UNITED REPUBLIC OF TANZANIA
Executive Summary
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COUNTRY CLIMATE AND DEVELOPMENT REPORT
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Executive Summary

COUNTRY CLIMATE AND DEVELOPMENT REPORT
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## Abbreviations and Acronyms

| Abbreviation | Description |
|--------------|-------------|
| ASP          | aspirational (scenario) |
| BAU          | business-as-usual (scenario) |
| CCDR         | Country Climate and Development Report |
| CO$_2$e      | carbon dioxide equivalent |
| gCO$_2$e     | grams of carbon dioxide equivalent |
| GDP          | gross domestic product |
| GHG          | greenhouse gas |
| GNI          | gross national income |
| kg           | kilogram |
| kWh          | kilowatt hour |
| LMIC         | lower-middle-income country |
| MSME         | micro, small and medium-sized enterprise |
| NDC          | nationally determined contribution |
| PSSN         | Productive Social Safety Nets (program) |
| UMIC         | upper-middle-income country |
| VRE          | variable renewable energy |
| WASH         | water, sanitation, and hygiene |

*All dollar amounts ($) are US dollars*
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A resilient, inclusive, and low-carbon growth path can be a reality in Tanzania

Despite its strategic geographic location, abundant natural assets, political stability and substantial social and economic progress since 2000, poverty in Tanzania remains high, its biodiversity, fish, forests, soils, and water have been overexploited, and the country faces considerable development challenges and vulnerability to risks, including climate change. These challenges stem from the structure of the economy and the country’s reliance on rainfed and low-productivity agriculture for gross domestic product (GDP), exports, employment, and food security. Large rural-urban disparities in incomes, job opportunities, access to basic services, unchecked urbanization, limited energy, transport and digital connectivity, and a rapidly growing population pose additional challenges and increase the country’s exposure to climate risks. Tanzania, depending on the economic path it pursues and ambition of the climate actions it implements, can cope and adapt to climate change, and transform its economy to be more resilient to climate shocks while having a lower carbon footprint. Tanzania has a unique opportunity to include climate action and environmental protection measures—many of which complement growth and poverty reduction—in Vision 2050 which will define the way Tanzania meets its development objectives in the face of global risks.

The Tanzania Country Climate and Development Report (CCDR) uses macroeconomic, climate, sectoral, institutional, and financial models to identify opportunities to integrate climate action and development. Examining the impact of different climate change futures on two economic growth scenarios (box ES1), the CCDR presents how implementation of three multisectoral intervention areas could generate climate-positive, resilient, and inclusive growth by 2050. These are: integrating climate considerations when strengthening human capital and social protection; optimizing land and water use and management to boost agriculture and rural productivity, augment climate resilience, and lower greenhouses gas (GHG) emissions; and prioritizing resilient and low-carbon infrastructure systems in urban areas and different sectors. The CCDR details governance arrangements for effective climate change action, presents investment needs, and describes options for mobilizing financing. Many of the recommendations could help Tanzania’s fulfill both its development agenda and updated nationally determined contribution (NDC).

Box ES1: Economic growth scenarios used in this report

The **business-as-usual (BAU)** scenario extends the growth, urbanization and basic service access rates, economy structure, poverty reduction, and natural resource degradation seen over the past 10–15 years out to 2050. Long-term GDP growth is 6.25 percent, government investments are the main driver of growth, private sector investments remain limited, and there is low growth in agribusiness, manufacturing, and professional services.

The **aspirational (ASP)** scenario assumes higher and more inclusive economic growth. Private investment increases and supports greater structural transformation with long-term GDP growth of 8.25 percent. There is increased growth in agribusiness, manufacturing, professional services, and exports, and a larger urban population. The government fulfills its access to basic services commitments and global commitments. Both economy scenarios are modeled with climate actions that are part of the country’s NDC.

Delaying action on climate change is not an option

In 2022, Tanzania was ranked the 47th most vulnerable country to climate change, and 150th out of 191 countries on readiness to cope with climate change.¹ Most climate models predict an average increase in temperature by 1.23°C from baseline across the country by 2050, with wide ranging impacts.

¹ https://gain-new.crc.nd.edu/country/tanzania#vulnerability.
Average precipitation is not expected to change significantly, though seasonal and annual variabilities are expected to grow. As East Africa’s most flood-affected country, Tanzania’s major cities are extremely vulnerable to flooding, especially its low-lying cities. Approximately 463 square kilometers of urban area are at high risk of flooding from rivers, rain, and sea level rise, partly due to the encroachment of built-up areas on riverbanks and wetlands. Intense rainfall during the rainy seasons also impacts most urban areas, where a large percentage of residents live in unplanned settlements without adequate drainage.

**Tanzania was the 46th largest global emitter of GHGs in 2019, contributing 0.31 percent of global emissions.** The annual GHG emissions estimates for forests in Tanzania range from 44 MtCO$_2$e to nearly 80MtCO$_2$e annually. The transport sector is estimated to emit 6.78 MtCO$_2$e annually making it the third-largest GHG-contributing sector, after agriculture and land-use change and forestry. The waste sector increased its emission from 4.78 to 6.38 MtCO$_2$e between 2010 to 2020. Ignoring the current GHG emission trend, could result in Tanzania’s net emissions increasing by nearly 130 percent by 2050.

Climate change disproportionately impacts people with limited options to cope with shocks, and could push an additional 2.6 million people into poverty by 2050 if no climate actions are taken today. In Tanzania, 27.7 percent of the population and 29.4 percent of the vulnerable population are exposed to at least one climate risk. Regions with higher poverty have more people exposed to climate-related shocks (figure ES1). Poor households also often deploy coping strategies that set them back economically limiting their economic advancement.

**Tanzania’s growth propelled it into lower middle income country (LMIC) status in 2020, even in the face of extreme climate events; but this progress hides the sectoral impacts of climate change on people and agriculture.** 70 percent of the population that is dependent on agriculture, many of whom are poor and smallholder farmers, are disproportionately vulnerable to climate change and are not well positioned to handle repeated exposure to climate shock or simultaneous exposure to multiple shocks. Lower labor productivity due to heat stress is projected to account for 20–40 percent of all economic losses under some

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2 In the CCDR, the term “vulnerable” is used for people and households with limited ability to respond to shocks based on the coping mechanisms they employ when confronted with the shock.

3 The World Bank assigns the world’s economies to four income groups—low, lower-middle, upper-middle, and high income. are based on the gross national income (GNI) per capita of the previous year. The current LMIC economies have a GNI per capita between $1,146 and $4,515, and UMIC economies have a GNI per capita between $4,516 and $14,005.
climate futures, while the loss of crop yields due to increased variability in precipitation could account for 25–50 percent of all economic damages from climate change. The aggregate impact across the agriculture sector is a 1–2 percent decrease in crop production by 2050, and livestock production shocks of 3–8 percent between 2041 and 2050. Climate change is expected to reduce the maximum number of fish caught by a third to a half, and decrease the overall weight of fish caught by 56 to 69 percent. The seaweed subsector, which largely employs women, is expected to decline due to rot and disease from increased temperatures. Internal migration is likely to rise as people move away from the coast due to deteriorating water availability and crop yield, sea level rise, and declining land availability, towards areas in Lake Victoria Basin.

Climate change is also projected to result in loss of forests, which are important for tourism and absorb carbon dioxide from the atmosphere. Montane forests, which are part of the Kilimanjaro and Mahale Mountains national parks, could lose 47–64 percent of their suitable habitat extent by 2085 under different greenhouse gas (GHG) emissions futures. Microhabitats and lowland forests in the Serengeti could lose more than 70 and 10 percent of their habitats, respectively, under a pessimistic climate future, impacting the scope and location of nature-based tourism. Deforestation and forest degradation also create challenges for fulfilling the country’s NDC commitments and benefiting from carbon market opportunities.

Disruptions due to climate change are expected to increase costs to households and the economy, across sectors. In the transport sector, damaged links which impact trade and freight, will result in rehabilitation costs. Annual damages across the transport infrastructure currently cost $108–109 million and could rise to $198–233 million by 2050 under a BAU scenario. While faster and higher growth may lower the costs, they could still reach $129–155 million by 2050.\(^4\) Climate change impacts also extend to the financial sector, which is small and dominated by banking. Banks are highly vulnerable to climate physical risks due to their credit exposure in vulnerable sectors and regions.

Strengthening Tanzania’s climate change governance arrangements would stimulate effective climate action

Tanzania is already taking action to address climate change but could strengthen its governance arrangements on climate change in four areas. Its updated NDC established a multisectoral institutional structure for addressing climate change, and its National Climate Change Response Strategy 2021–26 serves as the primary climate change policy guidance. To strengthen these arrangements, Tanzania could improve institutional coordination and governance frameworks, giving clear responsibilities for coordinating ministries and forging stronger links and communication between central and local governments. It could also mainstream climate considerations into core government systems (including budget planning and monitoring), increase stakeholder engagement and communication with citizens, ensure that quality data and evidence inform climate change decision-making, and make public sector institutions both knowledgeable about climate change and responsive and agile in handling the issues. Complementing these efforts, the financial sector could strengthen its own climate risk management practices.

Integrating climate considerations in human capital and social protection initiatives is a no-regrets measure

An adaptive social protection program can help households deal with climate shocks and reduce their reliance on unsustainable coping strategies. Although Tanzania’s poor households are among the most vulnerable to climate change, social assistance is severely underfunded and mostly financed by development partners. To increase the resilience of vulnerable households, the country could expand and formalize its Productive Social Safety Net (PSSN) registry into a national social registry and build an adaptive social protection program with increased coverage, prioritizing the most vulnerable areas and including vulnerable areas and including

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\(^4\) World Bank Tanzania Transport Team. 2024. “Transport Vulnerability Assessment Note.” Prepared for the United Republic of Tanzania Country Climate and Development Report. World Bank.
climate-smart interventions tied to income diversification and climate-resilient livelihoods. Formalizing linkages between disaster risk management and response and social protection would ensure a timely and coordinated response, while developing a medium- to long-term financing framework for social protection programs and increasing domestic financing would effectively deliver adaptive social assistance to these households. Information on the geospatial differentiation in climate change exposure and vulnerability (figure ES2) would help ensure social assistance also lowers exposure to climate risks.

**Figure ES2: Share of population exposed to different risks and household vulnerability**

|                  | a) Pluvial or fluvial flooding | b) Drought | c) Heatwaves |
|------------------|--------------------------------|------------|-------------|
| % exposed       | % vulnerable                 | % exposed | % vulnerable |
| % exposed       | % vulnerable                 | % exposed | % vulnerable |

Source: World Bank Tanzania Poverty Team. 2024, “Exposure and vulnerability to climate-related shocks in Tanzania.” Note prepared for the URT Country Climate and Development Report. World Bank.

**Implementing the country’s commitments to universal access to water, sanitation and hygiene (WASH) and health services can increase resilience during climate shocks and reduce exposure to a heightened incidence of disease due to climate change.** Supporting universal WASH access could reduce Tanzania’s annual economic losses by $1.9 billion by 2030 but is only possible with full cost recovery for safely managed services. Using a more adaptive health delivery system to reach the government’s goal of universal health access would ensure greater responsiveness to climate-induced diseases. An adaptive system will require extending coordination in government to those involved in disaster risk awareness and preparedness, delivering services where they are lagging, and using climate-resilient infrastructure design.

A climate-informed education sector would enable Tanzania’s youth to benefit from climate-compatible jobs and increasing the sector’s resilience to shocks. Tailoring climate-resilient infrastructure design to local climate risks and making these policies regionally specific would minimize disruptions to education and ensure a rapid resumption of schooling after climate disasters. Investments to reduce climate disruptions include using solar energy and biogas in schools, and growing trees to lower temperatures. Strengthening the curriculum to deepen pupils’ knowledge and awareness of climate change would help change norms, while encouraging enrollment in climate change-related fields of study could help correct the imbalance in skills for jobs that support a green-transition and adaptation to climate change.

**Optimizing land and water management can boost agricultural and rural productivity, augment climate resilience, and lower GHG emissions**

Tanzania could further optimize the allocation of land and water for productive uses and generating ecosystem services—for example, carbon storage-increasing the contribution of natural assets to growth while addressing climate change. Considering Tanzania’s current and projected land allocation across crops, livestock, forests, and natural vegetation, it could increase both the net economic value of agriculture to productive land use and its carbon storage potential. But relying primarily on land cover
change to fulfill its NDC GHG emissions commitments could reduce the net economic value of its agriculture to Tanzania’s productive land use, unless it also implements accompanying measures.

**Expanding irrigation beyond current government targets and improving farming practices and inputs are central to optimizing rural land for productive purposes while augmenting carbon storage potential.** Establishing a micro-irrigation challenge fund and taking an approach that responds to the country’s different hydrological realities would help expand inclusive and climate-informed irrigation. Improved service delivery is also important. Additional no-regret measures include improving seed and breed varieties, enhancing soil health and water management, augmenting feed availability and destocking livestock herds. Improving access to quality extension services is vital to accelerate productivity gains, while expanding private sector involvement in greener agriculture value chains, climate-resilient market infrastructure, and inclusive financial services and insurance are also pivotal.

**Accompanying efforts to increase ecosystem services with measures to monetize these services could move land use in Tanzania to the production possibility frontier.** In Tanzania, natural assets underlie goods, jobs, and ecosystem services that buffer climate change impacts. Monetizing ecosystem services will help motivate the large-scale forest restoration required to fulfill the country’s NDC commitment to reducing GHG emissions and avoid it taking place to occurring at the expense of economic value from productive activities (figure ES3). Increasing the contribution of forest ecosystem services to the local and national economies is also important, because 65 percent of Tanzania’s forests are in unprotected and general use lands and vulnerable to degradation and conversion. Options for monetizing ecosystem services include carbon trading, additional tourism opportunities linked to conservation and improved natural habitat management, supporting a value-driven approach to forest plantations, targeted incentives for participatory and community-based forest management regimes to scale up natural regeneration and restoration, as well as encouraging biomass sourcing from sustainably managed woodlots and curbing illegal charcoal production while accelerating the transition to clean cooking.

**Figure ES3: Optimizing economic value and carbon storage from land use in Tanzania under different scenarios**

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Notes (panel a): The production possibility frontier presents the best possible combinations of agricultural production and environmental service under different landscape configurations. The x axis depicts the net economic value of productive land use (cropland, grazing, and forestry and nonenvironmental services), minus transition costs; the y axis depicts total carbon storage in above- and below-ground biomass. The frontier extends below zero on the x axis because reaching such a high level of carbon storage requires significant restoration efforts, which have a cost in the model. In these graphs, reference to climate action is regarding the NDC mitigation target.
The government of Tanzania could also consider increasing the contribution of Tanzania’s livestock subsector, which accounts for 11 percent of Africa’s total cattle population, to reducing methane emissions. Methane from livestock accounts for over 60 percent of Tanzania’s agriculture sector emissions. Sustainable intensification—through improved animal genetics, health, and feed—alongside incentives for reducing herd sizes would reduce emissions without compromising national food needs. Intensive and efficient livestock systems can increase meat production at a low emissions intensity of 14 kilograms (kg) of carbon dioxide equivalent (CO₂e) per kilogram of meat, compared to Tanzania’s current 60 kgCO₂e. High-productivity dairy can further lower emissions from 25 to 2 kgCO₂e per kilogram of milk produced.⁵ Steering consumption towards poultry, pigs, and dairy can also help reduce emissions.

Medium- to long-term climate-positive investments will require secure land rights and the enforcement of robust land use plans. An effective and functioning national cadaster with complete ownership information, and registration of communal certificates of customary right of occupancy would reduce land conflicts, formalize land markets, and protect communal resources. Tenure security would also facilitate the monetization of provisioning and regulatory ecosystem services from forests. Promoting and enforcing village and district land use planning would help connect landscapes, support the coexistence of livestock and wildlife habitats, and engender broader collaboration, resilience in food systems, ecosystem conservation, and sustainable resource management, all of which helps curb forest conversion.

Prioritizing resilient and low-carbon infrastructure systems to enable climate-positive growth in urban areas and across sectors

Tanzania would benefit from taking a systems approach to infrastructure planning and investment that includes resilience considerations and enables low-carbon growth in cities and across the country. High-quality and well-functioning energy, transport, and digital infrastructure are necessary for economic prosperity, structural transformation, greater private sector investment, engagement in global value chains, and increased productivity independent of climate change futures. An infrastructure systems approach would ensure investments serve emerging growth sectors, increase the competitiveness of Tanzania’s cities, and withstand expected climate impacts while meeting increased demand.

Robust transport sector planning and cost-effective interventions to bolster resilience in the transport network can reduce infrastructure disruptions. Contingency planning, which examines the flow of trade and levels of criticality during decision-making, can help reduce system vulnerability and ensure robust interventions to improve the road network in flood-prone areas with high international trade importance. Tanzania’s highest-traffic routes carry nearly $10 billion of goods every year. A strategy to extensively rehabilitate drainage on vulnerable paved roads and pave nearby unpaved links to increase redundancy would avoid isolating communities and industries from services and markets. And although these works would incur substantial costs, they would be offset by savings by the early 2030s.

Enabling a low-carbon logistics sector and urban mobility will help Tanzania achieve its emissions targets. Tanzania is projected to become a logistics hub in East Africa, and shifting inter-regional cargo to railway would ensure faster delivery, streamline cargo processing, and reduce congestion on inter-regional road networks. Although railways are expensive from an emissions reduction perspective, over time, building more railway lines would improve efficiency. In rural areas, shifting cargo transport from two-axle to articulated trucks can also reduce the carbon footprint, while in urban areas, improving the coverage, quality, and reliability of high-capacity public transport services—including by electrifying the sector—will help decouple urban growth and carbon emissions. Investing in inter-regional, high-capacity public transport, and nonmotorized transportation infrastructure, and lowering emissions from motorized transport will put the country and its cities on a low-carbon transport path.

⁵ FAO. 2019. Five Practical Actions Towards Low-Carbon Livestock. Food and Agriculture Organization of the United Nations.
Tanzania’s energy sector can meet the growing demand for power with a low-carbon power mix, reducing both the electricity supply cost and GHG emissions. Peak electricity demand is expected to increase from 1,350 to 5,400 megawatts between 2022 and 2044 under the BAU scenario and reach 7,000 megawatts under the ASP scenario. The new Julius Nyerere Hydro Power Plant will be fully commissioned by 2027, and hydro plants will supply 95 percent of the country’s energy, halving power supply costs and reducing carbon emissions to near zero. In the long term, the generation mix is expected to evolve toward a system based on wind and solar photovoltaic—or variable renewable energy (VRE)—and hydro (figure ES4). VRE provides electricity at the lowest price, while hydro reservoirs cost-effectively provide flexibility. Natural gas will be important for the transition to renewables. Under the BAU scenario, gas-fired plants become must-run units in 2030 to handle sudden increases in power demand, but under the ASP scenario, battery storage can help develop greater VRE capacity, potentially reducing the cost of electricity supply by 4–5 percent. A significant share of renewable energy in Tanzania’s optimal power sector expansion plan enables the sector to deliver on its NDC GHG emissions commitment. Increasing electricity access will also help reduce emissions as households and businesses switch to cleaner power sources.

**Figure ES4: Tanzania’s power sector capacity mix, 2023–44**

[Graph showing installed capacity from 2023 to 2044 for different energy sources under BAU and ASP scenarios.

Tanzania would also benefit from a climate-resilient power sector strategy. Assessing climate impacts on current and planned power infrastructure, conducting further analysis on water demands and yields in key basins, and defining technical standards and policies would help the government mitigate risks from droughts and floods to the sector, and address any potential development tradeoff in its allocation of water to hydropower versus irrigation, particularly in the Rufiji basin. With interconnectors already linking Tanzania with Kenya, Rwanda, and Burundi, a power sector strategy could also consider how regional power trade could enhance resilience by fostering regional cooperation and shared resource management.

Tanzania could leverage the global decarbonization agenda by considering a mines-to-market framing when planning energy and infrastructure investments. The demand for minerals is expected to grow 10-fold over the next decade due to the increasing demand for renewable energy. Tanzania is well positioned to supply nickel, graphite, and rare earths for battery manufacturing, and has increased the exploration permits awarded for these minerals. Investing in the quality of its roads and addressing congestion along transport corridors connecting mines to ports would help lower costs, while also benefitting other industries, such as agriculture. With the necessary infrastructure systems in place, Tanzania could also benefit from being a key export route from the Central African Copperbelt, augmenting its role in logistics.
Key reforms to create enabling policy and labor conditions in the mining sector would unlock opportunities and promote climate-smart mining. Although there are several downstream market opportunities to add value to Tanzania’s gold, nickel, graphite resources, the country needs to carefully consider mining sites for certain minerals. To unlock its mineral potential and avoid a boom-and-bust situation, there are governance and infrastructure challenges to overcome. Tanzania’s mining sector runs on two parallel tracks—small and large-scale—underscoring the importance of a just transition in the sector.

Planning and development controls and stronger and more capable institutions will help Tanzania’s urban areas thrive and make them climate smart. Building urban resilience to climate events will require a coordinated national effort tailored to the needs of individual municipalities. A national resilient human settlement planning and development program can provide guidance, standards, and resources for municipalities. Using risk-informed planning tools can help direct investments in basic services, housing, and industry, and lead to resilient, low-carbon urban development. As Tanzania’s cities change and develop, municipalities need to be empowered to mobilize and manage their budget for infrastructure and services. Strong coordination mechanisms between district, city, and regional governments and other urban development actors—including water and sanitation utilities—are vital for efficient urban infrastructure and land use, and to minimize service extensions following unplanned, sprawling development.

Electrifying transport and improving waste management in Tanzania’s cities could help lower the country’s heavy reliance on forest restoration to meet its NDC GHG emissions target. The country could aspire to electrify at least 80 percent of its commercial, public transport, and two- and three-wheeler fleets, and at least 50 percent of its private cars. These targets are congruent with those of similar developing economies. The emissions reduction potential of various sustainable transport alternatives in Tanzania is only 1–2.5 percent. This could increase to 33.75 percent of cumulative transport emissions through 2050 under a more ambitious electrification scenario. Tanzania is East Africa’s market leader for electric vehicle ownership, with more stocks than all the other East African countries combined. And, although up to 95 percent of electric vehicle charging is expected to occur in private homes and in the garages of public and commercial fleets, establishing a charging network in key locations would support the transition. Waste is Dar es Salaam’s fifth-highest source of emissions, including methane from the decomposition of organic matter in anaerobic conditions. Although individuals and businesses understand the advantages of reducing food loss and waste, introducing information and analytics on the sources and reasons for food loss and waste and developing partnerships will help implement concrete actions. Committing to improve waste management in existing and emerging cities would reduce methane and, in turn, GHG emissions.

As the economy continues to grow and becomes increasingly digitized, transitioning telecommunications and data-hosting infrastructure to green sources of power and new energy-efficient technologies will reduce the sector’s climate impact. To realize the benefits of the low-carbon digital transition, climate resilience and sustainability must be part of the design and deployment of all new digital infrastructure. Taking a multistakeholder approach—with commitment from government, regulators, and private sector actors who are actively involved in the digital development agenda—is also important.

Climate action can dampen climate change impacts on GDP and further poverty reduction

Climate change could impair Tanzania’s ambition to achieve UMIC status by 2050. Projections indicate that under a dry/hot climate future, inaction could lead to a 4 percent reduction in real GDP by 2050, compared to the baseline scenario, which assumes no climate variability (figure ES5). But implementing climate action could reduce this decline to 3 percent. Under the ASP scenario, the impact of dry/hot climate futures would reduce real GDP by 3.8 percent compared to the baseline; but with climate action, this reduction could be lessened to 2.7 percent. In contrast, if the climate future is more precipitation and limited
warming, and Tanzania implements climate action, the negative effects on infrastructure and livestock could be offset by gains in crop yields. Under these conditions, climate change could become a net contributor to Tanzania’s economy, increasing GDP by up to 0.5 percent, compared to baseline, by 2050.

While the ASP scenario exposes more of Tanzania’s economy to climate-related risks, the higher growth leads to a significantly larger economy, offering protection for its population. Structural transformation, which is important for Tanzania’s continued economic growth, increases the country’s resilience to climate-related shocks even if it cannot eliminate the shocks altogether. For example, with fewer Tanzanians working outdoors and increased mechanization, the negative effects of climate change on labor productivity are reduced. In contrast, although the area under irrigation increases under ASP, rainfed agriculture also expands. And with land being allocated to other uses, this expansion is in areas with higher risk of climate-related shocks, particularly under a dry/hot climate future. But despite these risks, the ASP economy is projected to grow by more than 50 percent in 2050.

Investing in adaptation could reduce climate-related economic losses by 25 percent by 2050. Results for the climate change impact channels and resilience measures assessed in the CCDR show that adaptation measures associated with the three key multisectoral intervention areas outlined here—which build resilience to heat stress, lower livestock yields and inland flooding—could each increase GDP by 0.3 percent by 2050. Adaptation measures in other sectors are beneficial but have a lower return. Measures for roads and bridges require careful prioritization to generate net economic benefits.

Climate action can also mitigate the impact of climate change on poverty. With effective adaptation and mitigation, Tanzania could counter the effects of climate variability. In a dry/hot climate future, climate action can decrease poverty rates further, by 0.6 and 0.7 percentage points under the BAU scenario and 0.5 and 0.8 percentage points under the ASP scenario, using LMIC and UMIC poverty lines, respectively.

6 World Bank. 2023. Strategic Country Diagnostic - Update. Washington DC: World Bank.
More efforts are needed to mobilize financing for climate action

The government of Tanzania estimates that it will need $19.23 billion to achieve its updated NDC commitments by 2030. There is evidence that it has spent $4.85 billion on climate action, with $1.72 billion coming from the government’s adaptation budget. The remaining climate financing needs will depend on the country’s growth trajectory, and whether it implements development investments that have climate co-benefits. For example, under the BAU scenario, the additional investments needs for select climate actions is $15.8 billion to 2030, with an additional $16.2 billion between 2030 and 2050. Under the ASP scenario, which includes important development investments, the need for additional climate-related investments are $396 million to 2030, and $3.2 billion between 2030 and 2050 (table ES1). Under the ASP scenario, these additional investments result in a net benefit for the economy.

Table ES1: Estimated investment needs for selected actions ($, millions 2024)

|                                | BAU 2023–30 | BAU 2031–50 | BAU with climate action 2023–30 | BAU with climate action 2031–50 | ASP 2023–30 | ASP 2031–50 | ASP with climate action 2023–30 | ASP with climate action 2031–50 |
|--------------------------------|--------------|-------------|--------------------------------|---------------------------------|-------------|-------------|--------------------------------|---------------------------------|
| Universal access to safely managed WASH | 2,153        | 1,650       | 16,394                          | 16,085                          | 16,394      | 16,085      | 16,394                          | 16,085                          |
| Restoring forests and reducing forest degradation | 53           | 132         | 181                             | 453                             | 21          | 52          | 263                             | 657                             |
| Promoting clean cooking         | 102          | 58          | 102                             | 58                              | 365         | 723         | 365                             | 723                             |
| Boosting agriculture productivity and resilience | 816          | 539         | 1,592                           | 1,381                           | 2,149       | 1,284       | 2,060                           | 3,528                           |
| Resilient transport networks and low-carbon transport modes | 0            | 0           | 646                             | 602                             | 4,224       | 5,518       | 4,486                           | 5,846                           |
| Increased share of renewables in power mix | 1,586        | 5,437       | 1,586                           | 5,437                           | 1,558       | 6,979       | 1,558                           | 6,979                           |
| Total investment need           | 4,710        | 7,818       | 20,501                          | 24,016                          | 24,711      | 30,641      | 25,126                          | 33,818                          |

Notes: The zero value for BAU under Resilient transport networks and low carbon transport modes is due to the assumption that, despite the growing need to enhance the resilience of transport networks, no new measures are taken to adapt to future climate and development conditions, even at the expense of the commitments made in recent years. The unchanged values under Increased share of renewables in power mix for with climate action scenarios are due to the models used for the generation expansion plans being based on projected demand and aimed to optimize resource utilization. The recommendations resulting from these models for BAU and ASP fulfill the country’s NDC commitments in the energy sector and, therefore, do not require additional investments in the with climate action scenarios.

The financing gap underscores the urgency of mobilizing multiple sources of climate finance, including public, private, and dedicated climate financing. There is room for the government to augment spending on climate change by increasing funding for public goods and boosting public spending effectiveness. For example, repurposing distorting agriculture subsidies for input support to income subsidies linked to farm capital formation, and integrating financing for adaptive social protection with local-level climate action could help address the vulnerability of poor households. Tanzania can also
continue to tap into dedicated climate financing and leverage these funds to mobilize private financing. An amendment to the public-private partnership regulations explicitly mentions the need to show how climate change adaptation measures are considered in project design, construction and operation, and how climate change adaptation measures are likely to impact project financing structures. Enforcing these regulations may encourage private sector actors to invest in resilient and low-carbon transport systems and infrastructure. Tanzania should also assess the potential to introduce carbon pricing while ensuring no unintended distributional impacts.

**The financial sector and insurance industry can play a key role in financing climate action.** Despite the country’s relatively small capital market and domestic banking sector, the financial sector can, over time, provide access to financing for climate action while mitigating future transitional and physical risks. To promote climate investments in micro, small and medium-sized enterprises (MSMEs) it is important that efforts aimed at bolstering the resilience of the financial sector should not exacerbate financial exclusion challenges in the country. The government could collaborate with national development financing institutions to develop financial mechanisms—such as partial credit guarantee schemes or long-term capital investments—that scale climate finance for MSMEs that are addressing climate change. Lowering the cost of capital, expanding the insurance industry, and making affordable insurance accessible could also create opportunities for adaptation financing and climate action. Providing insurance on investments would make investing in the resilience of the transport sector commercially attractive to the private sector.

**Engaging the private sector will be instrumental if Tanzania is to achieve its NDC targets.** For example, private investment will be key for greater renewable energy development, including commercial and industrial solar energy. MSMEs can get involved in energy production at the primary end, while larger enterprises can install solar systems to power businesses and institutions. Although immediate opportunities are constrained to energy production for internal use and associated services, long-term potential is high. Lifting the 30 percent limit on VRE penetration and enabling the use of battery technologies to provide backup capacity are central to mobilizing private financing to ensure VRE makes up 45 percent of the energy mix by 2045. Defining appropriate risk-sharing arrangements, providing government backstopping for projects, and strengthening the legal and regulatory enabling environment would also help. Making guarantees or insurance available for large projects can lower private sector risks, such as in power purchase agreements. Certified emissions reductions can also provide incentives to reduce emissions in the sector.

**To encourage foreign direct investment into climate finance, the government can ensure a predictable regulatory environment for investors in distributed renewable energy, mini-grid, and off-grid technologies.** Large-scale commercial investors need a national green taxonomy and reliable, robust, and objective data to support their decisions regarding climate investments. Developing clear guidelines, technical assistance, and incentive mechanisms would also help operationalize finance instruments for climate action and stimulate the development of green, social, sustainable, and sustainability-linked bonds and loans. Increasing awareness and capacity of domestic institutional investors, such as pension funds, could help leverage long-term capital to support climate action. Tackling currency risk, which is a constraint for foreign investors, would also help, as most climate projects generate revenue in local currency.

**Proactively adopting best practices in carbon credit regulations can also unlock opportunities for foreign private investments to provide an important source of non-debt financing for climate mitigation projects.** Tanzania’s Carbon Trading Regulations set out the process for participating in carbon markets, but these needs to be strengthened if the country is to meet its ambitious goals. Although Tanzania has made progress in developing a GHG mitigation strategy and is developing market infrastructure through its monitoring, reporting, and verification system, it could accelerate the full implementation of its registry. Developing documented procedures for meeting United Nations Framework Convention on Climate Change reporting requirements would help prevent double counting, while strengthening
its carbon trade guidelines could help demonstrate the alignment of mitigation activities with its NDC and provide guidance on the full carbon activity cycle. Given the dynamic nature of the market, there is a need to build flexibility into carbon guidelines/regulations and have mechanisms in place to receive stakeholder input to incorporate updates/amendments on a periodic basis.

**Financing for resilience could also combine public sector, private sector, and carbon markets.** In the agriculture sector, investments in productivity-enhancing technologies and systems, such as solar-powered productive appliances, and in forestry and organic fertilizers can benefit from a package of public and private financing and access to carbon markets. This is also the case for afforestation and agroforestry projects, which provide long-term soil health improvements and increase resilience to climate risks.

**Acting now will help ensure Tanzania can leverage its development and climate actions for a resilient, inclusive, and low-carbon growth path**

The CCDR’s robust analyses and recommendations highlight how Tanzania would benefit from committing to resilient, inclusive, and low-carbon growth via three multisectoral intervention areas, by integrating climate considerations in human capital and social protection investments; optimizing land and water use and management to increase agricultural productivity, bolster climate resilience, and lower GHG emissions; and building resilient and low-carbon infrastructure that supports existing and emerging sectors and urban areas. As the global trend in GHG emissions is expected to create what scientists consider unacceptable risk, Tanzania, like other countries in the region, needs to accelerate the implementation of climate actions to avoid the cumulative impacts of climate change. Several of the urgent actions associated with the three intervention areas align with the country’s development objectives and NDC. Strengthening sectoral and whole-of-economy governance for addressing climate change will facilitate efficient and effective climate actions. By further improving the way it uses public resources, dedicated climate finance, and carbon markets, the government of Tanzania can also stimulate private sector engagement in low-carbon investments and adaptation. Ensuring the country’s development path is climate informed will help Tanzania meet its growth aspirations, create jobs, and prevent climate change from setting back development gains.
Read more on linkages between climate and development in Tanzania