 2016 | 110 pp. | Development practitioners | Provides information on “best practices” for developing alternative financial services to build the adaptive capacity of smallholders. Options discussed include mobile banking, Village Savings and Loan Associations (VSLAs), and microfinance. Includes detailed case studies of stakeholder experiences in Ethiopia, Mali, and Myanmar. |

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|---|--------------------|--------------------|------|---------|---|--|
| <i>Building Competitive Green Industries: The Climate and Clean Technology Opportunity for Developing Countries</i> | infoDev | infoDev/World Bank | 2014 | 128 pp. | Development practitioners, entrepreneurs, and investors in SMEs | Provides more in-depth information than the Tool on clean technologies, with a focus on opportunities for SMEs that have co-benefits for climate change mitigation and economic development. Discusses region-specific challenges and opportunities. Provides numerous examples along with in-depth case studies of bioenergy, solar energy, and climate smart agriculture projects. |
| <i>Private Sector Engagement in Adaptation to Climate Change: Approaches to Managing Climate Risks</i> | S. Agrawala et al. | OECD | 2011 | 56 pp. | Development practitioners and private companies | Provides more detailed examples than the tool on private sector responses to climate risks and opportunities. |