WESTERN AND
CENTRAL AFRICA

World Bank Group

COUNTRY CLIMATE AND DEVELOPMENT REPORT

Key messages

Climate Change is a Significant Threat to Togo's Development Trajectory:

- Climate change is already impacting the Togolese population, with more frequent and severe heat waves, unpredictable rainfall, and growing coastal erosion impacting livelihoods and economic activity.
- Impacts are projected to intensify, reaching an estimated loss in income per capita levels of up to 12 percent by 2050, with most severe welfare effects borne by poor populations in rural areas and along the coastline.
- Rising temperatures are expected to be a dominant driver of expected losses in welfare, followed by reduced yields for rainfed crops, slower human capital accumulation, and damages from more intense urban, coastal and inland flooding.

Structural Transformation is Crucial to Deliver More Inclusive and Resilient Growth:

- Reaching upper-middle-income status and reducing the national poverty rate below 10 percent by 2050 would require decisive efforts to raise Togo's growth potential to at least 6 percent annually, which could prove challenging in the face of climate change.
- Such outcome would only be possible if job opportunities are scaled up in higher productivity activities and sectors, if human capital is strengthened and labor force participation is increased, with a focus on more vulnerable populations.
- This accelerated process of structural transformation could already help reduce projected climate change impacts by up to 20 percent, as a smaller share of the economy and the workforce would be directly exposed.

Turning Climate Challenges into Opportunities:

- A multi-pronged approach aimed at scaling up climate-smart agriculture solutions, accelerating access to clean and affordable energy, investing in in climate-resilient infrastructure and urban development could turn threats from climate change into new avenues for development.
- Better supporting and protecting human capital from climate shocks is also critical to stimulate faster development and match available skills with the demand of emerging sectors and technologies, including those needed to strengthen climate resilience.

Strengthening Climate Governance and Access to Finance:

- Togo should develop an ambitious and well-coordinated national strategy to address climate change and better integrate climate objectives and risks across public policies, including in public investment and debt management, as well as revenue mobilization strategies.
- Building capacity to leverage new climate financing instruments could open opportunities for additional public resources, while deepening the financial sector and developing green credit, insurance, and equity financing solutions will be critical to leverage private sector solutions.

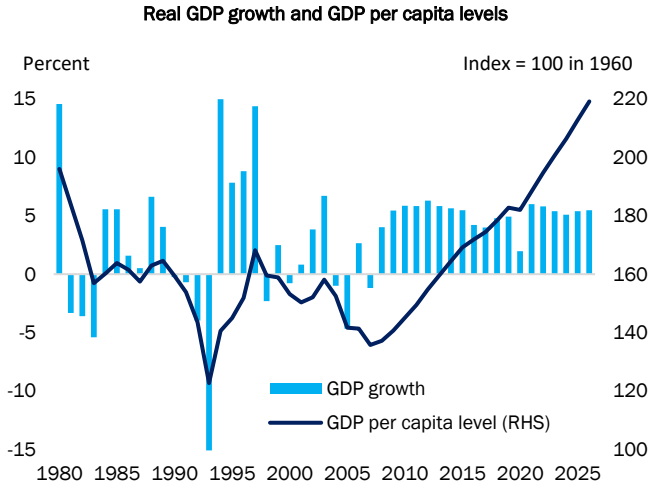
Identifying Priority Investments for a Climate-Conscious Development Strategy:

- Total investment needs identified in this report to support faster, more resilient and greener growth are estimated at about US$13.9 billion in net present value over the next 25 years, amounting to 6.2 percent of GDP annually until 2035, and 4.1 percent of GDP thereafter.
- Beyond their expected contribution to adaptation and mitigation efforts, these would have significant development co-benefits, contributing to faster growth and poverty reduction.
- Togo could initially prioritize low-cost, high-return investments with a strong role for the private sector, and boost allocative efficiency through governance reforms, while developing new revenue sources and improving access to climate financing instruments over time.

Climate change, structural transformation and the cost of inaction

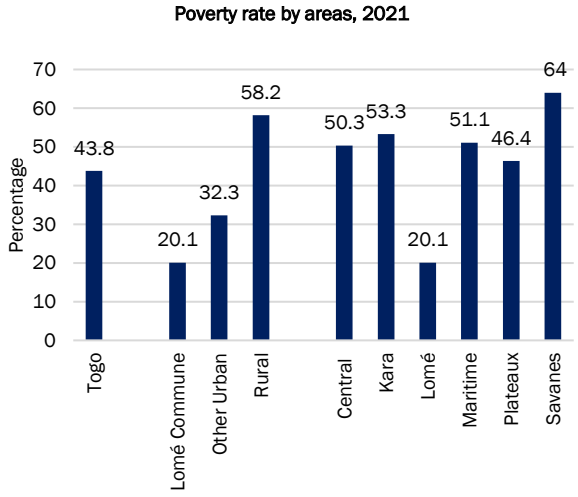
Togo has achieved significant development gains over the last decade, but progress is still held back by slow structural transformation and a large urban-rural divide. Togo was able to achieve relatively rapid and stable growth over the last 10 years, averaging about 5.2 percent (2.8 percent in per capita terms), which was supported by economic reforms as well as rising public and private investment rates (Figure 1). However, limited headway was achieved in terms of structural transformation (i.e., the process of shifting jobs towards higher productivity activities and sectors), thus holding back opportunities for faster, more inclusive, and more sustainable growth. While the expansion of port activities in Lomé and the development of agro-business value chains, manufacturing and logistics services have helped the country's economic development in recent years, limited gains in agriculture productivity, slow progress with human capital accumulation, and remaining barriers to private investment have prevented faster development. As a result, the national poverty rate has been on downward trends over the last decade, reaching 43.8 percent in 2021, but with significant and widening gaps between the capital Lomé and rural communities, particularly in the North where factors of fragility and insecurity have escalated in recent years (Figure 2). These factors have contributed to inward migration pressures in other areas of the country.

Figure 1 - Real GDP growth has been resilient, leading to improvements in living standards



Source: World Bank

Figure 2 - ...but poverty remains elevated, with a particularly large rural-urban divide.

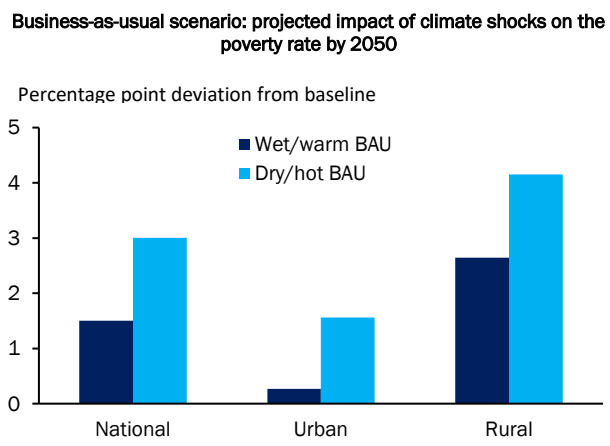


Source: World Bank calculations based on EHCVM 2018 and EHCVM 2021

Togo would need to deliver higher and more inclusive growth than observed historically to achieve ambitious development outcomes by 2050. In fact, to reach upper middle-income status and reduce extreme poverty to below 10 percent over the next 25 years, annual GDP growth in Togo would need to accelerate to 6 percent on average, or 4 percent in per capita terms, which would put the country among the top 10 to 15 percent of growth performers globally and nearly double the pace of income per capita gains from recent trends. This development trajectory would only be possible if Togo is able to simultaneously boost productivity and create more and better jobs through structural transformation. This would require diversifying the economy by leveraging comparative advantages in agriculture, light manufacturing, logistics, other trade-related and high-value services, improving connectivity infrastructures, creating a more enabling environment for private investment, upskilling the labor force, and creating more opportunities for female participation in the formal economy. More specifically, sustaining average GDP growth of 6 percent until 2050 would require ensuring that private investment reaches about 20 percent of GDP on average (+3 percentage points from current levels), increasing total factor productivity growth by 0.8 ppt per year supported by a shift in labor supply from agriculture to industry and high-value services, accelerating human capital gains by an additional 0.2

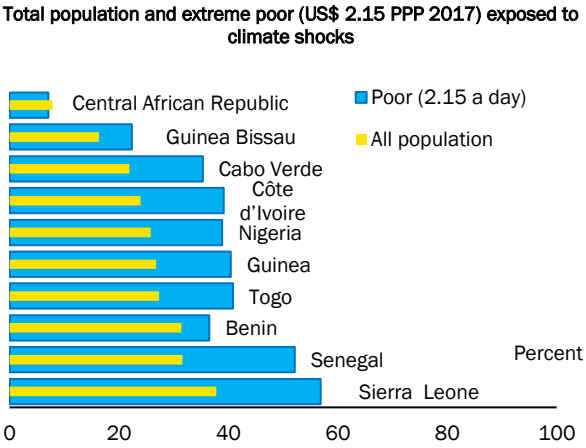
percentage points (ppt) per year, and boosting female labor force participation by 6 ppt. This ambitious structural transformation scenario could more than double cumulative income per capita gains and halve the poverty rate by 2050 compared to a business-as-usual scenario where growth would gradually slow to 4 percent.

Figure 3 - Climate change could widen gaps between urban and rural areas



Source: World Bank
Notes: For the purpose of the analysis in this CCDR, and in line with guidance to ensure comparability across countries, climate scenarios were aggregated into wet/warm and dry/hot scenarios to assess vulnerabilities and adaptation options. Results derive from microsimulation based on the output of the Applied General Equilibrium model Manage-WB developed for Togo.

Figure 4 - ....and impact the poor more severely.



Source: World Bank calculations based on EHCVM 2018 and EHCVM 2021

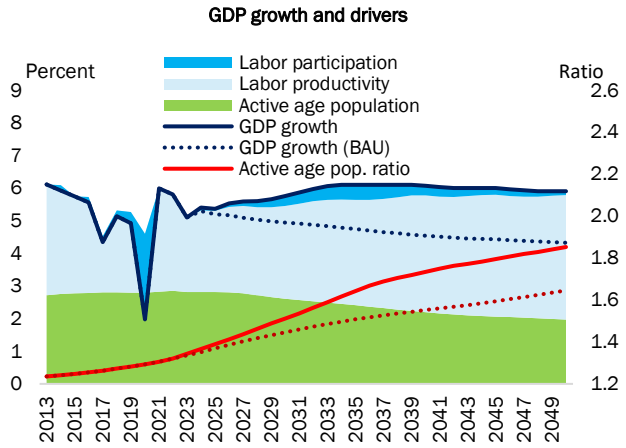
Climate change will significantly impact Togo's development trajectory, affecting disproportionately vulnerable populations. Heat waves have already become more widespread and severe, rainfall seasons more uncertain, and occurrences of extreme precipitation more frequent. These climate pressures are projected to intensify over time. In a business-as-usual scenario where the structure of the economy would remain broadly unchanged and the labor force would remain predominantly employed in low productivity and informal jobs in agriculture and services, simulations suggest that damages from climate change could result over the next 25 years in a loss of average income per capita ranging between 6.1 percent and 12.2 percent depending on climate scenarios. In these scenarios, the poverty headcount could rise by between 1.8 and 3.1 ppt as a direct result of climate shocks, with larger increases in rural areas (Figure 3). Compared with peers, the poor in Togo are particularly exposed to extreme climate events, with about 40 percent of them being regularly impacted (Figure 4). Considering the specific impact channels modeled in this report,[1] rising temperatures are expected to be a dominant driver of expected losses in welfare, followed by reduced yields for rainfed crops, slower human capital accumulation, and damages from more intense urban, coastal and inland flooding. Internal migration from more exposed rural areas, including the Savanes and Northern Kara where significant cropland surfaces could be lost to climate change, and from low-lying coastal areas due to increased coastal erosion and flooding, could put additional strains on resources in host communities, leading to heightened competition for water, infrastructure, and social services, which could feed social strife and conflict.

Faster structural transformation will be needed to boost economic opportunities for all, but also to strengthen resilience to climate shocks. By reducing the share of the workforce exposed to heat stress and boosting agriculture productivity through improved land management, irrigation, and mechanization, and by ensuring a transition to more productive services and manufacturing jobs in urban areas, structural transformation can be a powerful tool to reduce climate change impacts on livelihoods and poverty. A faster reduction in fertility rates

[1] The impact of climate shocks was assessed by using a large-scale computable general equilibrium model capturing direct climate impacts on productivity, labor, and capital, as well as indirect effects through production linkages, factor substitution, and trade. Climate shocks are evaluated through to separate biophysical models that convert changes in grid-level climate data into biophysical shocks for each of the ten impact channels considered in this CCDR, including through crop-specific yields; livestock revenues; damages to infrastructure from inland, urban and coastal flooding; heat stress on labor productivity and learning outcomes; and impact on labor supply of incidence of vector-borne, water-borne, and temperature-related diseases on labor supply.

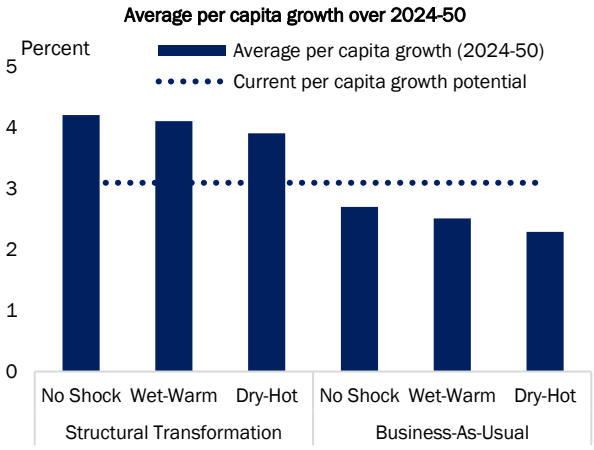
and slower population growth could also boost demographic dividends and ease pressures on land, water, and other natural resources that provide ecosystem services and help regulate the climate (Figure 5). Simulations suggest that the impact of climate shocks could be reduced by about 20 percent in this structural transformation scenario, ranging between -4.8 and -10.3 percent of GDP per capita. As a result, the impact on income per capita and poverty could be less than one third of that in the business-as-usual scenario (Figure 6). This highlights how priority reforms to stimulate structural transformation are expected to play a crucial role not only in raising Togo's growth potential but also in improving its resilience to climate change. This combined with adaptation and mitigation measures identified in this CCDR could largely offset climate impacts even in the most severe scenario and significantly reduce emissions intensity.

Figure 5 - Structural transformation could yield large growth dividends



Source: World Bank

Figure 6 - ... and strengthen resilience to climate shocks.



Source: Simulations with the World Bank's Mitigation, Adaptation and New Technologies Applied General Equilibrium (MANAGE-WB) model.[2]

While structural transformation is essential to strengthening growth and resilience, it also needs to be more inclusive to maximize impact on poverty reduction. In Togo, where poverty and food insecurity remain entrenched, boosting economic opportunities for smallholder farmers, improving education and healthcare outcomes in rural areas, prioritizing inclusive urban planning and equitable access to resources and services and creating more and better jobs in urban-based industries and services are crucial to ensure broad-based gains and alleviate fragility risks.

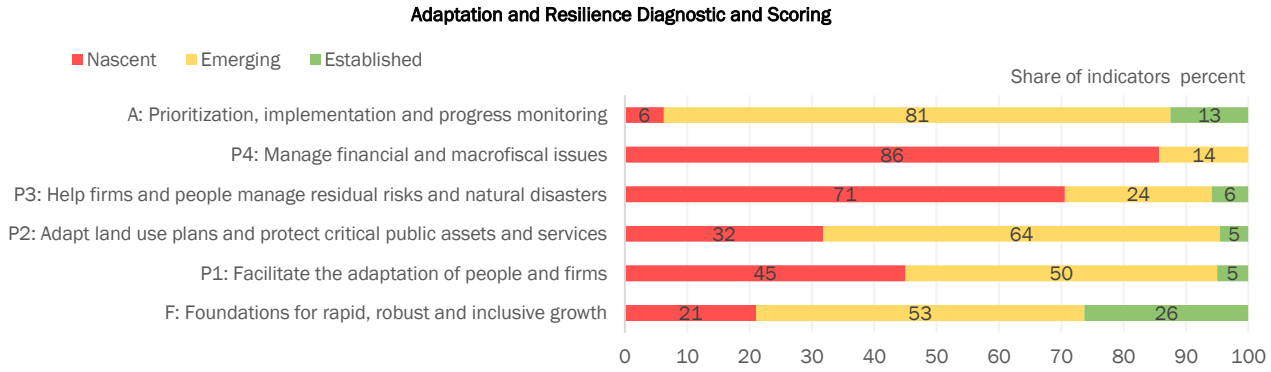
Defining a more resilient and low-carbon development pathway

With the right policy responses, challenges associated with climate change could be turned into development opportunities for Togo. While climate change poses a significant threat to Togo's development, particularly for its agriculture sector and most vulnerable populations, a multi-pronged strategy that leverages innovation, green infrastructure development, climate-proofed social services, and the promotion of climate-conscious businesses could help turn threats into opportunities. In agriculture, improving access to drought-resistant crop varieties, developing smart irrigation, promoting nature-based solutions like agroforestry and better land management and conservation could boost yields while strengthening resilience and helping to decarbonize the sector. Accelerating the shift to renewable energy sources like solar, hydro and wind power will not only reduce reliance on fossil fuels but will also provide reliable and clean energy for rural communities, fostering economic activity and promoting sustainable development. Upgrading existing transport, digital, urban, and coastal infrastructures will also be key to ensuring long-term resilience and to minimize future damages. Climate-proofing social services would require expanding social protection programs in the form of social safety

[2] The World Bank's Mitigation, Adaptation and New Technologies Applied General Equilibrium (MANAGE-WB) model accounts for both direct effects of climate change through damage vectors on productivity, labor supply and the capital stock and indirect effects accrued from various channels such as production linkages, factor substitution and intersectoral mobility, the fiscal framework, and trade.

nets for vulnerable communities, investing in robust early warning and disaster response systems, and strengthening education and healthcare infrastructures and training systems to address climate-related challenges.

Figure 7 - Efforts to boost resilience in Togo are still nascent



Source: World Bank
Note: A total of 101 indicators were used in this assessment, of which 29 percent are quantitative indicators where data are sourced from publicly available databases. The remaining 71 percent contain qualitative information collected through consultations with sectoral and country experts, and a review of relevant and publicly available legislative and executive documents, including strategies, regulations, plans and other policy documents.

A climate-conscious development strategy requires building on synergies and complementarities between sectoral policies to simultaneously boost productivity, job creation, and the resilience of vulnerable populations. For instance, scaling up climate-smart and nature-based solutions in agriculture supports productivity, food security, and carbon sequestration, providing a strong foundation for sustainable rural livelihoods that limits rural-to-urban migration pressures. This complements efforts to ensure sustainable urban and coastal development while mitigating risks from coastal erosion and flooding. Ensuring universal access to clean and reliable energy is also critical to power agriculture, to attract new manufacturing and higher value-added services in urban centers, and to support digital solutions for a low-carbon economy. Similarly, a more resilient and greener transport sector can help lower emissions while strengthening local, regional and global value chains, and help develop secondary cities that reduce the urban pressures under the Grand Lomé area. Efforts to enhance human capital, especially among the youth, are equally critical to support more and better paying jobs by matching skills with the demand of emerging sectors and technologies, including those needed for Togo's green transition. Moreover, a higher level of human capital is associated with social progress, stronger resilience, and reduced fertility rate, all enablers of structural transformation. Finally, robust climate governance and improved access to climate financing can help mobilize critical investments across these sectors while fostering transparency and accountability for impactful delivery. In this regard, substantial gaps remain in creating an enabling environment to boost resilience and adaptability (Figure 7).

If implemented correctly, priority reforms and investments could help turn threats from climate change into opportunities for faster development.

Here are the key elements of that strategy:

Table 1 - Development pathways, priority areas, and priority reforms for a greener, more resilient, and inclusive development in Togo

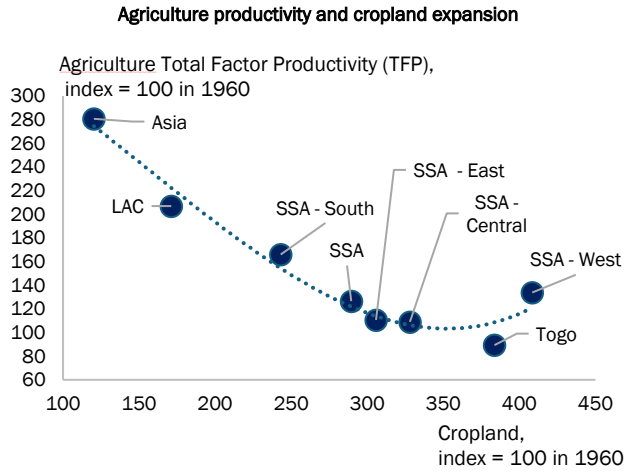
HIGH LEVEL OBJECTIVE	PRIORITY AREAS	KEY RECOMMENDATIONS		
ACCELERATE STRUCTURAL TRANSFORMATION IN A CHANGING CLIMATE	Scale up climate-smart and nature-based solutions in agriculture	Support the adoption of climate-smart practices and inputs	Promote agroforestry, riparian buffers, and other nature-based solutions	Increase access to sustainable irrigation and develop inland valley swamps

	Support sustainable urban and coastal developments	Develop an urban planning code that incorporates climate risks and ensures the resilience of cities to disaster and climate-related risks	Improve solid waste management through the use of sanitary landfills and recycling	Implement a dynamic adaptive policy to tackle coastal degradation
	Ensure universal access to more reliable and clean energy	Incorporate gas into the energy mix as a transitional measure away from more polluting energy sources	Implement reforms and make strategic investments to boost solar and hydroelectric power	Improve access to clean cooking solutions and management of biomass
	Develop greener and more resilient transportation	Increase the share of paved roads by 50 percent, build to higher standards and improve maintenance capacity	Phase out fuel subsidies, introduce Intelligent Transport Systems (ITS), and promote electric mobility	Create a sediment bypass around the Port of Lomé
	Promote clean industrial development	Implement a comprehensive strategy to address marine pollution from the release of tailings from phosphate mining	Use the planned exploitation of hard-rock phosphate deposits to convert to electrified or hydrogen-fueled equipment	Develop low clinker content or blast furnace cement and promote demand for low-carbon cement products
	Develop an enabling environment for private sector innovation and the promotion of green investments	Reform investment promotion, FDI, entrepreneurship and PPP policies to mainstream climate adaptation and mitigation	Create a more supportive policy framework for research and development (R&D) in green technologies	Expand green credit and equity financing options, through *inter alia* the introduction of a new taxonomy to identify climate-smart activities
BOOST THE HUMAN CAPITAL AND RESILIENCE OF VULNERABLE POPULATIONS	Improve learning outcomes in sustainable schools	Construct climate-smart school infrastructure and use vegetation to reduce heat stress	Reinforce teacher training and curricula on climate-related issues	Accelerate digitalization in the education sector
	Prevent climate-related health threats	Ensure rapid progress towards universal health coverage	Improve the quality of health and nutrition services, particularly for the most exposed segments of society	Ensure climate-adaptive measures for health infrastructure in climate-sensitive areas
	Develop a robust and shock-responsive social protection system	Operationalize a dynamic social registry with up-to-date socio-economic household data	Expand access to productive safety net programs to strengthen the resilience of poor households	Institutionalize a shock response program to support households in the event of a climate hazard
IMPROVE CLIMATE GOVERNANCE AND ACCESS TO FINANCE	Develop a clear strategy and institutional framework	Strengthen institutional capacity through better governance and coordination	Fully integrate climate objectives into public investment management	Make the tax structure greener and consider the introduction of carbon taxation
	Boost access to climate-related financing	Maximize the full range of concessional and semi-concessional financing instruments	Operationalize the regulatory and institutional framework for carbon credits	Create the capacity to issue sustainability-linked sovereign debt instruments.

1. Scale up climate-smart and nature-based solutions in agriculture

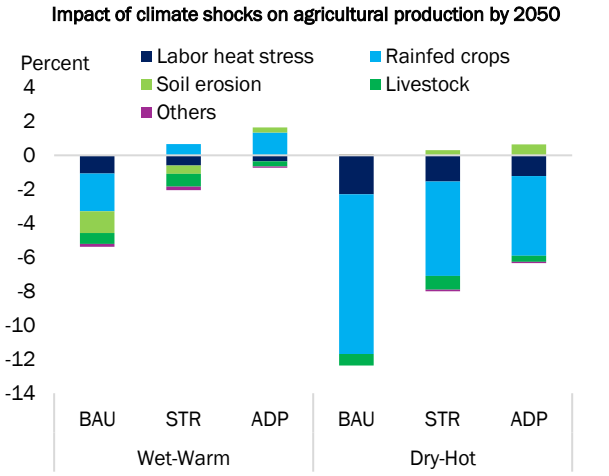
The agricultural sector could make a more substantial contribution to Togo's structural transformation with necessary productivity-enhancing investments and efforts to reduce exposure to natural hazards. Despite its relatively low and declining share in GDP, agriculture still occupies 40 percent of the workforce in Togo and remains the main source of income for 60 percent of rural workers and up to 70 percent of those living under the poverty line. Yet stagnant productivity traps most farmers in subsistence agriculture with low incomes and limited capacity to invest in more resilient practices or to adjust to shocks, thus leading to the expansion of cropped areas that contributed and contribute still to deforestation (Figure 8). In the absence of decisive measures, agricultural production and food security could be severely hampered by heat-related stress, changes in rainfall patterns, climate-related crop diseases, and soil erosion. These impacts could reduce the sector's capacity by up to 12.3 percent over the next 25 years (Figure 9).

Figure 8 – Low agriculture productivity and cropland expansion have contributed to deforestation



Source: World Bank

Figure 9 - Climate impacts on the agriculture sector could be severe in the absence of decisive measures



Source: World Bank
Notes: Based on the results of biophysical models for 13 individual crops and 5 livestock species, heat stress on labor productivity and soil erosion fed into the Manage-WB CGE model.

Greening the agriculture sector and improving water management are critical to boost resilience and decarbonize production. Supporting the adoption of climate-smart practices could significantly transform Togo's agriculture sector by increasing productivity, creating jobs, enhancing resilience to climate shocks, and ensuring food security. Key strategies include green mechanization and irrigation, organic fertilizers, and heat-resilient crops, which could mitigate the negative impacts of climate change on yields. To attract private investments needed to transform the agriculture sector, it will be crucial to develop customized financial instruments, improve access to technology, streamline regulatory processes, and better leverage public-private partnerships. Land tenure security will also need to be strengthened to encourage smallholder farmers to invest in their land, improve their living conditions and preserve natural resources. Scaling up nature-based solutions, and notably agroforestry, appears particularly promising to confront climate change challenges for smallholder farmers in Togo. It offers prospects of significant gains in agricultural productivity and in ecosystem services that reduce the need for costly and sometimes environmentally damaging inputs (Figure 10). In addition, its carbon sequestration potential could open the door to financing options that could help scale-up necessary investments (Figure 11).

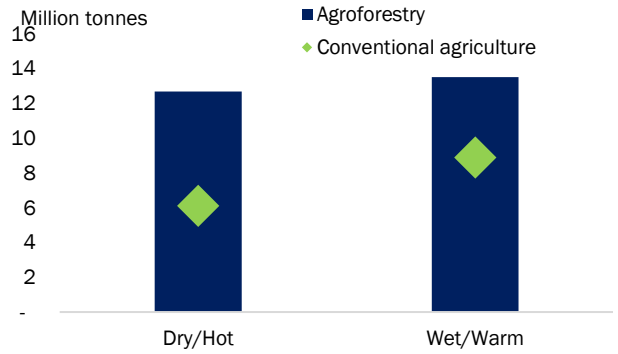
Taken together, investments identified in this CCDR to boost climate adaptation and mitigation in the agriculture sector could reduce climate impacts by at least 50 percent. These investments are estimated to amount to US$1.9 billion in present value term over the next 25 years, which would require average annual investments of about 0.9 percent of GDP until 2035 and 0.451 percent of GDP from 2036 to 2050 (Figure 9, **Error! Reference source not found.**). However, they would be more than offset by gains in production capacity, incomes, and food security, which should largely compensate the impact of climate shocks in a wet/warm scenario and reduce their effect by more than 50 percent under a dry/hot scenario. The carbon intensity of the sector would also decrease by an estimated 75 percent between now and 2050. These investments will have synergies with other sectors, including education, social protection, and re-skilling to prepare the workforce for green jobs.

Greening agriculture production and value chains will help support international competitiveness. Climate regulation among countries representing major market opportunities for Togo are likely to increasingly limit access for agricultural products not meeting certain forest and land preservation standards. Similarly, the potential for climate financing in agriculture largely relies on measurable reductions in emissions, including through better land and forest management. Nature-based solutions like agroforestry, riparian buffers or community-based forest management are particularly promising in this regard but should be accompanied by improved capacity to undertake reliable and transparent environmental and emission impact assessments.

Similarly, developing sustainable supply chains that prioritize renewable energy, use local sourcing and minimize transportation distances could contribute to a lower carbon footprint, while the adoption of waste-to-energy technologies, such as converting agricultural waste into biogas or bio-fertilizers would also help reduce emissions. This could have the added benefit of helping boost access to international markets amid increasingly demanding low-carbon commitments.

Figure 10 - Scaling up agroforestry could boost productivity, climate resilience, and food security

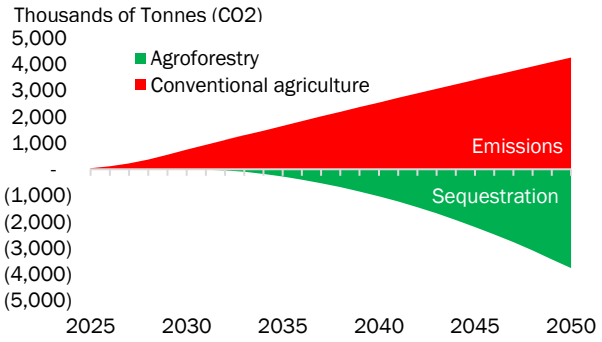
Crop production by 2050 on 20 percent of suitable cropland and 50 percent of suitable grassland and shrubland converted to agroforestry



Source: World Bank
Based on the identification of suitable land[3] and an assessment of costs and expected benefits (expected returns, carbon sequestration) under various climate scenarios.

Figure 11 - … while significantly reducing GHG emissions.

Carbon emissions from different agricultural systems on 20 percent of cropland and 50 percent of grassland and shrubland, cumulative



Source: World Bank

2. *Support sustainable urban and coastal developments*

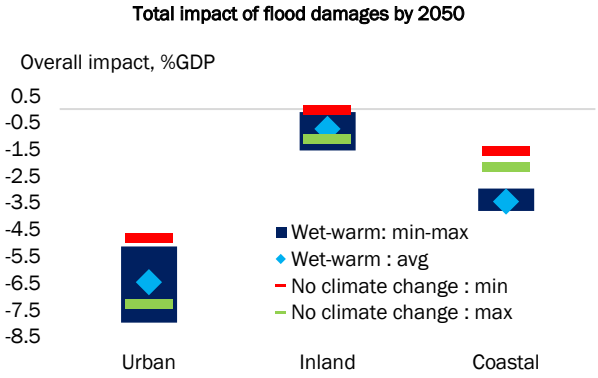
Climate pressures are heightening challenges associated with rapid urbanization and coastal developments, which play an important role in structural transformation. By 2050, it is projected that about 9.3 million people will live in urban areas in Togo, corresponding to more than 60 percent of the population, up from 45.6 percent currently. Climate pressures are set to amplify spatial imbalances and geographical disparities between rural and urban areas and between northern and southern parts of the country, further intensifying fragilities and causing population displacements. As demographic pressures intensify, major urban and coastal areas in Togo will be increasingly exposed to flood risks, with an average of 3 to 6 percent of built-up areas currently exposed to 100-year floods. By 2050, costs associated with flood damages in urban areas could reach 6.5 percent of GDP, and nearly double along the coastline to reach 3.5 percent of GDP, creating significant disruptions to livelihoods and economic activity (Figure 12). In fact, southern coastal agglomerations, where most of the urban population resides, are highly vulnerable to increasing coastal erosion and sea level rise, which could lead to permanent damage, in addition to repairable damage from periodic floods and storm surges. Weaknesses in water supply and sanitation systems and urban heat island effects will also amplify climate vulnerabilities (Figure 13), with solid waste being a major source of urban Greenhouse Gas (GHG) emissions and flood risks.

The next decade will be critical for determining the development pathway of cities and coastal areas. Once urban sprawl has occurred and coastal erosion becomes pervasive, reversing the trend is extremely challenging as natural risks would be locked in. A new urban planning code that incorporates climate risks and ensures greater resilience of cities to disaster- and climate-related risks should be implemented, including regulations for the use of land, buildings, or other structures. Improving solid waste management through the use of sanitary landfills and recycling would help reduce urban emissions, while also helping to reduce water pollution and flood risks. A dynamic adaptive policy to tackle coastal degradation is also needed to reduce coastal erosion, in close collaboration with the private sector. More sustainable funding mechanisms for local

[3] Soil health, elevation, slope, proximity to settlements and roads, land use, precipitation and temperatures.

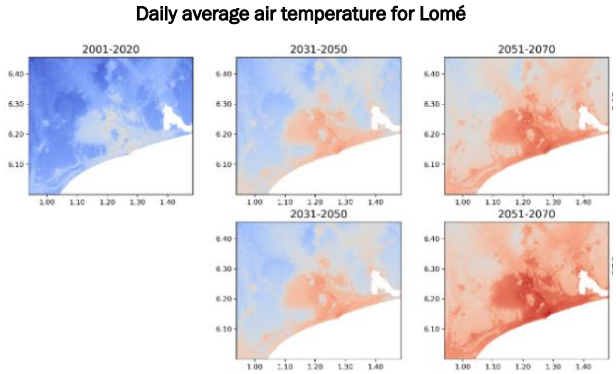
governments, such as increasing transfers or using performance-based grants, could incentivize much-needed local action. Diversifying water resources and increasing the efficiency of distribution networks will also help reduce the energy intensity of water supply services while improving water availability. Investments identified in the CCDR to support a more resilient urban and coastal development are estimated to reach about US$ 2.07 billion by 2050 in present value, which would require average annual investments of about 0.78 percent of GDP until 2035 and 0.8 percent of GDP from 2036 to 2050. These are expected to bring large economic and environmental co-benefits.

Figure 12 - While urban flooding has the highest economic cost, damages from coastal flooding will increase the most



Source: World Bank
Notes: Based on stochastic simulations for inland, urban, and coastal flooding in Togo, using estimated return period of historical floods and their impacts to run 5,000 realizations of flooding damages over the period up to 2050 under various climate change scenarios.

Figure 13 - Heat stress represents a key challenge for productivity and livelihoods in urban centers like Lomé



Source: World Bank

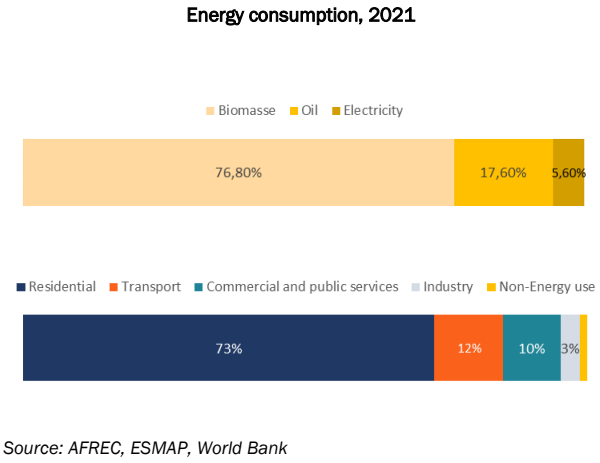
3. *Ensure universal access to more reliable and clean energy*

The energy sector will play a key role in Togo's transition to a more prosperous, resilient and lower carbon economy. Significant progress has been achieved in raising access to electricity in recent years. But this has occurred mostly in urban areas, as only a quarter of the population has access to electricity in rural areas. As the government seeks to reach universal access by 2028, the demand on the interconnected grid is expected to increase by 250 percent by 2035 and by 500 percent over the next 25 years. This will require major expansions of production and distribution capabilities, along with efforts to boost decentralized solutions in remote areas. Supporting studies to mitigate losses on the network of the national electricity company (*Compagnie Énergie Électrique du Togo*, CEET) and in public buildings will help reduce demand pressure and optimize resource use. Reinforcing and upgrading regional integration is also crucial to create a more resilient and interconnected energy network, augmenting the production capacity of importing countries like Togo, and ensuring a stable supply of natural gas through the West African Gas Pipeline (WAGP). The exposure of power infrastructures to climate hazards, combined with weak sector governance and performance, are exacerbating challenges in meeting growing demand while transitioning to cleaner and cheaper energy. Beyond the need to scale up renewable energy sources, climate mitigation efforts in the energy sector will require improvements in the biomass sector, which currently accounts for 75 percent of energy consumption in Togo (Figure 14). Current practices in this area are causing the overexploitation of forests, adversely affecting natural ecosystems and plant and animal biodiversity. Inefficient cookstoves consume large amounts of wood fuel and are also major sources of atmospheric pollution. Universal access to modern energy cooking services (MECS)[4]

[4] This refers to a household context that has met the standards of Tier 4 or higher across all six measurement attributes of the Multi-Tier Framework: convenience, (fuel) availability (a proxy for reliability), safety, affordability, efficiency, and exposure (a proxy for health related to exposure to pollutants from cooking activities).

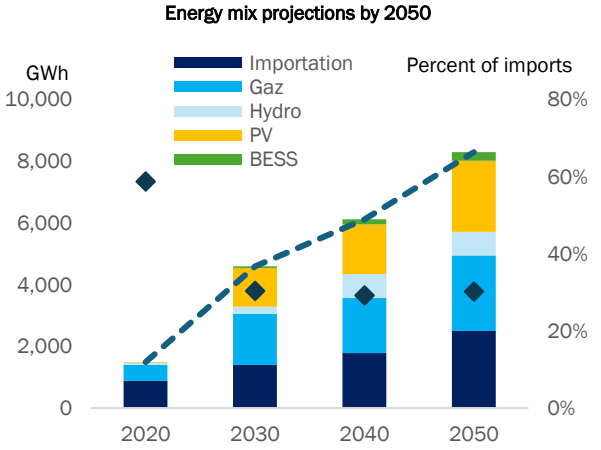
by 2050 could reduce biomass use by shifting away from wood and charcoal and cut greenhouse gas emissions by about 90.5 percent compared to a 2020 baseline.

Figure 14 - Energy consumption is still dominated by biomass and is driven by the residential sector.



Source: AFREC, ESMAP, World Bank

Figure 15 - Renewable energy will need to play a key role in meeting growing demand while reducing imports



Efforts to reduce reliance on fossil fuels should be combined with improved access to clean and stable energy, and with a more sustainable management of natural resources. Gas could serve as a bridge to a cleaner energy system by facilitating the integration of renewable energy sources through balancing intermittent supply and stabilizing the grid (Figure 15). However, Togo's integration of LNG into its energy mix risks creating a dependency due to the sunk costs of LNG infrastructure, potentially locking the country into natural gas use beyond its transitional role. As hydrocarbon reserves are depleted in neighboring countries, Togo should aim to diversify its energy sector. To achieve a significant expansion of solar energy, Togo will need to pursue a series of sectoral reforms and strategic planning of large-scale projects, which will likely become a source of cost-effective and climate-friendly renewable energy. Hydroelectric power is also a crucial element in Togo's clean energy strategy, with the dual objectives of providing a reliable and sustainable electricity supply and of improving water management to counter the negative impacts of climate change. Furthermore, a revised national energy strategy should prioritize grid extension and densification, especially in rapidly growing peri-urban areas. Reaching universal access to clean and efficient cooking would also require significant investments, but those would be lower than the expected gains in welfare and the reductions in emissions over time. Establishing performance targets for cookstoves' efficiency and emissions, creating cookstove testing facilities and labeling schemes, and tracking progress to identify and overcome barriers are some of the low hanging fruits to move towards cleaner cooking technologies. Overall, identified investment needs for climate adaptation and mitigation in the energy sector are estimated to reach a cumulative US$ 3.881 billion by 2050 in net present value, requiring average annual investments of about 2.22 percent of GDP until 2035 and 1.25 percent of GDP from 2036 to 2050. These investments, however, should be partly compensated by the economic empowerment of other sectors as well as the reduced emission intensity of the energy mix by around 60 percent from now till 2050.

The private sector will need to play a determinant role in enhancing the overall efficiency and financial performance of the energy sector. As the CEET grapples with challenges related to operational efficiency and financial viability, strategic partnerships with private entities are indispensable. These collaborations facilitate the injection of capital, the introduction of innovative technologies, and the improvement of management practices. The synergy between the private sector's dynamism and CEET can lead to more sustainable energy solutions and help stabilize the financial foundation of the energy sector. This partnership not only drives progress towards universal electricity access but also supports the government's efforts to ensure that state-owned enterprises become more accountable and financially viable. By leveraging private sector expertise and

investment, Togo can better navigate the complexities of modernizing its energy sector and enhancing its economic impact.

4. Develop greener and more resilient transport sector

Togo's main transport assets, namely roads, bridges, and port facilities, are significantly exposed to natural hazards. At present, almost 20 percent of the total length of roads could be damaged during frequent flooding (with a flood return frequency of ten years) and up to 40 percent under extreme circumstances (with a flood return frequency of 100 years). The wider economic cost of flood-induced damages to roads and bridges isestimated at US$12.1 million every year, 95 percent of which is due to traffic disruptions associated with reduced accessibility. Depending on climate scenarios, these costs could increase by between 40 and 250 percent over the next 25 years. Moreover, the Port of Lomé, which is one of Togo's most valuable assets, is increasingly impacted by coastal erosion, while also being a cause of that erosion. In fact, a strong natural eastward drift of sediment along the coastline has been interrupted by the construction of the Port of Lomé, leading to significant erosion on the east side of the port and sediment accumulation on the west side and along the port's access channel. Sea level rise will amplify coastal erosion, with effects becoming increasingly visible after 2040.

Targeted adaptation and mitigation interventions could help prevent climate-related disruptions to transport infrastructure and also cap emissions. Increasing the share of paved roads by 50 percent and building to higher standards could potentially reduce climate-related road network disruptions by half by 2050. Building capabilities for effective road maintenance is also crucial to maximize the benefits of investments over time. Upgrading drainage systems and elevating road surfaces across the most exposed road links could be cost-effective measures as well, helping to prevent large-scale disruptions with minimal investments. Considered as a quick win in addressing urgent short-term priority, the adaptation of critical links across the country to protect key road links from events as severe and rare as 1,000-year flood could be regarded as cost effective investments to be pursued by the government. These investments could partially be financed through a phasing out of fuel subsidies, which could also encourage lower emissions transportation. Other mitigation measures include improving the quality of gasoline and diesel fuels, introducing Intelligent Transport Systems (ITS), promoting electric mobility, and rehabilitating railways and freight movement. Meanwhile, a sediment bypass around the Port of Lomé, involving the dredging of the port access channel and the transfer of sediments to the erosion zone to the east, could be the most effective option for minimizing coastal erosion, and is also preferred in terms of socio-economic acceptance. The past decade has seen substantial public spending to support the government's road infrastructure program, with public investment in the sector averaging 2.5 percent of GDP per year. Priority investments needed to support a more resilient road sector with lower emissions and address coastal erosion around the Port of Lomé are conservatively estimated to reach about US$1.6 billion by 2050 in net present value, requiring average annual investments of about 0.78 percent of GDP until 2035 and 0.5 percent of GDP from 2036 to 2050.

5. Scale-up clean industrial development and innovation

Togo aspires to accelerate industrial development, which will require leveraging more private sector investments to improve efficiency and reduce the environmental footprint. Togo's industrial sector is still concentrated in extractive industries, most notably phosphate production and cement works. It also has manufacturing industries in areas such as food, textiles and clothing, wood, chemicals, and metals, with a large untapped potential for more and better jobs. Developing a more attractive environment for foreign direct investments, which have been relatively muted over the last decade, could play a critical role in leveraging the potential of these sectors and in fostering technological transfers, driving innovation, and spreading cutting-edge practices needed to boost productivity and job creation in a climate conscious way. Togo is already providing significant safeguards for foreign investments, but to attract new projects and broaden their benefits it should continue to improve access to markets, energy, and infrastructure, ensure strategic planning around ambitious sectoral objectives, and stimulate domestic investments in associated value chains. At the same

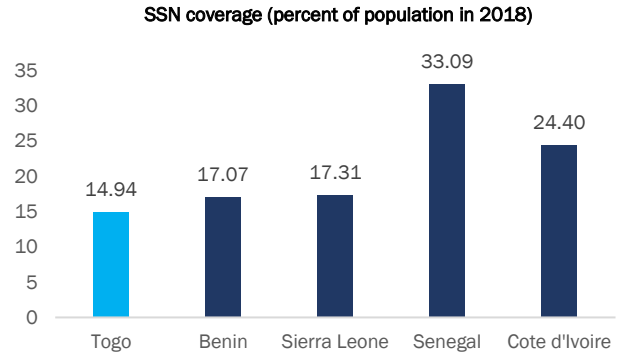
time, Togo could facilitate local innovation and reduce its reliance on imported technologies by strengthening public-private partnerships, creating a more supportive policy framework for research and development (R&D) in green technologies, and carrying out targeted investments in technical education and vocational training.

Climate-proofing phosphate and cement sectors are critical to the nexus between industrial competitiveness and environmental sustainability. Actions to decarbonize their activities are a key component of their future competitiveness and access to international markets amid increasingly stringent national and global emissions reduction commitments. For instance, EU's Carbon Border Adjustment mechanism seeks to ensure that imports of key industrial products like steel, fertilizer, cement, or aluminum meet certain emissions standards to prevent carbon leakage thus putting domestic industries at a competitive disadvantage. Energy audits of existing production facilities, together with the selection of more energy efficient technologies, could help guide the decarbonization strategy of these sectors. The potential exploitation of hard-rock phosphate deposits offers an opportunity to convert to electrified or hydrogen-fueled equipment with low emissions. In parallel, urgent action must be taken to rein in the significant marine pollution caused by the release of tailings from the phosphate industry. In the cement sector, lowering its carbon footprint through reduced clinker content or blast furnace cement should go hand-in-hand with efforts to expand demand for low-carbon cement products, which currently remains low.

6. Boost the human capital and resilience of vulnerable populations

In the absence of robust adaptation measures, climate change could slow poverty reduction efforts and adversely impact human capital development with lasting consequences on future generations. Under the more benign wet/warm scenario, climate shocks could increase the poverty rate by 1.8 ppt by 2050, while in the more acute dry/hot scenario, the increase could reach 3.1 ppt, with up to half a million people falling into poverty as a result of climate shocks every year. Challenges to human capital development will also intensify, as learning opportunities and health of exposed populations could be significantly impacted, with negative consequences on productivity and earning levels of future generations. Togo is already grappling with high learning poverty (82 percent), which diminishes adaptation potential and readiness for structural transformation, and could deepen even further because of climate pressures. If left unmitigated, rising temperatures could potentially reduce knowledge acquisition by between 10 to 20 percent over the next 25 years, and school and education infrastructures remain highly exposed to climate shocks such as flooding and high winds. The social protection system currently suffers from pervasive fragmentation and weak coverage of the poor and vulnerable, directing the bulk of resources towards formal sector workers. Climate change could also exacerbate fragility risks and security challenges in the North, increasing competition over diminishing resources and intensifying migration. The hard-won gains of social and public health programs could also be threatened by an increased incidence of climate-related diseases, putting additional pressure on already underfunded social protection programs.

Figure 16 - Social safety net coverage in Togo is generally lower than among regional peers.



Source: World Bank, using ASPIRE Data

To prevent adverse impacts on human capital and build a more resilient, productive, and inclusive society, climate-smart reforms and investments will need to be prioritized in the coming years. While the Government should continue pursuing investments that help to build resilience through education, health, and social protection programs, it should also target specific reforms and investments to address climate change impacts on its vulnerable population. In this regard, productive safety net programs play an important role in strengthening the resilience of poor households and better preparing them for climate and other shocks, while contributing to higher productivity of future generations and greater social cohesion. The vision of the new flagship safety net program adopted by the Government needs to be translated into concrete actions in instituting, financing and launching it at scale to boost coverage, which has been historically below regional peers (Figure 16). To improve learning opportunities for students across the territory, priorities should include the construction of climate-smart school infrastructure and the use of vegetation to reduce heat stress. These measures should be complemented by adjusted curricula, reinforced teacher training, and accelerated digitalization in the education sector. Finally, ensuring rapid progress towards universal health coverage, the provision of quality services, particularly for the most exposed segments of society as well as ensuring climate-adaptive measures for health facilities, could limit the impact of climate change on public health. The costs of priority measures to support the adaptation of vulnerable populations are estimated to reach a cumulative US$3.6 billion by 2050 in net present value, which would require average annual investments of about 1.17 percent of GDP until 2035 and 0.85 percent of GDP from 2036 to 2050, which should prevent the loss of human capital to climate change.

Identifying priority investment needs and their impact

Table 2 - Priority investment needs for adaptation and mitigation in key sectors over the period 2024-50

	Investment needs by 2035		Investment needs by 2050	
	Cumulative, Present Value $US	Average, %GDP	Cumulative, Present Value $US	Average, %GDP
Agriculture, including the following priority investments:	**US$ 1,160M**	**0.9**	**US$ 1,926M**	**0.4**
Develop a national agroforestry initiative, using ecosystem services to help boost agricultural productivity and prevent land degradation. Promote the use of climate-smart agriculture practices and technologies to strengthen resilience and reduce the carbon footprint. Boost access to sustainable irrigation systems that integrate effective surface water management and optimize water use for agriculture.				
Urban and coastal development, including the following priority investments	**US$ 1,093M**	**0.8**	**US$ 2,068M**	**0.8**
Implement a resilient and compact urban development that ensures better land management and reduces the risk of urban sprawl. Carry-out a resilient drainage and flood protection program for coastal and secondary cities and reduce heat-related climate risks. Strengthen coastal development and management, including through the implementation of nature-based solutions to reduce coastal erosion.				
Energy, including the following priority investments:	**US$ 2,984M**	**2.2**	**US$ 3,885M**	**1.2**
Boost access to electricity by supporting resilient grid extension in peri-urban areas and hybrid mini grids and solar kits in rural areas. Develop cost-effective and climate-friendly renewable energy sources through the strategic planning of large-scale photovoltaic projects. Strengthen reforestation efforts and biogas supply capacity for bioenergy production.				
Transport, including the following priority investments:	**US$ 1,008M**	**0.8**	**US$ 1,666M**	**0.5**
Establish an Intelligent Transport Systems with digital services and automatic traffic management to cap emissions and congestions. Boost the road network resilience by upgrading key links for protection against 1,000-year floods. Support the sustainable development of the Port of Lomé by developing a sediment bypass combined with regular dredging of the port access.				
Digital, including the following priority investments:	**US$ 115M**	**0.1**	**US$ 136M**	**0.01**
Expand climate-proof and resilient ICT infrastructures in high-risk (remote) areas; and perform periodic climate risk assessment. Roll out critical digital public services to ensure the administration continuity in a disaster and set up disaster recovery centers in low-risk areas.				
Phosphate and other industries, including the following priority investments:	**US$ 379M**	**0.3**	**US$ 625M**	**0.2**
Reduce marine pollution from phosphate production by implementing water quality testing and constructing settling basins for slurry treatment. Develop a robust monitoring and reporting system to track progress of private sector initiatives in climate mitigation and adaptation.				
Human capital, including the following priority investments:	**US$ 1,756M**	**1.2**	**US$ 3,619M**	**0.9**
Implement mandatory green building standards for new education and health sector constructions to boost resilience. Ensure that pupils have access to digital content to develop new learning opportunities and limit disruptions during climate shocks. Adopt and implement a Preparedness Plan for food and nutrition security (FNS).				

	Investment needs by 2035		Investment needs by 2050	
	Cumulative, Present Value $US	Average, %GDP	Cumulative, Present Value $US	Average, %GDP
Strengthen the resilience of poor and vulnerable households by operationalizing a dynamic social registry with georeferenced and hazard data, expanding access to flagship safety net program to all poor, and institutionalizing shock response program to those affected by climate shocks.				
Total investment needs	**US$ 8,495M**	**6.2**	**US$ 13,925M**	**4.1**

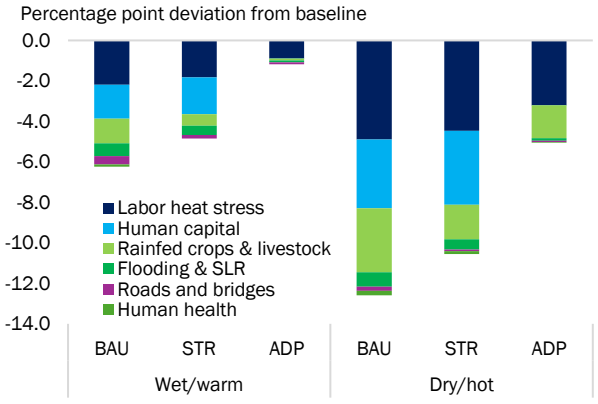
Source: World Bank
Note: Priority investments are identified based on their viability and expected impact. An investment "viability" is computed by averaging scores on urgency, implementation period, and operability. Expected impact is computed by averaging scores on development co-benefits and Impact on the most vulnerable.

Addressing climate change while meeting broader development needs requires selectivity in climate actions as well as innovative financing solutions. The critical climate-specific investments addressing climate adaptation and mitigation across the key sectors described above are estimated to cost about US$13,925 million in net present value over the next 25 years, corresponding to average annual investments of about 6.23 percent of GDP until 2035 and 4.1 percent of GDP thereafter (**Error! Reference source not found.**). If financing for such investments could be found, the adverse impact of climate change could be largely avoided under wet/warm conditions and be reduced by about 60 percent under dry/hot conditions (Figure 17), while reducing GHG emissions intensity by 55 percent by 2050 (Figure 18). This illustrates that combining structural transformation with key adaptation and mitigation measures can help ensure faster development, while boosting climate resilience and emission reductions.

Despite strong development co-benefits from many of the identified climate actions, Togo's ability to invest is constrained by limited fiscal space and access to climate financing instruments. Fiscal consolidation efforts in the short term and relatively low domestic revenue mobilization are among the most pressing constraints for publicly financed climate actions in Togo, many of which have high upfront costs. This is especially true when the country also needs to invest massively in basic infrastructure and services, as well as in education, healthcare, and social protection to address poverty and fragility risks. Togo will therefore need to focus in the short term on relatively low-cost and high-return investments and boost allocative efficiency through governance reforms, while developing new sources of revenue mobilization and improving access to climate financing instruments.

Figure 17 - Structural transformation and adaptation could reduce climate impacts by up to 90 percent

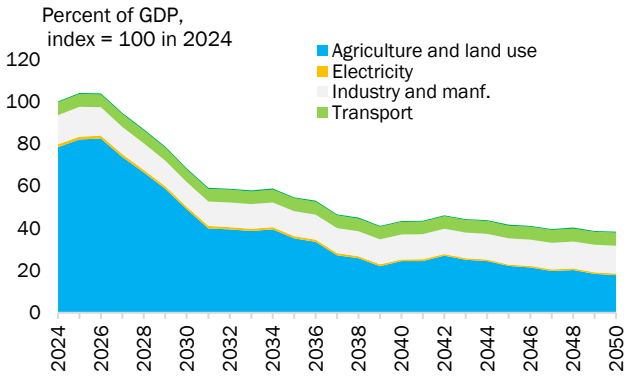
Impact of climate shocks by 2050 on real GDP per capita levels under different scenarios



Source: World Bank
Notes: Derived from simulations with the World Bank's Mitigation, Adaptation and New Technologies Applied General Equilibrium (MANAGE-WB) model.

Figure 18 - ...and reduce GHG emissions intensity by 55 percent over the next 25 years.

GHG emissions in a dry/hot scenario with sectoral mitigation and a carbon tax of US$7.5 per ton of CO_2



Source: World Bank
Notes: Derived from simulations with the World Bank's Mitigation, Adaptation and New Technologies Applied General Equilibrium (MANAGE-WB) model. A detailed analysis of energy supply and demand has been incorporated, taking into consideration various sources of electricity generation and the corresponding energy mix. The model is also set up to include and track the evolution of GHG emissions by type and source.

Boost climate governance and access to finance

Togo would need to develop a clear and well-coordinated climate change strategy. While the Government's national development program includes climate change considerations, Togo does not yet have an integrated and holistic national climate strategy, nor has it set a net zero target in accordance with Article 4.19 of the Paris Agreement. The government did, however, launch a low emissions development strategy (LTS) covering all sectors, State-OwnedEnterprises (SOEs), and municipalities, which marks an important step forward towards more strategy-driven climate change planning. On the other hand, Togo's institutional landscape for climate change and its coordination of climate action and policy are not yet conducive to improved climate governance. Despite the establishment of several coordination mechanisms over the years, including several institutions that appear set to play a role in mobilizing climate finance, these are yet to be operational. This further underscores the urgent need for a more integrated and collaborative approach to climate change policy and financing in Togo for delivering on adaptation and resilience objectives. A more comprehensive Climate and Disaster Risk Financing strategy is also needed to clarify most suitable sources of financing and instruments.

Climate objectives and risks should be integrated in the public investment management framework to reinforce adaptation and mitigation efforts. Integrating climate considerations into macro-fiscal policies, budget allocations, and public investments is critical. Climate goals and climate risk assessment should systematically be integrated in the selection and execution of public investment projects. A Resilience Rating System (RRS) could help assist in project financing and implementation decisions, and raise awareness among government officials, policy makers, and the general public about the risks of climate change and the benefits of more resilient infrastructures. Public-Private Partnerships are also critical to meet large investment needs and to benefit from private sector expertise in climate adaptation and mitigation. This should be accompanied by updated legislation clarifying standards and methodologies to account for climate risks. It is also critical to develop a cohesive climate and disaster financing strategy, and to engage the private sector to enhance Togo's adaptation and resilience capacities.

Greening the tax structure and introducing carbon taxation could provide an important source of additional financing for climate actions and significantly reduce emissions. In particular, the gradual introduction of a carbon tax at US$7.5 per ton of CO_2 in sectors that are significant sources of emissions and for which low-carbon alternatives exist like energy, transport, industry, and agriculture could raise an average of 1 percent of GDP per year by 2035 and reduce emissions by 9.9 million tons of CO_{2eq} by 2050. This would lower the emissions intensity of economic activity by 6 percent. A fee and rebate system could provide necessary incentives for low-carbon alternatives by subsidizing them with rebates, while discouraging activities and production methods with high carbon intensities with fees. Reforming wasteful and regressive subsidies and tax expenditures could also help increase resources for climate action, while leading to more efficient use of energy, lower pollution, and improved human health.

Togo will need to maximize the full range of concessional and semi-concessional financing instruments. These could blend funding and guarantees from multilateral development banks, development institutions, and public sector funds to support nature and biodiversity conservation, or climate-resilient infrastructure, transportation, and agriculture in Togo. Green bonds could also help attract investors for sustainable forestry, agriculture, or renewable energy projects. To take advantage of these financing sources, Togo needs to establish a strong framework with transparent impact assessments, and a robust pipeline of well-defined thematic projects. Moreover, Togo could explore sustainability-linked bonds (SLBs), which tie their financial performance to progress made towards agreed-upon Key Performance Indicators (KPIs), but which are not linked to specific projects.

Deepening the financial sector is also essential to mobilize domestic and international savings for climate investments. Banks dominate the financial sector in Togo, but their ability to finance climate-related projects is limited. Authorities have not yet introduced formal labels for green lending products or for banks' financing flows for climate and environmental projects. The lack of a green taxonomy framework impedes investors from

identifying environmentally sustainable activities. Togo should define its own taxonomy based on its needs, prioritizing sectors with the highest needs, such as energy, agriculture, and forestry and other land uses.

Togo is currently developing the regulatory framework for carbon markets, which should help implement mitigation efforts and nature-based adaptation strategies. Carbon market initiatives offer opportunities to accelerate the transition to a sustainable, inclusive, and low-carbon economy in Togo. To unlock their benefits, Togo should establish a clear and stable regulatory framework for carbon markets, set up a market infrastructure, and develop a pipeline of high-integrity projects that utilize credible methodologies.

Key policy reforms and investments identified in the CCDR will be operationalized through World Bank operations and stakeholder engagement. *Climate interventions highlighted in this report will be supported by World Bank operations to boost resilience in sectors such as agriculture, forestry, and water management; electricity, transport, and digital infrastructures; coastal and urban developments; and health and human capital. The CCDR will also serve as a key instrument to help align climate actions of various technical and financial partners, mobilize new sources of financing, engage with civil society, academia, think tanks on the contour of a development strategy that better integrates climate challenges and help develop a strategy to mobilize the private sector for priority investments.*

Acknowledgements

This report was authored by a World Bank Group Task Team led by Marc Stocker with core members including Komlan Kpotor and Justin Marie Bienvenu Beleoken Sanguen, Nour Masri, Ahmed Al Qabany, Raphaela Beatrice Karlen, Meritxell Martinez, Christopher Balliet Bleziri, Daniel Valderrama Gonzalez, and Martin Aaroee Christensen.

The report has benefitted from invaluable inputs from the task team including: Aissatou Ouedraogo; Akizou Bataba; Akouvi Ometima Agbekoh; Ana Karla Perea Blazquez; Andre Teyssier; Antonia Grafl, Bernardo Atuesta, Bogachan Benli, Dinara Akhmetova; Djiby Thiam; Esther G. Naikal; Eva Brocard; Fatima Barry; Fred Kizito; Ibrahim El ghandour; Jia Jun Lee; Koffi Hounkpe; Laurent Damblat; Laurent Xavier Frapaise; Louis Akakpo; Maimouna Gueye; Manuela Ravina da Silva; Marek Stec; Miriam Muller; Mohamed Moustapha Sarr; Morten Larsen; Nahida Sinno; Nimonka Bayale; Nouhoum Traore; Oceane Keou; Ruslan Yemtsov; Sara Datturi; Shreya Rangarajan; Stephane Dahan; Steven David Potter; Voahirana Rajoela; Xavier Stephane Decoster; and Youssouf Traore. The team would like to extend sincere thanks to the Industrial Economics (IEc) team: Kenneth Strzepek, Brent Boehlert, Diego Castillo, Kim Smet who led the impact channel and adaptation modelling. The analysis of Nature-Based Solutions (NBS) in agriculture and forestry benefited from the technical and financial support of NBS Invest, which aims to mainstream Natural Based Solutions into climate mitigation and adaptation initiatives in low-income countries. NBS Invest is funded by the Global Environment Facility through its Least Developed Countries Fund and implemented by the World Bank, in partnership with the Global Program on Nature Based Solutions.

Thanks are extended to Management and their teams on their guidance. In particular, Chakib Jenane, Jessica Wade, Olivier Buyoya and Sebnem Erol Madan, Ellysar Baroudy, Kanta Kumari Rigaud, Hans Anand Beck, Markus Kitzmuller, and Sujatha Venkat Ganeshan. The team benefited immensely from the guidance of, and is grateful to, the key peer reviewers: Craig Meisner, Hardwick Tchale, Fatima Arroyo, Lara Born, and Stephanie Brunelin. The report benefited from editorial support from John Carey. The team would like to thank the authorities for their collaboration and inputs in the preparation of this report.