

Strengthen the resilience of communities and ecosystems vulnerable to climate change in the Mono basin (Togo)

Pre-feasibility Study

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1 INTRODUCTION

1.1 PROJECT DEVELOPMENT CONTEXT

Togo has prioritized climate change adaptation as the best means to sustainably and effectively address specific issues for the future development of the country, including the consideration for the vulnerability of key economic sectors and the associated social and environmental consequences. This development and implementation strategy and options will have a co-beneficial impact. Togo requires funding to sustainably address the vulnerabilities which are further exacerbated by increasing climate risks and the government has developed this pre-feasibility report and concept note with the support of UNDP, in line with the priorities of the country.

The work Identification process was based on the following steps:

- Project Pre-identification (January-July 2017)
This work was based on the mobilization of key stakeholders within a workshop of over 3 days (17 – 20 July 2017) held in Lomé. The workshop consisted of:
 - Identifying the awareness of the participants on the issues of climate finance and specifically the process of submitting proposals to the GCF;
 - Developing a road map leading to a formulation of the project for submission to the GCF in 2019.

1.2 FOR THE CONCEPT NOTE

Based on the results of the identification phase of projects, the development of a concept note and the corresponding pre-feasibility study was initiated, with the support of a team of consultants recruited by UNDP.

The work process for the development of the pre-feasibility report involved:

- Literature review on the specific context of vulnerability of Togo, the institutional framework addressing climate, and opportunities for adaptation;
- Consultation with key stakeholders (see List of stakeholders mobilized as part of the mission provided in the annex) for developing the project framework, in order to meet the priority needs, complementing the initiatives and projects already in place
- Collaborative work with the government and stakeholders to refine the results
- Formalization of the results in the format required by GCF.

The main results of the analysis work are synthesized in this report which was prepared as a supporting document to the concept note. This will be further developed and completed as part of the work of preparing the full proposal.

2 BUILDING RESILIENCE THE TOGO: THE KEY CHALLENGES FACING

2.1 GENERAL CONTEXT

2.1.1 *Physical and Population Context*

The Togolese Republic (Togo) is located in West Africa on the Atlantic coast of the Gulf of Guinea. The country spans an area of 54,400 km² encompassing rolling hills (the Chaîne du Togo) in the north, a southern plateau (Ouatchi Plateau or Terre de Barre), and a low coastal plain with extensive lagoons and marshes. A number of lakes dot the Togolese landscape, the largest being Lake Togo, in the south.¹ The country has 50km of sea coast which is subject to increasing erosion rates exacerbated by sea level rise.

¹ GFDRR Disaster Risk Management Programs for Priority Countries. Togo Case Study.
TOGO_GCF CN Pre-Feasibility Study June 2019

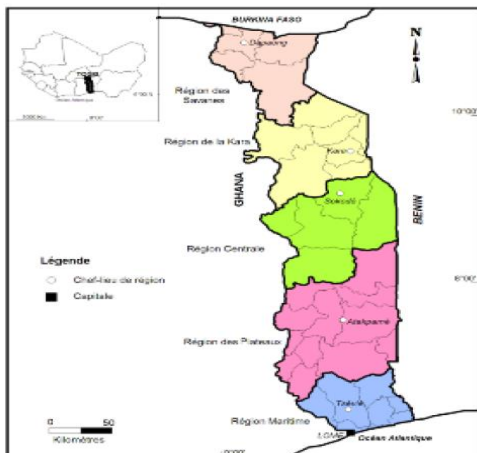


Figure 1: Map of Togo Showing 5 Regional Administrative Districts²

The Togolese population was 6,191,155 inhabitants in 2010 (4th RGPH, 2010), with a rate of average annual growth of 2.84%. On this basis, the population is estimated in 2015 to be 7,121,673 inhabitants of which 60% will be less than 25 years old, which poses a significant challenge in terms of job creation. The southern regions along the coast and Lomé have 64.20% of the total population over 41% of the national territory in 2010. Overall, the Togolese population is predominantly rural with a growing tendency to urbanize (urban annual growth rate of 3.8% compared to 1.58% for the rural population).³

2.1.2 Socio-economic Context⁴

The Togolese economy is showing relatively strong results, with the GDP growth rate over the last five years averaging 5.5%, which is higher than most countries in sub-Saharan Africa although Togo has been exposed to negative economic shocks with the lower commodity prices of raw materials.

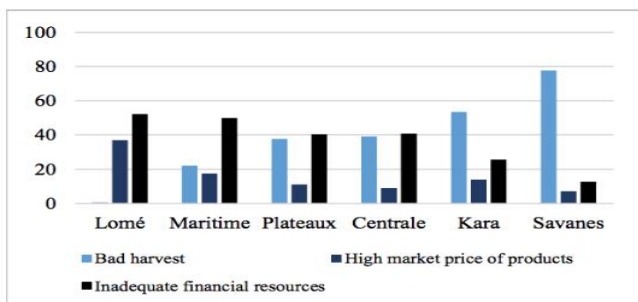
The agricultural sector, which accounts for nearly 40% of the country's GDP and provides more than 60% of the jobs, has benefited from good weather conditions in recent years. Inflation remains under control, at 0.9% on average in 2016. The budget deficit, which stood at 7.8% of GDP in 2015, however, continued to deteriorate in 2016 to reach 9.6%, while the accumulation of public expenditure arrears amounted to about 5.7% of GDP at the end of last year. The ratio of public debt to GDP rose from 75.6% of GDP to 80.8% between 2015 and 2016; This rate, which exceeds the threshold of 70% required by the West African Economic and monetary Union (UEMOA), is among the highest levels in Sub-Saharan Africa. At the beginning of the year 2017, the government launched a new economic programme based on a three-year agreement with the International Monetary Fund and approved in May the following month. The main objective of this programme is to restore the viability of public finances while preserving the social sectors.⁵ Key factors that impact the economic capacity, especially for rural population are bad harvests, high market price of products and inadequate financial resources as illustrated in Figure 2 below.

² Administrative regions: Maritime, Plateau, Central, Kara and Savanna

³ TCNCC, 2015

⁴ <http://www.banquemondiale.org/fr/country/togo/overview> - Statistics sourced from World Bank Overview Page - Togo

⁵ <http://www.banquemondiale.org/fr/country/togo/overview>



Source: République Togolaise, QUIBB 2011

Figure 2: Key Factors affecting livelihoods in rural Togo

Exacerbating the poverty and climate-related problems in the rural regions is the limited availability of funds at the national level to support adaptation actions. Togo requires significant financial resources to address climate change impacts.

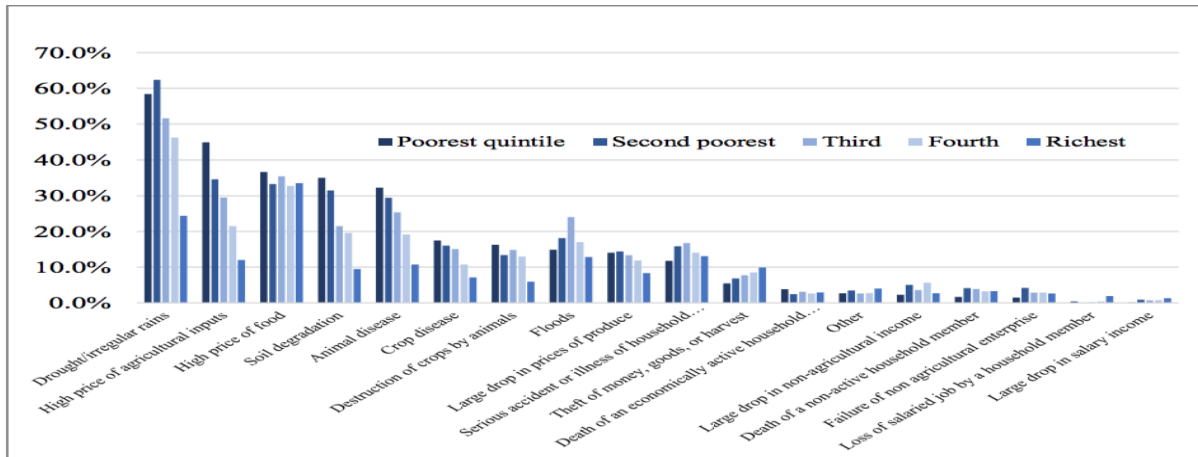
Togo is ranked among countries with a low level of human development index (HDI) with a level of 0.469 in 2000 (143th 174 countries), Togo's HDI stagnated at 0.512 from 2003 (141st rank over 174 countries) to 2005 dropping to 0.435 in 2011 before starting to grow to 0.459 in 2012, which places the country in the 159th rank of the 187 countries according to the UNDP Human Development Report (2013). This upward recovery of the HDI in Togo attests to an improvement in living conditions, resulting from the combined effects of government efforts in the social sectors such as education and training, health and nutrition, HIV/AIDS, drinking water and sanitation, social protection, youth promotion, equity and gender equality.⁶ The QUIBB Survey (2011) indicates that the main social indicators have generally progressed in Togo. These include the net enrolment rate in primary school (87.8%), adult literacy rate (60.3%, with a clear gender disparity, 74.0% for men and 47.9% for women), morbidity rate (20.6%), rate of access to water (55.9%), the proportion of households with sanitary facilities (53.1%), the rate of malnutrition (27.9%), the rate of households not meeting basic food requirements (49.5%) and the rate of use of health services (66.2%).⁷

Poverty will be exacerbated by climate change and is identified as one of the main causes of the degradation of natural resources resulting from anthropogenic sources like GHG emissions. The vulnerability of the population is highly affected by climate change factors who are dependent on natural resources and rain-fed agriculture.⁸ Refer to Figure 3 that illustrates the impact of each weather event type related to rural households separated by income.

⁶ TCNCC, 2015

⁷ TCNCC, 2015

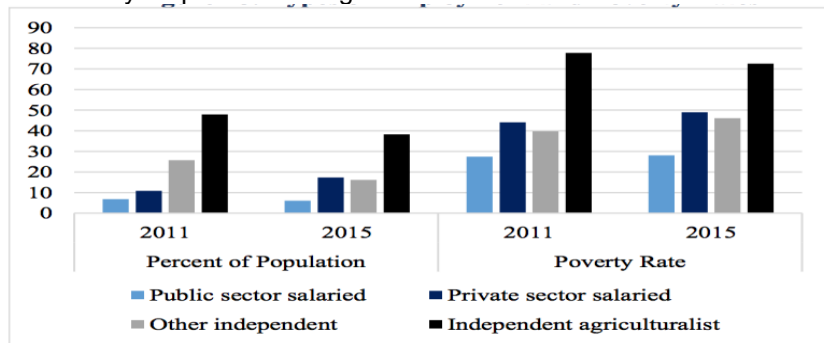
⁸ TCNCC, 2015



Source: République Togolaise, QUIBB 2011.

Figure 3: Percentage of Rural Households Affected by Shocks by Consumption Quintile 2011

The poverty rate has improved in Togo is 58.7% of the population in 2011 (SCAPE, 2013) - compared to 61.7% in 2006, a 3-point decrease in 5 years. This rate of reduction has been too weak to allow Togo to achieve Objective 1 of the Millennium Development Goals Development (WCO) – achieve poverty reduction by 50% between 1990 and 2015, the proportion of the Togolese population living below the threshold. The poverty rate is much higher in rural area with the rate estimated at 24% in the Lomé region, 90% in the Savanna region, 78% in the central region, 75% in Ka region of Kara, 69% in the coastal region and 56% in the region Of Trays.⁹ Poor people living in rural areas are working primarily in agriculture, and relatively isolated from markets and services. Over three-quarters (77 percent) of poor people live in rural areas, which have a higher incidence of poverty (68.7 percent) compared to Lomé (34.8 percent) and other urban areas (37.9 percent). Looking deeper into the available poverty statistics, women are more likely to be living in poverty than men. On average, female-headed households have a higher rate of poverty (57.5 percent) than male-headed households (54.6 percent). Female-headed households in rural areas are also more likely to be poor. Cultural and legal obstacles hamper access to opportunities for women and girls, particularly with regard to attending secondary school, earning incomes equal to those of men in the labor market, accessing inputs when working as small entrepreneurs, and enjoying secure land tenure in rural areas. Only 15 percent of Togolese women have access to a bank account.



Source: INSEED 2016, using QUIBB

Figure 4: Types of Employment and Poverty

Source: World Bank 2015

⁹

Poverty Headcount Ratio (Percent)				
	2006	2011	2015	Change
Lomé Urban	30.8	28.5	34.8	4.0
Other Urban	46.4	44.7	37.9	-8.5
Rural	75.1	73.4	68.7	-6.4
Total	61.7	58.7	55.1	-6.6
Poverty Gap				
Lomé Urban	26.6	24.2	12.1	-14.5
Other Urban	30.6	34.2	12.0	-18.6
Rural	40.7	45.1	29.2	-11.5
Total	38.2	41.6	22.1	-16.1
Distribution of the Poor (Percent of Total)				
Urban	21.1	22.4	23.0	1.9
Rural	78.9	77.6	77.0	-1.9

Source: QUIBB 2006, 2011, 2015.

Figure 5: Poverty Stats Recent Years
 Note: (poverty line for per-capita nominal consumption in 2015 is \$605 USD (344,408 FCFA) per year.)

These rural poverty communities also face recurrent floods and drought which have hindered development gains and caused additional hardship for the population in recent years. The country experiences flooding almost every year, leaving infrastructure destroyed and land devastated. In 2008, approximately 11,688 hectares of cultivated land were washed away by the floods, four schools and eleven key bridges were destroyed, and over 300 km of rural roads were seriously damaged. Two years later, more than 82,000 people were affected by a flood following heavy rainfall, leading to extensive damages to property and livelihoods, with thousands rendered homeless and sheltered temporarily in camps and with friends and relatives. The 2010 flood resulted in over \$38 million in damages and losses, as was estimated by a GFDRR-supported post-disaster needs assessment. Unsustainable land and forest management has exacerbated land erosion and intensified the negative impacts of climate change, in particular flooding. Land degradation affects at least 85 percent of arable land in Togo, and nearly one-third of protected land areas have been irreversibly lost in recent years or are too costly to rehabilitate. Deforestation, land degradation, and flooding constitute an intertwined problem that requires an integrated approach.

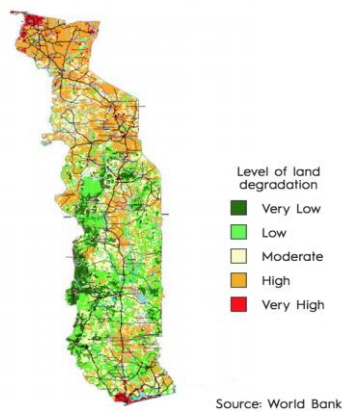
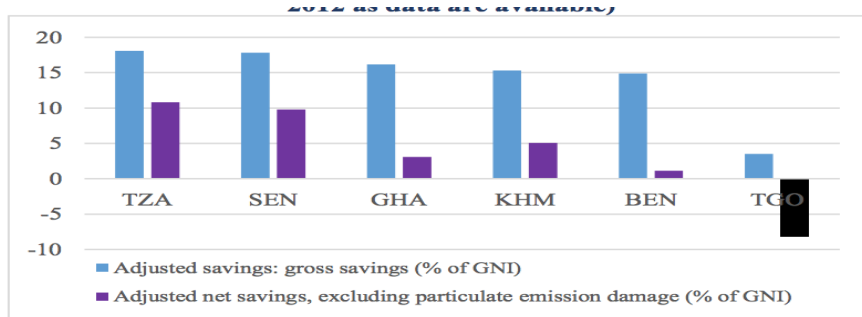


Figure 6: Map of Land Degradation - World Bank (2015)



Source: WDI

Figure 7: Gross Savings and Savings Adjusted for Environmental Degradation as % of Gross National Income (available data 2006 to 2012)

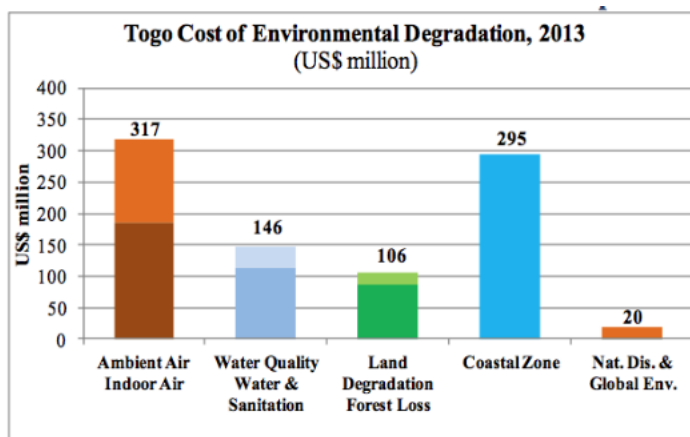


Figure 8: Annual Cost of Environmental Degradation by Environmental Category (2013 – Cost in USD Millions)

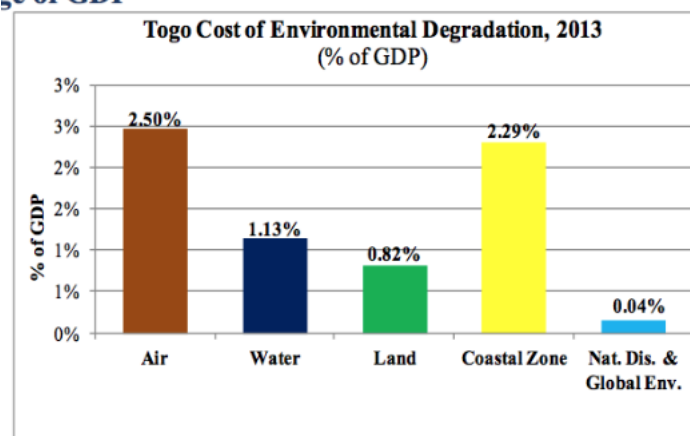


Figure 9: Estimated Costs of Environmental Degradation (2013)

Source for Figure 8 and 9: World Bank 2013

The existing agricultural farmland is estimated to be close to 3.4 million hectares (64% of the territory) of which only 55% were used in 2010. The total area of the irrigated land is about 86 000 hectares and out of possible 175, 000 exploitable hectares. Surface water and underground reserves are estimated between 17 and 21 billion cubic meters of water on average per year with an annual consumption of approximately

3.4 billion m³. The native plants are strongly degraded and the rate of deforestation is in the order of 15, 000 ha/yr despite reforestation efforts that scarcely replant 3,000 ha annually.¹⁰

2.2 POLICY AND LEGAL CONTEXT FOR CLIMATE CHANGE

2.2.1 Strategy and Policy – General Context

The Togolese political system incorporates multiparty system, and allows freedom of association and unions. The legislative power is bicameral (two chambers) with a National Assembly whose members are elected and is headed with a President of the Republic directly elected for a term of five (5) years renewable and a prime minister who is the head of government, appointed by the parliamentary majority party. The judiciary is independent of legislative and executive power (art. 113 of the Constitution) and the President of the Republic is responsible for the independence of the judiciary.

According to article 141 of the Constitution the government is organized into decentralized local authorities with national unity. These local authorities are: municipalities, prefectures and regions. The territorial authorities shall be freely administered by freely elected councils elected, under the conditions laid down by law. As illustrated by Figure 8, Togo has five key administrative regions which have regional governments. Despite the relatively well-defined roles of the government there are capacity issues related to effective delivery of policies, and laws as illustrated by Figure 10 below:

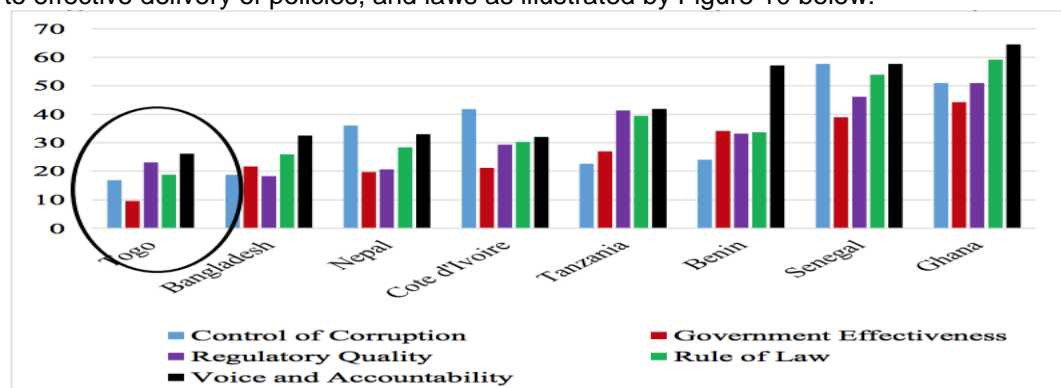


Figure 10: Worldwide Governance. Indicators – Percentile Rank (2014)

Certainly, the governments' capacity to effectively deal with climate change is hindered or challenged due to governance issues as measured by the World Bank (2016). The Togo government recognizing this has focused on established national strategic guidelines underpinning sectoral policies and programmes are part of the *Growth Strategy Accelerated and Job promotion (SCAPE) 2013-2017*. The SCAPE of Togo provides the framework for defining medium-term development goals to achieve the *General policy Statement (DPG)*. This is broadly based on the Millennium Development Goals (MDGs) for the period 2006-2015 and serve as a guide for Togo over the next 15 to 20 years.

The fight against climate change and the implementation of sustainable development are part of the following key institutional initiatives:

- (i) existence of a ministry specifically dedicated to managing environmental and natural resources policies since 1987;
- (ii) creation of an Environmental Directorate at the Ministry of the Environment and Forest Resources (MERF), one of whose duties is to coordinate the mechanisms defined in the conventions that Togo has signed;
- (iii) creation of a National Climate Change Committee; and

¹⁰ All statistical data sourced from Intended Nationally Determined Contribution (INDC) Sept 2015
TOGO_GCF CN Pre-Feasibility Study June 2019

- (iv) establishment of an institutional framework to prepare for the Third National Communication (TCN).

In terms of international environmental commitments, Togo is a Party to the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD). The main national laws adopted in relation to climate change are:

1. Law 2008-005 of 30 May 2008 enacting the framework law on the environment replacing the Environmental Code;
2. Law 2008-009 of 19 June 2008 enacting the Forest Code;
3. Decree 2006-058/PR of 5 July 2006 defining a list of works, activities and planning documents subject to environment impact assessments (EIAs) and its implementing orders;
4. Law 99-003 of 18 February 1999 enacting the Hydrocarbons Code of the Republic of Togo.

In addition, **Gender and Other Inequalities:** Cultural and legal obstacles affect the ability of Togolese girls and women to improve their incomes and well-being. Women face gender barriers in accessing employment, and those employed earn only 71 cents for every dollar that men earn.¹¹ Customary law and cultural attitudes pose significant barriers to women's entrepreneurship by affecting the capacity to contract, inherit, marry, and divorce. In addition, female-headed households have farms that are half the size, on average, as those of male-headed households. Issues such as the worst forms of child labor and trafficking in persons join this and poor water service as moderate constraints to well-being, which can also disproportionately affect the female population.

Despite legal and political measures to promote equality between the sexes, some aspects of Togolese culture still restrict women's access to and control over productive resources such as land and basic social services, as well as women's public and private lives and participation in decision making.

Many sociocultural factors are more harmful to women and girls than to men and boys. These reduce women's productivity and keep them in poverty, with adverse effect on their health (particularly reproductive health), leisure time, and reinvestment in human capital. According to the 2011 QUIBB (Unified Questionnaire on Basic Well-being Indicators) survey, 52.4 percent of women are literate, versus 76.9 percent of men. Similarly, the percentage of women with full-time employment in the private sector (15.2 percent) is lower than that of men in this sector (35.1 percent).¹²

2.2.2 Institutional Setting of Climate Change

In recognition for the need to adapt to climate change the Togolese government has organized and created institutional framework as illustrated in Figure 11.

¹¹ World Bank Country Diagnostic Estimated average effect within the population (with no differentiation by public or private sectors)

¹² IMF, Togo – Poverty Reduction Strategy Paper (July 2014)

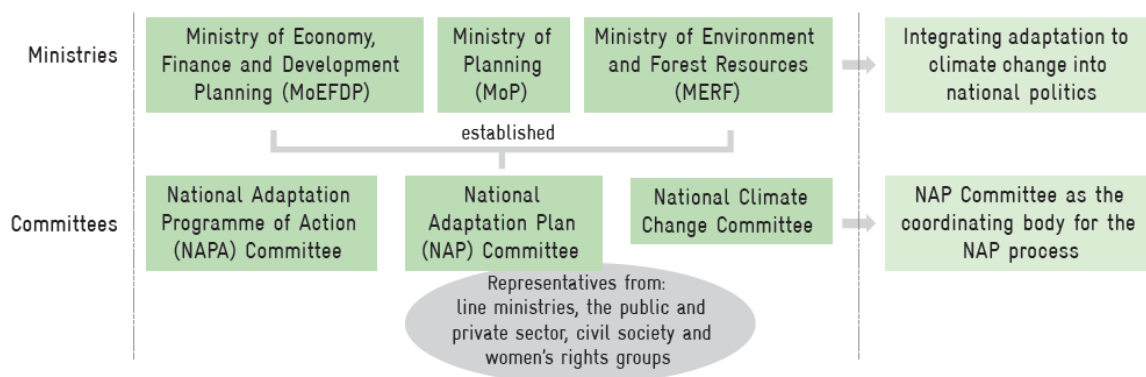


Figure 11: Climate Governance Structure - Togo¹³

The lead ministry, within Togo, responsible for climate change is the Ministry of Environmental and Forest Resources (MERF), which is also coordinating the Nationally Determined Contribution implementation. Together with the Ministry of Planning (MoP) and the Ministry of Economy, Finance and Development Planning (MoEFDP), an Inter-Ministerial National Adaptation Plan Committee was established in 2014. It consists of representatives from line ministries, the public and private sector, civil society and women's rights groups and acts as the coordinating body for the NAP process. The MERF and the MoEFDP are working closely together in order to ensure that adaptation to climate change will become part of national politics.

The national development strategy based on the Millennium Development Goals (MDGs), adopted by the Government of Togo included strategic development guidelines defined by sector and sub-sector. Key institutions and related policy and strategic directives are listed in Table 1¹⁴ below.

Table 1: Policies and Strategies by Sector

Sector	Current Policy and Strategies	Actions to be Taken
Energy	Strategic plan for the electricity sub-sector, adopted in December 2010. Draft National Energy Policy (POLEN), drawn up in October 2011. Togo's National Energy Efficiency Action Plan (NEEAP), 2015-2020-2030; July 2015. The National Renewable Energy Action Plan (NREAP) Togo, 2015-2020-2030; August 2015.	Adoption of a national energy policy; establishment of incentives for renewable energy use; revision of the electricity law and creation of a national rural electrification agency.
Transport	Declaration of General Governmental Policy on the Restructuring of the Transport Sector of 29 May 1996, made operational in 2013 through the definition of the National Strategy for the Development of Transport in Togo (not yet adopted).	Revision of current national transport policy; adoption and application of the measures within the national strategy, especially the sections limiting the age and setting standards for the quality of imported used vehicles.
Land Use and Forestry	National Forest Action Plan (PAFN) 1994, updated in November 2011. Togo's Forest Policy (PFT), defined in November 2011.	Preparation of structuring programmes and mobilization of adequate funding through public/private partnerships.

¹³ Togo: NAP Process Country Case Study – GIZ March 2018.

¹⁴ Togo – Intended Nationally Determined Contribution (INDC) Sept 2015

Agriculture	Commitment to the Climate-Smart Agriculture process in the framework of the implementation of the agricultural policy laid out by ECOWAS and NEPAD. National Policy for the Agricultural Development of Togo (PNDAT) 2013-2022, approved at a national workshop on 22 and 23 November 2012. The existence of the National Programme for Agricultural Investment and Food Security (PNIASA).	Initiation of specific adaptation programmes along the lines of the ADAPT project currently being implemented, as well as mitigation programmes.
Water Resources	National Policy on Drinking Water Supply and Sanitation in Rural and Semi-Urban Areas, prepared in April 2006. National Action Plan for the Water and Sanitation Sector (PANSEA). Integrated Water Resource Management (IWRM) Strategy. Water Code (law 2010/004 laying down the water code).	Implementation of pilot programmes based on IWRM and measures to increase water resource availability, in both quantity and quality.
Health and Human Services	Existence of a National Health Policy; Preparation of a draft National Hygiene/Sanitation Policy for Togo (PNHAT), accompanied by a Strategic Plan. Existence of a National Urban Planning and Housing Policy. Preparation of a national housing strategy.	Revision of urban planning and housing policy, including energy efficiency measures and taking into account disaster risks. Improvement of efficiency, both in managing other policies and in the service offer for human settlements (buildings and cities), to build the resilience of populations facing the effects of climate change.

2.3 CLIMATE PROFILE AND CLIMATE CHANGE VULNERABILITY

2.3.1 Climate Profile

Togo has a tropical climate under the influence of two trade winds: the L'Harmattan (Alizé Boreal), hot and dry wind blowing from the northeast to the southwest; and the monsoon (Alizé Austral), hot and humid wind blowing from southeast to northeast. The average rainfall of Togo is in between 800 and 1400 mm, with an average temperature of 27 to 28 °c.

From the coast at 8° N, there is a subequatorial climate characterized by two dry seasons and two rainy seasons of unequal duration. Annual rainfall is divided between the two rainy seasons: a large one from March/April to the end of July and a small one from early September to mid-November alternating with two dry seasons (one large, from November to March and one small, from July to September). The number of rainy days varies from 130 to 240 with a relative humidity generally fluctuating around an average of 90% and an annual average temperature of 27 °C.¹⁵

Beyond 10 ° north latitude a semi-arid type of climate is present, characterized by a rainy season of five months (May to October) with average rainfall of 900 to 1100 mm spread over 175 days. Temperatures range between 17 and 41 °c in dry season and between 22 and 34 °c in the rainy season with intense evaporation and relative humidity ranging from 15 to 86%.¹⁶

¹⁵ All statistical data sourced from the 3rd National Communication CCNUCC (October 2015) – UNDP

¹⁶ All statistical data sourced from the 3rd National Communication CCNUCC (October 2015) – UNDP

Between these two climatic zones a Guineo-Redanien climate is representative of the transition zone. In this zone, annual precipitation fluctuates between 1400 and 1500 mm with an average annual temperature of 26.5 °c (min: 15 °c; Max: 37 °c). The average relative humidity varies between 60 and 80%. The map below synthesizes the climatic characteristics of the country¹⁷.

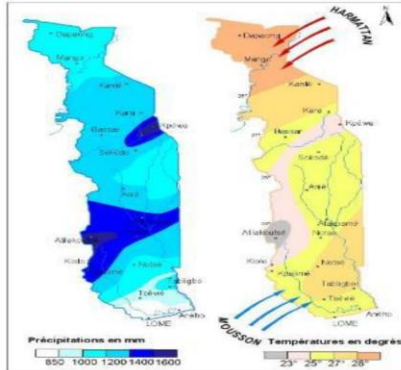


Figure 12: Climatic characteristics¹⁸

2.3.2 Climate Trends

Climate scenarios have been developed for time horizons 2025, 2050, 2075 and 2100, as part of the preparation of the TCNCC¹⁹, exploring the different GHG emission scenarios developed by the IPCC, the RCP Scenario 2.6 with the most optimistic (strong emission reductions internationally) to the most pessimistic RCP 8.5 (current emission trends without effective reduction measures). The variables considered in the development of these climate scenarios are temperatures (mean, minimum, maximum) and precipitation.

2.3.2.1 Rainfall and Temperature Variability

Observations of the climate over the period 1961 to 1990 reveal increased temperatures trend as well as a decrease in rainfall and reduction in the number of rainy days. For temperature, the linear trend of the national average over the period 1961 to 2012 indicates a warming of 1 °c.

For projections the scenarios made in the context of the third national communication (TCN), the simulations conducted with SimCLIM 2013 to the time horizon 2050 ²⁰ indicate:

- In the case of optimistic scenario (RCP 2.6):
 - The warming trend is noticeable throughout the country with average maximum temperatures between 27 °c and 36°c.
 - The variation in mean precipitation is not very significant compared to the average precipitation levels in the baseline scenario. One can note however a slight increase in the whole.
- In the case of the pessimistic scenario (RCP 8.5), trends are similar :
 - Temperatures maximum averages between 27.8°c and 37°c
 - Precipitations in the range 862mm to 1732 mm

Evaluating the case of the pessimistic scenario RCP 8.5, indicates global temperature assessment annual averages in relation to their current oscillating level is between 0.60 and 0.71 °c in 2025 and Between 3.6 and 4.5 °c in 2100 in Togo according to the latitude considered. Annual rainfall for these same horizons

¹⁷ TCNCC, climate scenarios report, 2015

¹⁸ TCNCC, climate scenarios report, 2015

¹⁹ Scenarios developed using the SIMCLIM2013 simulation tool (TCNCC, 2015), a computer model based on the IPCC Guidelines for climate Projections of the fifth report (AR5) incorporating four new GHG emission scenarios (RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5).

²⁰ TCNCC, climate scenarios report, 2015

would increase in all respects of the territory respectively of 4 to 8 mm in 2025 and from 18 to 39 mm of rainfall compared to their current level.²¹

All projections indicate substantial increases in the frequency of days and nights that are considered 'hot' in current climate. Annually, projections indicate that 'hot' days will occur on 17-56% of days by the 2060s and 23-88% of days by the 2090s. Days considered 'hot' by current climate standards may increase most rapidly in June-September. Nights that are considered 'hot' for the annual climate of 1970-99 are projected to occur on 28-76% of nights by the 2060s and 38-89% of nights by the 2090s. Although the projected mean temperature increases most rapidly in the interior regions of Togo than near the coast, the projected changes in the daily temperature extremes ('hot' and 'cold' days and nights) in Togo are largest in the coastal areas and smaller inland.²²

The map below shows the spatialized results for the RCP 2.6 scenario on the 2050 horizon.

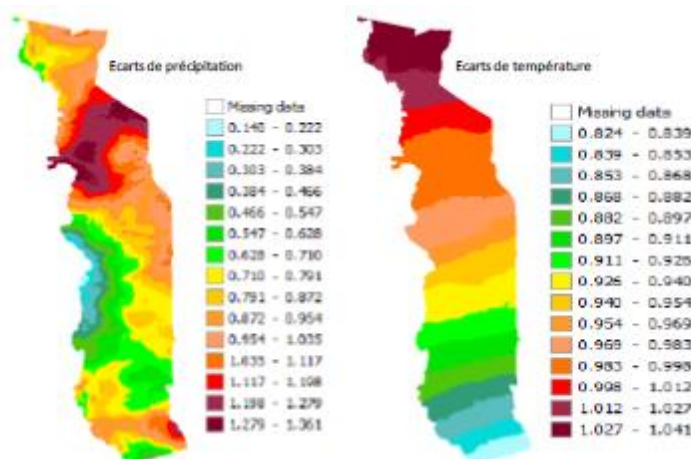


Figure 13: Changes in precipitation and Temperatures on the Horizon 2050 According to scenario RCP 2.6²³

The projections put specific focus on a tendency to increase of max temperatures (increasing the frequency of days and nights considered "hot"). Changes in extreme temperatures will be more evident on coastal areas. Changes in precipitation present a higher level of high uncertainty with small changes expected in terms of average level, but an increased frequency of extreme events (Strong Rain and drought with change in climatic variability, extension of dry seasons)²⁴.

Projections of changes in rainfall are less certain for Togo, with both increases and decreases indicated by different models. However, the predicted changes in average rainfall, either for an increase or decrease, are rather insignificant for much of the country (+/-30 mm). The frequency of intense rainfall events and longer periods of drought may increase.²⁵

²¹ CPDN, 2015

²² All statistics are derived from UNDP Climate Change Country Profile for Togo and WB Climate Change Knowledge Portal.

²³ TCNCC, 2015 (figure 3.24)

²⁴ http://sdwebx.worldbank.org/climateportal/countryprofile/home.cfm?page=country_profile&CCCode=TGO&ThisTab=Overview

²⁵ World Bank Knowledge Portal www.worldbank.org/climate_portal

2.3.2.2 Climate Change Trends Specific to the Mono Togo Basin

A downscaled climate change projection model has been developed for the Mono Togo Basin based on 1980 to 2010 reference period and has provided further understanding of the climate risk specific to this region. The specific report²⁶ results were based on an analysis and synthesis of running the following global models:

Global model name	Institute ID	Model short name
GFDL-ESM2M	NOAA-GFDL	NOAA
NorESM1-M	NCC	NCC
MPI-ESM-LR	MPI-M	MPI
MIROC5	MIROC	MIROC
IPSL-CMA5-MR	IPSL	IPSL
EC-EARTH	ICHEC	ICHEC
CNRM-CM5	CRNM-CERFACS	CNRM
CanESM2	CCCma	CCCMA

Table 2: Climate Model Origins

Note: Used climactic models (column 1), global models under which they are run (column 2).

The specific indices that were evaluated and results compiled within this report include:

R10 mm – Number of heavy rain days (annual count of days when rainfall > 10mm)

R20 mm – Number of very heavy rainfall days (annual count of days when rainfall > 20mm)

CWD – Consecutive wet days (Maximum number of wet days with rainfall > 1mm)

CDD – Consecutive Dry Days (Maximum number of dry days with rainfall < 1mm)

RX1day – Maximum daily rainfall amount Annual (mm)

PRCPTOT – Annual wet day rainfall total (annual precipitation in wet day RR > 1mm.)

R90 - Wet Day – annual total precipitation when RR>90 percentiles (mm)

R99 – Extremely Wet Day - annual total precipitation when RR>99 percentiles (mm)

The results of the analysis for these indices are provided in the following Table 3:

ID	2011-2040		2041-2070		2071-2100		2011-2100	
	RCP4.5	RCP8.5	RCP4.5	RCP8.5	RCP4.5	RCP8.5	RCP4.5	RCP8.5
R20 mm	45	50	55	15	50	15	48.3	26.6
R10 mm	-5	-6.5	-2.5	-7.8	-5	9.5	-4.5	-2.1
CDD	10.5	41	35	35	35	45	26.6	40.3
CWD	-5	-15	-15	-15	5	-25	-5	-28.5
RX1day	-60.5	-56	-50	-55	-46.5	-55	-52.3	-53.6
PRCPTOT	-11.8	-15	12	-9.5	-7.5	-7	-4.8	-10.3
R90	-35	-65	-45	-45	-45	-40	-41.6	-51.3
R99	30.5	50.5	32.5	28.5	56	60	39.3	46.3

Table 3: Summary of mean projected changes in the indices (%)

The key indices that need to be considered for flood and drought conditions include:

Flood – R20mm which shows significant increase in rainfall intensity for each time period ‘

Drought – CDD shows significant increase number of dry days for each time period.

Seasonal variation of temperature and precipitation on a monthly basis has also been developed for RCP 4.5 and 8.5 and are provided in the following figures:

²⁶ Africa-Cordex Simulations Projections for Future Temperature, Precipitation, Frequency and Intensity Over Mono Basin in West Africa, Journal of Earth Science and Climate Change, Batablinle et. al, 2018.9.9

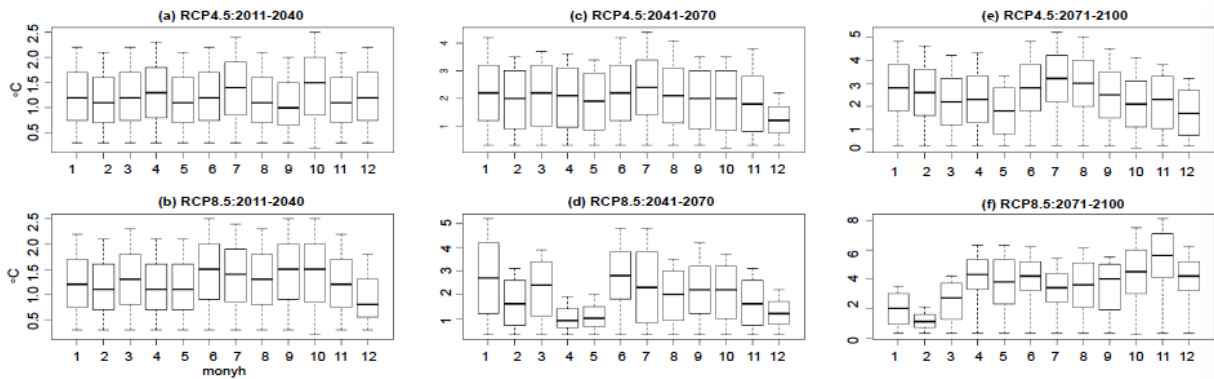


Figure 14: Projected Changes in Average Temperature (°C) for each calendar month

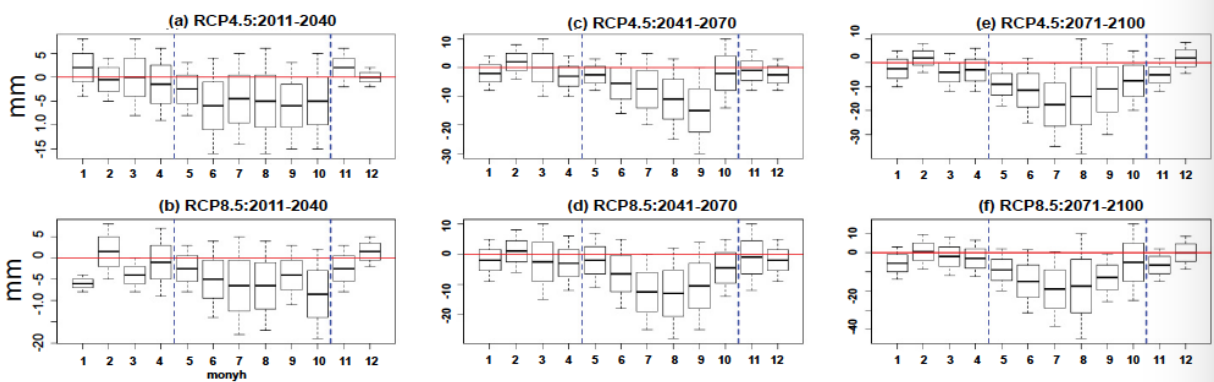


Figure 15: Projected Changes in Average Precipitation (mm/month)

Key summary findings from the report:

Changes from the baseline period 1981- 2010 were computed for futures 2011-2040, 2041-2070 and 2071-2100. The results predicted that the number of heavy rainfall days will decrease of -4.5% and by -2.1% respectively for RCP4.5 and RCP8.5 while the number of very heavy rainfall days will increase by 48.3% and 26.6% under RCP4.5 and RCP8.5, respectively. For the dry and wet sequences, the both scenarios (RCP4.5 and RCP8.5) predict an increase of consecutive dry days of 33.6% and a decrease of consecutive wet days of -16.8%. Concerning the intensity indices such as, the annual wet days rainfall total, the maximum daily rainfall amounts annual, the results showed a decrease of -4.5 and -52.2% respectively under scenario RCP4.5 and of -10.3 and -53.6% under scenario RCP8.5. The wet day will decrease of -46.5% while the extremely wet day will increase by 43.5% for the both scenarios. With regard to the seasons, a decrease is found for the precipitations while monthly-averaged temperature is projected to increase at all horizons considered and under both sequences.

2.3.2.3 Sea Level rise

The phenomenon of coastal erosion, which was originally adversely affected with the construction of hydroelectric and port infrastructure, is further exacerbated by higher sea levels as a consequence global warming. Data on coastal erosion in current conditions indicates a loss of 5m/year on average of the coastline. Taking into consideration climate change, this figure will progressively increase to reach 10 m/year. The consequences as regards the amount of land lost will be significant. With significant infiltration of sea water into the barrier system, salt bevels will progress rapidly and the fresh water/salt water interface will increase, thereby reducing the depth of the phreatic reserve from fresh water to sea water; this will lead to considerable shortages of fresh water. In addition to engulfing hundreds of hectares of land with the any existing infrastructure the resulting population displacements lead to problems of occupation of space, the

proliferation of precarious dwellings in non-constructible flooding), temporary occupations of land owned by other communities, potentially generating land conflicts. From the 3rd National Determined Communication report by year 2100 SLR will increase by 120 cm (RCP 8.5) and 74.22cm (RCP 2.6).²⁷

Table 4: SLR under RCP 2.5

NM /RCP2.6	1995	2025	2050	2075	2100
NMHaut	0 cm	15,86	34,16	54,90	74,22 cm
NMMédian	0 cm	12,20	26,84	40,26	58,63 cm
NMBas	0 cm	9,16	19,52	28,06	34,16 cm

Table 5: SLR under RCP 8.5

NM /RCP8.5	1995	2025	2050	2075	2100
NMHaut	0 cm	13,42	39,04	73,20	120 cm
NMMédian	0 cm	9,76	30,50	56,12	90,28 cm
NMBas	0 cm	7,32	23,18	41,48	64,66 cm

2.4 POTENTIAL IMPACTS

According to studies carried out in developing Togo's national communications, the main climatic risks are floods, droughts, rains variability. These risks impact the activities of rural communities (70% of the population is mainly agricultural) livelihoods which are directly linked to the exploitation of natural resources.

2.4.1 Floods

Floods: Experiences²⁸

At the local level, data from the National Flood damage and Loss Assessment Report (2010)²⁹ reveal that the prefectures of the lakes, Yoto and lower Mono and the greater Lomé have been the most affected in terms of destruction of homes, schools, roads and health infrastructures. As an example (by sector), the 2010 floods impact:

- i Estimated damage and losses to 5 US \$562,078 in the housing sector,
- ii Damage of US \$177 778 and US \$1 650 785 in the health sector
- iii Damages of US \$1,614,247 with respect of the agricultural sector,
- iv Damages of US \$234,715 and losses amounting to US \$753,033 in the areas of potable water supply and sanitation.
- v Damage of US \$15,420,000.00 in the transportation sector.

Overall, losses and damages were estimated at US \$43 934 165.

Hundreds of hectares of forests, including gallery and savannah forests, and thousands of wild animals have been affected by these disasters.

Based on the third National Determined Contribution on CC between 1925 and 1992, 60 major flood events with significant loss of life and damages to infrastructure occurred in the country. In the last decade alone, six of these caused extreme environmental, social and economic damage. Flooding is projected to increase in frequency, magnitude and intensity with severe impacts on the Togolese economy.³⁰ As to rainfall projections, the Togolese NDC assumes precipitation increases by 4 to 8 mm by 2025 (18 to 39 mm by 2100), again depending on the latitude. Hence, there is a strong urgency to adapt to climate change, especially in the sectors of agriculture, coastal and water resources, energy and health. Generally, floods have the potential to inundate fertile land, kill livestock, destroy standing crops, and reduce or eliminate yields. Corn and millet in particular—the main food staple of many Togolese – will suffer reduction in yields. Unless inputs are provided and opportunities arising from projected changes in climate are capitalized upon,

²⁷ Third National Communication on Climate Change – UNDP Oct 2015

²⁸ Economic Commission for Africa, 2015, Evaluation report on the integration and implementation of disaster risk reduction measures in Togo

²⁹ UNDP & World Bank, National Assessment Report on the damage and loss of Floods 2010

³⁰ The World Bank Group. [Historical Climate Variability and Change, Togo Dashboard](#). Published 2017. Accessed September 2017.

not only will yields drop but prices of staples will rise. Climate change is projected to bring about a shift of seasons accompanied by a reduction of humid periods, a rise in evapotranspiration, and drying of soils. A majority of humid soils where rice and sugar cane are cultivated will become drier, while projected changes in floods and droughts suggest a reduction in rain-fed maize production by 2025. In monetary terms this is the equivalent to a loss of \$USD 12–24 billion. As the price of maize continues to rise, these losses stand to significantly impact Togo.

In terms of intense rainfall events, the Mono River Basin in Nangbéto has recorded between 1988 and 2010 a significant increase in rainfall intensity daily averages averaged over the watershed, which may be a risk factor.³¹ Also, the evolution of annual maxima in 24 hours of rains over twenty-three years shows a significant increase in the annual maximum annual rainfall at the 95% threshold. This could partly justify the recurrence of the floods observed today especially in the lower Mono Valley. This increase in rainfall intensity in a deteriorating environment as reported by Amoussou et al. (2014) and Trambly et al. (2014) would be an enhancer of surface runoff and hence flooding in the Mono Basin. Also, communities in the lower part of the Mono River Basin stand the chance of being frequently affected by a 2-year and a 5-year floods with corresponding river flow magnitudes of 567 m³/s and 847.4 m³/s. (100-year flood (1612.2 m³/s). The 2010 flooding, which hit most part of the country, has a return period of 5 years with a magnitude of 847 m³/s and an exceedance probability of 20%. Flood frequency analysis is very crucial in planning and building structural measures to mitigate flood disaster in the Mono River Basin.³²

Based on the more frequent and recent flooding experienced in the SE Corner of the Maritime and Plateau regions and the limited available data to better understand its vulnerability and impact - further study will be required to determine risks and impacts for projected climate change. With the same or more intensity of precipitation (and land degradation due to loss of plant life from higher temperatures/evapotranspiration) will compound of increased settled sedimentation within the riverbeds creating shallower depths leading to greater flooding zones and impact to agriculture and livelihoods.

2.4.2 Droughts

Over the past 60 years, Togo has experienced three major droughts (between 1942-1943, 1976-1977, and 1982-1983) leading to severe famines. In addition to direct environmental impacts, such as soil degradation and loss of biodiversity, the socio-economic consequences of these events include a reduction in agricultural yields, death of livestock, reduction in agricultural revenue, an increase in rural to urban migration, exacerbation of famine, and an upsurge in water- and vector-borne diseases.³³

Specific to recent decades, the Mono Basin has been subjected to more frequent and intense drought events that reduce the flow of the river to levels incompatible with the objectives and irrigation strategies of the Mono managed areas. The analysis of the annual standardized precipitation indices (SPI) for most stations in the Mono Basin in general experienced droughts from the 1970s onwards continued in the 1980s, 1990s and 2000s, but also in 2014 and 2015.³⁴ From 1970, a general drop in precipitation, translated by a shift of isohyets to the north, is observed throughout the basin and the study area. For example, the rainfall amounts in the Sokodé-Kpéwa-Alédjo sector, which were between 1350 mm and 1400 mm during the 1970s, are between 1200 mm and 1300 mm this time. At the same time, precipitation recorded from Aklakou to north of Afanyagan, between 900 mm and 1000 mm during the 1970s, now falls between 800 mm and 900 mm³⁵. The decrease in precipitation observed in the 1960s and 1970s was accentuated over the 1980-1989 decade throughout the basin. During the same period, the representative stations of the Mono basin experienced a continuous rise in temperatures. This trend was confirmed by Amoussou (2012), who

³¹ Amoussou, Ernest & Camberlin, Pierre & Totin Vodounon, S.H. & Trambly, Yves & Houndenou, C & Mahe, Gil & Paturel, J.-E & Boko, Michel. (2014). Évolution des précipitations extrêmes dans le bassin versant du Mono (Bénin-Togo) en contexte de variabilité / changement climatique.

³² Rainfall Trends and Flood Frequency Analysis in the Lower Mono River Basin, Togo, West Africa, Joshua Ntajal University of Bonn

³³ GFDRR – Vulnerability, risk Reduction and Adaptation to Climate Change – Togo (April 2011)

³⁴ République Togolaise, Ministère de l'Environnement et des Ressources Forestières (2016): Élaboration du plan de gestion intégrée des zones humides de l'aval du bassin du mono et de la bande côtière connexe.

³⁵ République Togolaise, Ministère de l'Environnement et des Ressources Forestières (2016): Élaboration du plan de gestion intégrée des zones humides de l'aval du bassin du mono et de la bande côtière connexe.

reported a significant decrease in precipitation during the 1970s, increasing from 1298 mm (1961-1970) to 1117 mm (1971-1990) on average, or 14%, on the Mono basin. This drought has also affected the Mono-Couffo hydrosystem, with repercussions on the river flows. Since 1988, with the development and operation of the Nangbéto dam, which coincides with a slight rainfall recovery in the 1990s, there has been a change in the hydrological regime from Mono to Athiémé (Benin). The statistical methods applied to the monthly rainfall and discharge data for the period 1961-2000 have shown that the rainfall deficits of the 1970s and 1980s have led to runoff deficits. But with the slight increase in rainfall (2%) from 1988 to 2000, there is a 37%³⁶ excess flow over the Mono increasing flood potential.

2.4.3 Sea Level Rise - Coastal Area

Sea-level rise, regardless of height, will cause coastal erosion and sea progress in the territory, affecting infrastructure and physical resources. It is postulated within the Togo NAPA that sea level rise will eventually require the displacement of more than 90% of the country's industrial units, currently concentrated in the coastal zone, and will affect the people and services that make up the country's development engine and would lead to a delay in economic growth. In addition, the saline intrusion will have an impact on the riparian populations of the lagoons, where they derive their income which will exacerbate their impoverishment and encourage them to reconvert to other activities. Farmers and residents along the coastal zone will also be affected by sea-level rise through the loss of their holdings and it will have an impact on food security.



Source: Third Communication on Climate Change

Figure 16: Horizon 2025 to 2050 - Disappearance of works, part of the city of Aneho and the bridge

³⁶ Journal des Sciences Hydrologiques, 57(4) 2012. Ernest Amoussou, Pierre Camberlin et Gil Mahé. (2012). Impact de la variabilité climatique et du barrage Nangbéto sur l'hydrologie du système Mono-Couffo (Afrique de l'Ouest).
TOGO_GCF CN Pre-Feasibility Study June 2019



Figure 17: Projections of inundation along the coastline of Lome for time horizons 2025 to 2100

2.4.4 Sectoral - Climate change Impact

The main sectoral risks were evident when reviewing the impacts as part of the preparation of the TCNCC: A characterization the vulnerability of key economic sectors is presented below³⁷. Further vulnerability studies will be required in each specific region and economic sector to support the understanding of challenges to the communities in helping to identify the stressors and the impact to those communities and their livelihoods. This will ensure interventions are tailored to support appropriate adaptive and mitigation actions to climate change are designed. With the more detailed funding proposal and feasibility study a greater analysis of each sector will be developed,

2.4.4.1 Energy

The most vulnerable sub-sectors are biomass, energy, hydroelectricity and hydrocarbons. A spatial analysis reveals that the Savannah region, which is experiencing the highest incidence of poverty and the scarcity of wood based resources, should have a low response capacity, with its consequences for worsening food and nutrition security and the related impact of monetary and non-monetary poverty.

The supply of wood-based energy in Lomé and the Maritime region would become almost un-sustainable in Horizons 2025, 2050, 2075 and 2100. Sectors of both artisanal and industrial activities with significant energy demand will be affected. The increase in spending due to an increase in hydrocarbon consumption is expected to make the transportation sector vulnerable from an economic point of view. The availability of biomass energy, the main source of energy for households, would be seriously jeopardized in the coming decades. Women would be the most exposed because they are directly involved in the collection and use of biomass energy. The trade and catering sectors will also be affected.

2.4.4.2 Water resources

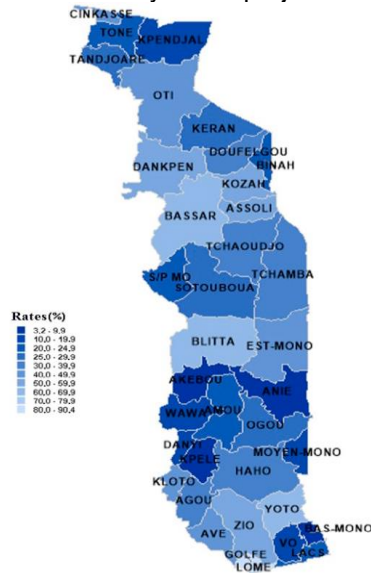
In general, the decrease of water resources is expected to be accompanied by an increase in evapotranspiration due to rising temperatures. Land degradation, especially loss of forest cover, increases runoff and reduces rainwater infiltration to critical aquifers. Consequently, reservoirs of groundwater and surface water will be significantly affected both qualitatively and quantitatively. In the southern lagoon area, rising sea levels will reduce the hydraulic gradient streams, leading to siltation and increased frequency of flooding. Lakes and coastal lagoons are likely to become completely brackish due to sea-level rise and increased storm surges, further deteriorating these critical ecosystems. As a growing number of people move to urban areas, there will be increased demand for community water provisioning as well as wastewater treatment.³⁸ Based on the QUIBB 2011 water resources information SE Togo is already experiencing scarcity and will further temperature increase the expected the impact to land degradation and drinking water availability will increase. Limited water resources information is available for the basin

³⁷ TCNCC, 2015 / CPDN, 2015 / PNACC, 2017

³⁸ GFDRR – Vulnerability, Risk Reduction and Adaption to Climate Change – Togo (2011)
TOGO_GCF CN Pre-Feasibility Study June 2019

and specifically in the SE Togo, especially in relation to flood impact. This will need be better understood to determine long term sustainable solutions relating to potential IWRM adaptation.

One of Togo's greatest concerns is the availability of clean drinking water. These resources are not always readily accessible and their quality can vary depending on aquifer depth. Moreover, the availability of Togo's surface water resources is already jeopardized by seasonal and regional rainfall variation. An early onset to the dry season could further exacerbate this supply. Together, the city of Lomé and the Maritime region are home to 40% of the population and over 90% of domestic industries. Securing sufficient water for these regions under current management conditions is projected to grow increasingly challenging.³⁹ Increased ability to store water during wet periods and increased access to irrigation during drought periods could help decrease vulnerability to the projected increase of dry days within the cropping season.



Source: 2011 QUIBB survey and 2010 GPHC, DGSCN

Figure 18: Drinking Water Access Rates

Drinking water access is much lower in the southern parts of the country, particularly in the Plateaux and Maritime regions (with drinking water access rates of 39 percent and 30 percent respectively). In fact, of the 8 prefectures with the lowest drinking water access rates (<30 percent), 4 are in the Plateaux region—Amou (24 percent), Anié (8 percent), Akébou (7 percent), and Wawa (29 percent); and 4 are in the Maritime region—Lacs (12 percent), Afagnan (16 percent), Vo (13 percent), and Yoto (19). Drinking water access rates are much higher in the five arrondissements of Lomé and the Golfe prefecture (>80 percent) than in other areas (<66 percent) (see map below). With the greater flooding impact expected, to be exacerbated by climate change, access to drinking water may continue to degrade with the communities' limited ability to adapt.⁴⁰ Focused in the SE maritime region further vulnerability studies will be required to assess the impact of flooding related to already scarce water resources and new solutions may need to be considered to help the communities adapt and respond.

2.4.4.3 Agriculture, forestry and land use

The basic climatic elements such as precipitation and temperature show seasonal or annual fluctuations somewhat different from expected climatic conditions, which are very important to agriculture production. Precipitation fluctuation has significant long and short term impacts on natural resources particularly forests, lakes, wetlands and rivers. Regardless of the presence of surface and groundwater resources, the low

³⁹ GFDRR – Vulnerability, Risk Reduction and Adaptation to Climate Change – Togo (2011)

⁴⁰ IMF Country Report No 14/224 TOGO – Poverty Reduction Strategy Paper/ Strategy for Boosting Growth and Promoting Employment (SCAPE) 2013 -2017

precipitation over the growing season seriously affects the region's agricultural activities that lead to food insecurity.

The vulnerability of livestock to increased mortality and abortion rates in herds and the proliferation of vectors and diseases will reduce the contribution of the livestock subsector to ABIP and have an impact on national supply in Meat products. The deficit in meat products will be aggravated by the decrease in the volume of fishery products such as fish, shrimp, crabs and the impoverishment of the actors working in the processing of these products. The decrease in the availability and quality of fodder and the development of domestic and nomadic farming would also exacerbate the conflicts between livestock producers and farmers.

The decrease in the national wood potential due to lower productivity of natural formations (forests, savannas, mangroves, etc.) would lead to energy deficits especially at household level and an increase in the price of woody products. The increase in the price of the timbers will have an impact on the remaining forest formations and on the incomes of the populations.

2.5 THE INSTITUTIONAL FRAMEWORK

The Togolese Government, in the interests of better consideration of climate risks, has ratified the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto protocol in 2004 since 1995. Togo is also part of The Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD).

The national strategic frameworks have been created for environmental management, adaptation and mitigation to climate change, prevention and management of crises and disasters.

The fight against climate change and the implementation of sustainable development plans are part of the main institutional initiatives following:

- (i) Ministry of Environmental and Natural Resources was established in 1987; creating an Environment Branch within the Ministry of Environment and Forest Resources (MERF) which is responsible for coordinating the conventions in which Togo is Committed
- (ii) Creation of National Committee of Climate Change
- (iii) Institutional framework for the preparation of Third National Communication (TCN) completed in 2015.
- (iv) A national second committee was set up in 2015.

2.5.1 The National Committee on Climate Change.

In order to reduce the impacts of climate change affecting its populations and fulfilling its commitments to the United Nations Framework Convention on Climate Change (UNFCCC), the Togolese government has set up the National Climate Change Committee on climate change by order No 011/MERF of 28 April 2015.

This committee serves as a framework for information, consultation and monitoring of the implementation of the UNFCCC and the Kyoto protocol. As such, it is responsible for developing recommendations and implementing national policy on climate change by following the implementation of the UNFCCC and its Protocol. It will execute programs and projects and participate in awareness-raising activities educating the public on climate change. However, this committee has shown limited capacity since its creation despite various support actions provided by UNDP.

On the whole, the issue of climate change is now included in national development policies but the degree to which the problem is taken into account in the policies initiated by the Government, is variable from one sectoral policy to another, with low levels of execution⁴¹. The specific policies include:

1. National Action Plan for the Environment (NWSEP)
2. National Environmental Management Programme (PNGE)

⁴¹ TCNCC, 2015
TOGO_GCF CN Pre-Feasibility Study June 2019

3. National Sustainable Development Strategy (December 2011)
4. National Strategy of Capacity building for Environmental Management (October 2008)
5. Program Reduction of greenhouse gas emissions related to deforestation and forest degradation (REDD +) 2010-2050
6. National strategy to reduce the risk of Disasters in Togo (December 2009)
7. National medium-term priorities framework (CNPMT) For Togo (2010-2015)
8. National Plan of Action for resource management for marine and coastal environmental.

The regulatory provisions integrating climate change are taken into account in policies, programmes, projects and development plans in other sectors affected by climate change (including energy, agriculture, transportation, finance) and is part of the National strategy paper Vision 2030 will incorporate this dimension as well as the other ODD.

In regards to adaptation to climate change, the strategic guidelines are defined in the following reference texts: National communications, National Action Programme for Adaptation to climate change (NAPA, 2009), National strategy for the implementation of the UNFCCC, and The National Adaptation Plan (NAP) which has just been finalized.

2.5.2 *National Climate Change Adaptation Plan (PNACC)*

The National planning process for climate change adaptation In Togo was Committed In 2014 with the Support of GIZ. The development of the PNACC was coordinated by a dedicated technical committee to integrate of ACC into planning and budgeting in Togo (Committee set up within the framework of the Inter-ministerial Order No. 008/2014/MPDAT/MEF/MERF of 21 July 2014). The development of the NAP was based on work previously in preparation of the National Adaptation Action Plan (NAPA, 2009) and the national communications on climate change, including consultation with stakeholders. The planning guidelines have been defined incorporated into Vision Togo 2020 identifying major issues and challenges such as: (i) Food and nutritional security; (ii) The reduction of poverty and social inequalities; (iii) Public health and the living environment; and (iv) protection of the livelihoods of vulnerable regions. In this perspective, the vision defined for The National adaptation plan for climate change in Togo (PNACC) is the following: "On the horizon 2030, the socio-economic development of Togo is more sustainable and the resilience of vulnerable populations strengthened through the implementation of climate change adaptation measures. A series of priority measures have been defined and quantified in collaboration with stakeholders within the PNACC.

2.5.3 *Mono-Togo Basin – Institutional Framework*

The legal framework for the management of the Mono Basin consists of national legal norms and the legal framework of sub-regional West African organizations of which they are co-members. In order to cope with increased intervention needs including a cross-border dimension, it was decided to set up a basin authority. The principle of establishing this Basin Authority was adopted on the 21st of November 2008 in Bamako (Mali) as part of the regional action plan for integrated water resources management in West Africa. The Council of Ministers further developed this concept for the development of scope of the authority of the Mono Basin (ABM), held on 04th July 2014 - in Cotonou, Benin. The authority is not yet operational. A study was carried out in 2011, with the overall objective of determining conditions of feasibility for the establishment of the cross-border basin organization of Mono and presently the Mono Basin covers three administrative regions of the five total regions in the country:

- i) the Central region (41% of the basin in the national portion of Togo), for the Haut Mono as well as the majority of the basins of the Anié and the Ogou., which includes the prefectures of Tc Haoudjo, Tan, Sotoubou, Blitta, Anié;
- ii) The Plateau region (54 per cent of the basin in the national portion of Togo) - the Median Mono comprising the prefectures of the Ogou, the Eastern mono and the Middle mono;
- iii) The Maritime region (5% of the basin in the national portion of Togo), which includes part of the prefectures of Yoto and the Lakes, as well as the prefecture of Bas Mono.

The decentralized departments of the main ministries are present at the prefecture-wide level.

Actions are implemented at the Community level by:

- Committees Environmental Protection (CVPE): they were implemented by the Ministry of Environment in support of environmental protective actions at the level Local.

- Village committees of Development (CVD).
- Village Associations for the management of Protected areas (AVGAP)
- Associations and local professional groups (producers, breeders)

It is important to underline the presence of customary law that influences the behavior of the local communities. The traditional chieftainship, through its organization and its system of social control, exerts some authority over the system of management of natural resources through land pacts, customary land ownership and the organization of hunters in the control or consumption of these resources. During the development of the full proposal, the project will need to coordinate with the local norms and properly recognize the cultural requirements.

2.6 STRATEGIC PRIORITIES

The preparation and submission of the planned second national contribution determined in December 2015 at the COP21 in Paris have led to the following priorities for climate action:

- (i) Strengthen actions for energy efficiency and sustainable carbon technologies; (
- (ii) Promote integrated and sustainable management of water resources;
- (iii) Strengthen the resilience of agricultural sector systems and means of production;
- (iv) Strengthening the capacity to adapt human settlements (buildings and cities) to climate change; and
- (v) Protect the coastal area.

The chosen approach is to implement a portfolio of adaptation measures and projects aligned with the national priorities of development, knowing that the adaptation options will include mitigation of GHG emissions, as much as possible.

The needs identified address the national concerns of the all of the stakeholders involved. They have been quantified and validated and as are part of national process set up within the framework. The launch and piloting of the Second and Third national communication, the various stakeholders involved were brought together in thematic groups related to the most vulnerable sectors. The purpose was to proceed with the prioritization of sectors and sub-sectors and identify the main priority measures as well as identify the conditions for their implementation. For each sector, the approach was to consider the degree of impact on national development priorities such as employment, the increase in income for beneficiaries and GDP, the positive impact on the growth and development of clean and sustainable carbon energy resources while taking into account the realities of climate of today and tomorrow. Each of the sectoral measures was then provided a series of operational activities complemented by an economic analysis to assess their needs for financial support.

Based on the vulnerability assessment in the targeted areas, adaptation options have been proposed. The programs and adaptation measures represent a program formulation, taking into account the options for adaptation in the sub-sectors. These programmes are consistent with the national strategic guidelines, including those included in the strategy paper on accelerated growth and promotion of employment (SCAPE) and in sectoral priorities and objectives. The main parameters that guided the choice of adaptation options are related to the fight against poverty, sustainable development, equity, the promotion of the competitiveness of the sectors, the evaluation of comparative advantages and the growth in population incomes with particular emphasis on vulnerable groups. The implementation of these programmes and measures will require the involvement of all actors, including universities and research institutions, public institutions, NGOs, the private sector, local authorities, communities in the and the technical and financial partners.

The adaptation programmes revolve around three strategic axes, namely the improvement of the regulatory framework and knowledge management of the coastal erosion phenomenon, the development of structural investments for the protection of the coast and the implementation of preventive risk management actions

The identification of priorities by key sector with associated costs (Table 4) are as follows:

Energy:

- (i) enhancement of biomass energy potential;
- (ii) development of renewable energies;

- (iii) promotion of energy conservation

Water Resources:

- (i) strengthening the institutional, legal and regulatory capacity of the water resources sector;
- (ii) improved knowledge of the country's water resources;
- (iii) optimization of the exploitation of water resources;
- (iv) implementation of actions for the integrated management of water resources;
- (v) protection of water resources.

AFAT:

- (i) capacity building in the AFAT sector;
- (ii) (ii) strengthening the resilience of food crops, family rearing and forest formations to the CC;
- (iii) (iii) Promotion of sustainable forest management;
- (iv) (iv) Land use management (RAT)

Human settlement and Health:

- (i) Revision of the regulatory and policy framework;
- (ii) Promotion of the rational management of human settlements;
- (iii) Health Promotion within a health-friendly environment

Table 6: National climate change adaptation Plan of Togo (PNACC), 2017

Adaptation Measures	Cost Millions (USD)
Agriculture Sector	105
Construction and / or rehabilitation of water reservoirs for micro-irrigation and livestock watering in rural areas in all regions	50
definition / development of corridors and transhumance areas	20
Promoting high-performance varieties with climate change	10
Fight against land degradation by strengthening the integrated management of soil fertility	25
Water Resource Sector	71
Conservation of rainwater and reuse of wastewater	35
Improvement of water management in the agricultural sector	20
Improved knowledge of water resources	16
Coastal Erosion	214
Improving the regulatory framework and knowledge management of the coastal erosion phenomenon	14
Developing infrastructure based coastal protection to increase resilience level	200
Human Health Sector	370.1
Human Settlements: Cities and buildings including waste treatment	350
Rational and sustainable management of waste in urban areas	160
Strengthening sanitation and storm water drainage in major urban centers	40
Development and rehabilitation of urban roads in the main urban centers	150
Health Sub-Sector	20.1
Development of Emergency Services	20
Development and Implementation of a nation health monitoring plan	0.1
Land use, Land-use change and forestry sector	150
Reforestation and protection of areas with a fragile ecosystem (mountain slopes, river and stream banks) to fight against inundations, strong winds and erosion	120
Capacity building (Techniques and materials) of meteorological services for better planning and implementation of activities	30
Energy Sector	46
Sustainable management of traditional energies (firewood and charcoal)	7
Implementation of energy saving strategies	9
Development of mini hybrid networks for rural electrification	30

National climate change adaptation Plan of Togo (PNACC), 2017

The complementary work carried out as part of the preparation of the National Adaptation Plan to climate change (PNACC) has led to prioritization of a number of measures – in collaboration with stakeholders – identifying key issues for the country. The first two Identified priority areas are the Agriculture and the Water Resources Sectors – Because of their importance to the economy and their degree of vulnerability. For all the sectors a key list of concrete adaptation measures has been proposed and their prioritization and selection (see table below) has been carried out at a workshop with various stakeholders, using a participatory multi-criteria analysis. This enabled the proper contextualization and identification of best practices, barriers, etc. -including analysis of these aspects in line with national adaptation priorities and national sustainable development goals⁴². The agriculture sector was selected as a pilot for implementation – Projects were identified based on a series of priority measures for each sector.

2.7 MOBILIZATION CLIMATE FINANCE

2.7.1 Financial needs for Adaptation

As part of the preparation of the Second National Contribution report, the analysis of the data collected identified the priorities, measures and needs in funding for adaptation. Priority sectors are in order: energy, agriculture; human and health establishments; water resources; coastal erosion; and land use, land-use change and forestry. The total need for funding is estimated at 1.54 billion USD from 2020 to 2030⁴³.

Assessment of technology needs (EBT⁴⁴): Identify a portfolio of projects and programs for addressing the adverse effects of climate change through the transfer and access to clean technologies - both for adaptation and for mitigation. It has been conducted in parallel under coordination by MERF through the direction of the Ministry of Environment. For adaptation the priority sectors of interventions selected are agriculture and water Resources. The requirements include the protection of these two sectors in the context of planning and implementing of adaptation measures that strengthen their resilience⁴⁵.

A complementary work prioritization measures was carried out as part of the preparation of the PNACC and has led to the estimation of a need 936 million US dollars for implementation of the priority actions as part of the Plan⁴⁶.

2.7.2 Access to the Finance - Togo

2.7.2.1 Key data

The implementation of these strategic documents is hampered by the lack of financial resources. An review of the state of climate change funding in Togo and the opportunities for funding as part of the preparation of the PNACC highlights the fact that only public funding is now being used to support adaptation efforts to climate change by the country⁴⁷ - The most important part of the contribution comes from international cooperation in the framework of major projects presented in part 4 (see 4.3.2).

⁴² National climate change adaptation Plan of Togo (PNACC), 2017

⁴³ National determined Contribution (Scnd), 2015

⁴⁴ The technology needs Assessment (EBT) is an initiative of the United Nations framework Convention on Climate Change (UNFCCC) led by the United Nations Environment Programme (UNEP) in partnership with the Global Environment Facility (GEF) that aims to assist developing Countries (PED) participants in the identification and analysis of technological needs to strengthen against the threats of Climate change.

⁴⁵ Technology needs Assessment in Togo (EBT) – Adaptation report, 2016

⁴⁶ National climate change adaptation Plan of Togo (PNACC), 2017

⁴⁷ National climate change adaptation Plan of Togo (PNACC), 2017

A specific study mapping the finance for Climate (Adaptation and mitigation⁴⁸) in Togo Since 2012⁴⁹ provides a detailed picture of the financings mobilized by sector and by partners. This study confirms the overriding role of international public funding (see Table below for the financing of adaptation (covering disasters recovery and risk reduction) over the period 2012-2017 and is estimated to be valued at \$28 M USD.

Table 7: Climate financing USD (millions) by sector, origin, and impacted region

International Financial Org.	Theme					Total by Partner	Region with Togo
	Adaptation	Mitigation	Infrastructure (Human)	Technology Transfer			
World Bank	0.197	5.089		57		62.286	National, Maritime and Lome
EU	12.283	1.222	0.77	0.12		14.395	Savannah and National
GIZ	0.281	1.376				1.657	Savannah, Maritime, Lome and National
Norway Fund	0.563					0.563	Maritime
FPMA	3.7					3.7	National
Terra Africa	0.5					0.5	National
UNDP		0.5	0.6			1.1	National
ITTO (OIBT)		0.346				0.346	
FAO		0.316				0.316	
BMZ		5.636				5.636	National
Sub-Total	27.308	14.485	49.843	57.12		146.76	
Regional							
Economic and Monetary Union of West Africa (UEMOA)	0.563	0.5				1.563	Maritime and National
National Financing							
Government	0.716	0.35					National
Total	27.871	15.701	50.193	57.12		151.26	

2.7.2.2 Key actors

The National Environment Fund (FNE) is a key instrument for the mobilization of financial resources at both the national and international levels for the implementation of the national environmental policy including the fight addressing climate change. The FNE was created in Act No. 2008-005 on May 30th, 2008 within the framework of Environmental Law; This is a public institution which has legal authority and financial autonomy.

The main objectives are the following:

- Support the National Environmental Management Agency (ANGE);
- To assist state public services and local authorities, civil society organizations in the framework of the implementation of their environmental project management;

⁴⁸ Note: The methodology for identifying and characterizing funding is not explained in the document.

⁴⁹ Readiness Programme of Togo for the GCF, Cartography on climate financing of Togo, August 2017

- Support local initiatives in environmental conservation and sustainable development;
- Finance environmental restoration and pollution control operations;
- Support private sector projects that integrate environmental considerations into their production system
- Funding of research and environmental education.

The Environmental directorate was chosen to play the role of the National Designated Authority by coordinating the development of proposal to vertical funds addressing climate change.

2.7.2.3 Steps in progress

A number of steps are currently being initiated to mobilize external financial support (bilateral or multilateral, conditional and non-conditional) for the financing of adaptation measures – and mitigation-prioritized by the government, supplemented by resources from the National Budget. The identification of potential sources of adaptation funding was carried out as part of the preparation of the NAPA, which leads to the following:⁵⁰

Table 8: Climate change resources mobilization

National Sources	Priority	Time Horizon
National Budget by Sector	Not-Immediate	Medium Term
National Funding	Not-Immediate	Medium Term
Private Sector	Not-Immediate	Medium to long Term
International Resources	Priority	Time Horizon
GCF	Immediate	In short and medium term
FAO (FPMA)	To Be assessed in relation to the ceiling for LDCs and mobile funds	Depending on the availability of - medium term
GEF (FEM)	To Be Evaluated Within the START allocation	Depending on the availability of - medium term
Adaptation Fund (FA)	to evaluate against the ceiling and the funds being mobilized	Depending on the availability of - medium term
World Bank	Immediate programming under IDA framework	Medium Term
International Private Sector	To research / opportunities to seize	Medium and Long Term

A country programme for GCF has been created with the support of the ongoing validation process. As part of the readiness, support was provided to the government of Togo to put in place capacity-building actions of key players. An agreement was made with the Centre of Ecological Monitoring of Senegal in 2016 to implement these actions. A first workshop was held in March 2017. In order to truly institutionalize support for climate finance, a GCF related line item was incorporated into the Annual budget of the government. This will enable consideration of projects being implemented.⁵¹

3 THE MONO BASIN: ISSUES AND SPECIFIC OPPORTUNITIES

3.1 THE DEVELOPMENT OF THE MONO BASIN, SPECIFIC ISSUES AND OPPORTUNITIES

The Mono River basin is one of the twenty-five (25) transboundary river basins in West Africa. It covers an area of about 24,300 km², of which 21,300 km² in Togo and 3,000 km² in Benin, corresponding to 38% and

⁵⁰ PNACC, 2017

⁵¹ Interview with the Plan Director, field Mission 26 Nov-6 Dec 2017

2.14% respectively of the territory of each of the two countries. The population of the basin is 5,115,026 inhabitants or 34.92% of the total population of the two countries (14,646,189 inhabitants in 2010.⁵²) The area included in the territorial right-of-way of the Mono Basin is 21 486 km². (Central region - 9378 km², 10885 km² in the Plateau region, 1072 km² in the Maritime region and 151 km² in the Kara region.) The estimated population for the Togo basin is 1,965,983 (Estimate 2011⁵³), with the following distribution of the 11 Prefectures that comprise it:

Table 9: Administrative Composition and Population of the Mono Basin

Region	Prefecture	Population ⁵⁴
Central Region (Top Mono)	Tchaoudjo	218453
	Tchamba	150202
	Sotoubou	125701
Plateau Region (Medium Mono)	Anié	142332
	Ogou	224882
	Is (East) Mono (partially covered)	138653
	Medium Mono	87551
Maritime region (Low Mono)	Yoto (partially covered)	189103
	Lakes (partially covered)	239928
	Low-Mono (partially covered)	101315

PARTIALLY COVERED – PART OF PROJECT REGION

The basin presents specific issues in relation to the development of the Country⁵⁵ :

- In terms of natural resources, the basin's territory has considerable biological diversity in terms of plant genetic resources and terrestrial zoological resources. This biological diversity – including the existence of many multi-tiered wetlands – determines the major elements of the large ecosystems present in the basin. Mangroves are a special vegetation in the Mono Basin Valley, because of the major functions they provide in the ecosystem and the services they offer to local populations.
- At the socio-economic level, the basin has significant potential, in terms of hydroelectric production, but more generally in terms of combating poverty through the valuation of natural resources and more particularly to the control of water for the satisfaction of the socio-economic and environmental needs of the local communities. These include reducing the vulnerability of this area and its populations to flood and drought phenomena and providing lasting responses to environmental problems, the main ones being soil erosion and the filling water bodies of the Mono River and its tributaries; Deforestation and regression of vegetation cover; pollution of water resources that are increasingly affected by climate change; Loss of biodiversity; flooding has become almost an annual phenomenon in the basin.
- Strategically, the management of the resources of the Mono basin appears to be an important factor in the establishment of peace between Togo and Benin, since a number of conflicts between the two countries are linked to problems of management of Natural Resources, Between the communities of each country as well as between the two states that share the Mono basin.

The main socio-economic activities of the people of the Mono transboundary basin are agriculture, fishing, river transport as well as livestock breeding:

- Agriculture - approximately 80% over the entire basin: primarily rain-fed and are subsistence level agriculture, primary source of income for households, with cultural techniques and practices that are not supportive to a sustainable environment and protection of natural resources (water, vegetation, soils).

⁵² ECOWAS, State report on the location of the Mono basin, 2011

⁵³ Ecowas Status report of the Mono Basin, 2011

⁵⁵ Ecowas Status report of the Mono Basin, 2011

- Fishing and river transport: An important economic sector for the population, with a tendency towards over-exploitation of water bodies-reported since 1995 as per the FAO⁵⁶ report – which leads to the degradation of freshwater and marine environments.
- Breeding: Characterized by low control of zoo-technical parameters by producers and strongly exposed to epidemics. The specific difficulties are linked to:
 - i) transhumance and conflicts with the resulting farmers
 - ii) the lack of an organized industry for the sector
 - iii) Problems related to the conservation of products
 - iv) Difficulties in accessing appropriations.

3.2 THE KEY CHALLENGES FACING MONO BASIN COMMUNITIES

3.2.1 Vulnerabilities

The state-of-the-scene study conducted in 2011⁵⁷ provided the necessary background framework for the implementation of a cross-border basin authority that highlighted key factors in vulnerabilities of the basin related to the water resource management, namely:

- Low levels of accessibility of drinking water needs and basic sanitation services for the population of the basin: in 2011, more than half of the population of the basin remains deprived of drinking water with a critical situation regarding access to adequate sanitation services. With the potential for further flooding compromising scarce water resources.
- Erosion and filling of plains and streams: erosion is a major problem on slopes and plateaus in the Mono basin, particularly as a result of agricultural cultivation on the banks of water bodies, poor cultural practices, and pollution from large solid debris in the bodies of water
- Degradation of the shorelines of water bodies and aquatic ecosystems, in particular due to uncontrolled and abusive harvesting of woody resources for fuelwood, lumber or service; The use of fire as a means of clearing or accelerating the process of rejection by herbaceous vegetation, the rapid colonization of new wastelands, and the utilization of inappropriate fishing techniques and equipment.
- The pollution of water resources linked to human activities characterized mainly by non-observance of hygiene rules in human settlements where water is mainly polluted by open defecation even at the edge of the water point, poor management of household waste and rainwater, poor practices in certain sectors of production (industry, fisheries and Agriculture). These practices result, among other things, the discharge of raw effluents into watercourses, the use of fishing techniques that promote the filling of watercourses, agricultural activities using fertilizers and pesticides which leached by waters currents are found in streams.
- The proliferation of invasive aquatic plants, whose growth is accelerated by contamination of streams by fertilizers and other pollutants, with environmental impacts (reduction of biodiversity, degradation of water quality and reduction of fisheries resources) and socio-economic (reduction of inland waterway transport, reduction of energy production capacity of hydroelectric power plants, worsening of waterborne diseases and reduction of resources Fisheries).
- The loss of biodiversity: different species are directly threatened (including species of mangroves, shrub, herbaceous, aquatic mammals and sea turtles etc.),
- The Risk recurring floods (see sections 3.4 and 4.2.2).

A key problem raised and confirmed during the consultation phase concerns the soil degradation with a problem of congestion and a water deficit for a good period of the year. Significant erosion on slopes and plateaus threatens the development of agriculture in the immediate environment of the alluvial plain of Mono.

The Nangbéto Dam

⁵⁶ Ecowas Status report of the Mono Basin, 2011

⁵⁷ Ecowas Status report of the Mono Basin, 2011

The dam was designed to regulate the flow of the river and provide sustained low water; However, there are still situations of drainage of the river, linking to different potential factors-as analyzed in the study of the state of the basin⁵⁸, namely: modes of management of the dam, modes of occupancy of space and impacts on the environment (deforestation, erosion, sedimentation, filling and siltation of plans and streams), impacts of climate change and variability.

3.2.2 *An expected worsening in the context of climate change*

The climate scenarios developed as part of the preparation of the TCNCC⁵⁹ highlight the expected projections across the country (see section 2.2.2). There are limited targeted projections at the infra-national level to date with large prioritized risks identified for the basin – confirmed during the consultations - align to the risks identified across the country, namely the risks of drought and flooding

The differences are, however, notable in the basin areas. If the demarcations of climate zones specifically identified, it differentiates the "High Mono" area namely the central region, The area "Medium mono" namely the plateau region and the "low mono" area primarily in the Maritime region. The results of the consultations highlighted mainly the risk of flooding for the Maritime region (see box below), the risk of drought for the central region as well as for the plateau region – also increasingly concerned by the risk of flooding.

Floods: Floods occur almost yearly and impact the riparian communities in the Lower part Of Basin⁶⁰. Mono is a torrential river, the rainfall contributions it receives are of a seasonal and random nature. Its watershed is very small and allows only water propagation times not exceeding 48 hours, thus excluding any long-term forecast from rain heights in the watershed. Flooding, often due to the abundance of precipitation and the swelling of some streams and bodies of water in the basin, has been also impacted by poor town planning, construction and safety standards including the poor living practices of the local populations who have for example converted water and drainage storm gutters into landfills which add on to the silting of streams at the bottom parts of the basin.

3.2.3 *Priorities for intervention*

In the context of climate change for the basin one of the key issues relate to water resources availability and sustainable ecosystems. In particular, improving knowledge and monitoring of the water resource (availability, use and needs) as well developing a better understanding of the impact of climate variability on water resources and vulnerability of the populations and ecosystems.

It is clear from the analysis at this stage the needs are as follows (focused at the community level):

- Understanding of the risks and barriers underlying the prevention and management of future climate event impacts through the:
 - Development of Integrated Water Resource Management (IWRM) models that support water resource decision making, that identifies risks and vulnerabilities.
 - Protection and improvement of access to water resources through development of resilient infrastructure;
 - Improvement of planning and management of river basins through ecosystem interventions, including swamps and low-lying areas.
 - Develop IWRM based resilient water safety and flood plans.
- Strengthen alert mechanisms for flooding potential.

A number of projects have been initiated (see 4.3.2) but do not cover all the needs. Complementarity and synergy with these projects will be a key focus for the development of this detailed project.

3.2.4 *Ongoing initiatives and projects*

An non-exhaustive list of key projects and initiatives for the Mono Basin by Togo in relation to this project - are described below (on-going or completed). They have been identified in order to define and ensure the

⁵⁸ Ecowas Status report of the Mono Basin, 2011

⁵⁹ Scenarios developed using the SIMCLIM2013 simulation tool (TCNCC, 2015), Computer model based on the IPCC Guidelines for climate Projections of the fifth report (AR5) incorporating four new GHG emission scenarios (RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5).

⁶⁰ Ecowas Status report of the Mono Basin, 2011

proposed projects complementarity – this will be further analyzed in detail as part of the complete preparation of the project.

4.3.2.1 The Hydro-agricultural development project of the lower Mono River valley (PBVM)

Objective and short description	Conducted studies have revealed the agricultural potential of the basin to reduce the dependence of Togo (and Benin) on food products, including cereals. A first phase of the project was decided on a pilot basis with total water control through the establishment of an adequate hydraulic infrastructure (pumping station) acceptable from the point of view of its implementation and its impacts. The development work consists of the construction of protective dikes along the river and the irrigation and drainage channels of runoff to allow an efficient exploitation of the agricultural potential of the area. For Togo, this is a 460 ha development, with mainly Facilities Hydroelectric and irrigation projects for rice farming.
Project Holder (Implementation)	MAEH
Implementation period	2006-2018
Total Budget and funding	\$26.4M USD (14 985 000 000 FCFA)
Intervention area	Prefecture-Mono Canton of Agoméglou
Main realizations	The development work consisted of the construction of protective dikes along the river and the irrigation and drainage channels of runoff to allow an efficient exploitation of the agricultural potential of the area.
Climate change gaps	Small scale in relation to the Basin requirements for climate adaptation. Can be considered a potential pilot with the use of Ecosystem based adaptation for infrastructure development. The project covers only the Agomeglou area which is only the lower part of the Mono basin towards the coast
Partners involved	TFP (Badea, BOAD), State Technical Structures MAEH and other ministries (MERF, Ministry responsible for planning,) Microfinance Institutions

4.3.2.2 The integrated disaster and Land management project (PGICT)

Objective and short description	<p>The integrated Disaster and Land Management (PGICT) project aims to:</p> <ul style="list-style-type: none"> ➤ Strengthen the capacity of targeted institutions to manage the risk of flooding and land degradation in targeted rural and urban areas; ➤ To extend sustainable land management (GDT) in the targeted landscapes and in the climatically vulnerable areas of Togo. <p>Four components:</p> <ul style="list-style-type: none"> ➤ Institutional strengthening and awareness raising ➤ Community activities to adapt to climate change and sustainable land management
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	<ul style="list-style-type: none"> ➤ Early warning, monitoring and knowledge systems ➤ Project Management
Project Holder (Implementation)	Togolese Government through the Ministry of Environment and Forest resources, with a delegation of regional coordination to the AGAIB
Implementation period	2013 - 2017
Budget total	\$17 M USD
Intervention area	Whole country
Main realizations	<p>Institutional strengthening and awareness raising</p> <p>Early warning, monitoring and knowledge systems piloted</p> <p>Development of a best practices guide to Sustainable Land Management (SLM) - piloted</p>
Climate change gaps	<p>The Mono Basin was partially covered by PGICT and integration of the systems developed by this project will be scaled and incorporated.</p> <p>National Level Project (not enough granularity)</p>
Partners involved	All the actors in the Platform National for the Reduction Risk of disasters at the level of the Government and civil society, decentralized services, NGOs and local authorities, the World Bank, UNDP, the EU, TerrAfrica, LDC funds, GEF, GFDRR, CILSS, OSS, IUCN, GIZ.

4.3.3.3 Agropoles Development Project in Togo (Prodt)

Objective and short description	<p>The program aims to improve:</p> <ul style="list-style-type: none"> - the promotion of agricultural sectors for sustainable development of productivity and plant production, - the development of agricultural infrastructure, - access to the market and processing <p>(Note: An agropole is an urban centre, or nearby area, with a high potential for research and technological education, and advanced industries for food and beverage.)</p> <p>Activities for the first 5 years:</p> <ul style="list-style-type: none"> -Develop a pilot agropole on the Kara basin centered around the value chains of sesame, poultry and beverage, -Support ongoing interventions on the Ito basin to structure them in agropole centered on the value chains of rice, poultry and livestock/meat, -To assist the actions of the private actors of the cashew sector in a perspective of agropole in the Haut-Mono, -To deploy the mechanisms to generalize the agropoles on the rest of the territory.
Project Holder (Implementation)	Ministry of Agriculture, Livestock and Fisheries (APRM)
Implementation period	2016 - 2020
Budget total	\$126.9M USD (72 billion FCFA) Funded in part by the AfDB (\$112.8M USD (63 998.4 billion FCFA) for Ito and \$149.8 USD (85 billion FCFA for low mono))
Intervention area	3 areas identified: Ito, Kara and Top Mono

Main realizations and/or expected results	
Climate change gaps	
Partners involved	MAEH, Ministry in charge of industry, trade, environment, finance, civil society infrastructure, FAO, AfDB, green background, fond Korean, private sectors, SME/bank, beneficiaries

4.3.2.4 Promono Project

Objective and short description	<p>The aim is to create a biosphere reserve transboundary reserve of the Delta of Mono (Benin, Togo) with the following objectives:</p> <ul style="list-style-type: none"> ➤ The natural resources of the region, and in particular biological diversity, benefit from special protection and are subject to sustainable use. ➤ The resulting economic development on the periphery of the future central areas of the biosphere reserve benefits primarily the local population. <p>The Mono River Delta, located on the southern border between Benin and Togo, is home to a wide variety of animal species, some of which are highly endangered. To date, only a small number of Mono Delta sites are protected.</p>
Project Holder (Implementation)	Ministry of Environment and Forest Resources (MERF), Forest Resources Directorate (FDD)
Implementation period	2013-2019
Budget total	Financing: \$8.7M USD (7.5M €) German Federal Ministry of the Environment, Nature Protection, Construction and Nuclear Safety (BMUB)
Intervention area	Mono Cross-border biosphere reserve
Main realizations	
Climate change gaps	
Partners involved	Regional Directorate for Environment and Forest resources of Maritime, NGO ARCC, NGO Abiola Zamani, NGO COSOL PG, Prefecture of Yoto, Union of village associations of participatory management of protected areas of Togo South and north, associations ACPC of Godjé-Godjin, CSA Afito, ARIFAD of Akissa, management associations of the South Lagoon system Togo (Lake Togo)

4.3.2.5 Project WACA

Objective and short description	<p>The WACA programme provides funding to 6 countries (Benin, Côte d'Ivoire, Mauritania, São Tomé and Príncipe, Senegal and Togo) for the implementation of national coastal policy actions, investments for green, grey or hybrid solutions, as well as regional interventions needed to manage the coastal areas of West Africa in a sustainable manner. The objective of the project development is to improve Management of common natural and anthropogenic risks, integrating climate change, affecting communities and coastal areas of the West African region.</p>
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	For Togo, activities will be concentrated in the littoral zone, organized around three technical components that are (i) regional integration, (ii) Policies, institutions and support System (iii) physical and social investments. The project also covers activities to reduce the risk of erosion, pollution and flooding, biodiversity management, sustainable land management and integrated management (GDT) of transboundary water resources along the channel of Gbaga.
Project Holder (Implementation)	Program Carried by the World Bank and GEF
Implementation period	Approved 2018
Budget total	210 M USD is pending approval for the <i>WACA Resilience Investment Project (WACA ResIP)</i> to The IDA (International Development Association (IDA)) ⁶¹ .
Intervention area	For Togo, the target population of the project is primarily comprised of all the communities located in the maritime region. The Direct beneficiaries of the project are on the one hand communities vulnerable to coastal erosion, flooding and pollution and on the other hand supporting wetland adjacent communities in the restoration of these ecosystems, GDT and promotion of the generating income activities.
Expected results	Project focused on communities vulnerable to coastal erosion, flooding and pollution and on the other hand supporting wetland adjacent communities in the restoration of these ecosystems, GDT and promotion of the generating income activities.
Climate change gaps	project will address the impact of sea level rise on the coastal zones. (Southern Maritime Region) The project does not cover the land area of the Mono Basin
Partners involved	A number of international and national partners are involved in the programme (Http://www.worldbank.org/en/programs/west-africa-coastal-areas-management-program#3)

4.3.2.6 HYDROMET Project

Objective and short description	Hydromet is a program initiated by the World Bank, in partnership with the African Development Bank, the World Meteorological Organization, the French Development agency and the World Food Programme, in the field of Hydrometry and meteorology. It is assisting to help African countries modernize their meteorological and hydrometric tools and systems, so that they can produce accurate and exact forecasts, contribute to resilience to climate change, economic development and disaster risk management. In Togo, the main aim of the project is to strengthen the early warning system with important capacity-building components 1) technical support of the institutions in charge of meteorology and hydrology, 2) training and professional retraining, especially to improve data collection and processing.
Project Holder (Implementation)	National Agency for Civil Protection
Implementation period	Project in preparation

⁶¹ <http://www.worldbank.org/en/programs/west-africa-coastal-areas-management-program#2>
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Budget total	TBD
Intervention area	National territory (Togo)
Expected results	Strengthen the early warning system with important capacity-building components 1) technical support of the institutions in charge of meteorology and hydrology, 2) training and professional retraining, especially to improve data collection and processing.
Climate change gaps	Primarily impacted the national level, limited provision for additional equipment for measuring regional level impact to support planning and response within the Mono Togo Basin.
Partners involved	University of Lomé
	Project to be submitted to the Green Fund for Climate financing

4.3.2.7 Project RCC ACC (Disaster risk reduction – Adaptation to climate change)

Objective and short description	<p>The aim of this project is to strengthen the capacity of the communities at the grassroots for the management of the early warning system locally. It has helped to train volunteers at the level of each community and to organize them as a response group in flood-risk affected areas.</p> <p>The project provided information, training and community preparedness, as well as the organization of flood monitoring communities in their respective communities. In total, 100 communities benefited from the installation of SAP and the establishment of a beacon network.</p> <p>Vulnerability studies, action plans and contingency plans were deployed on 112 localities (out of 300 identified as the most vulnerable) 53 on Mono Basin.</p> <p>A flood modeling tool has been set up (FUNES – Functional Simulation), with a pilot test phase downstream of the dam.</p>
Project Holder (Implementation)	Togolese Red Cross
Implementation period	2009-2018
Budget total	\$2.1M USD (1.8M €) Finance: Federal Ministry for Economic Cooperation and Development (BMZ)
Intervention area	Whole country impacted; 112 targeted localities, including 53 in the Mono Basin, about 100 000 inhabitants
Main realizations	<p>Strengthen the capacity of the communities at the grassroots for the management of the early warning system locally. It has helped to train volunteers at the level of each community and to organize them as a response group in flood-risk affected areas.</p> <p>A flood modeling tool has been set up (FUNES – Functional Simulation), with a pilot test phase downstream of the dam.</p>
Climate change gaps	<p>Training did not include climate change resiliency strategies.</p> <p>Can scale the flood modelling tool</p>
Partners involved	Croix Rouge Climate Center

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4.3.2.7 Project REDD+

Objective and short description	This is a support for REDD readiness, in order to improve the technical and institutional framework for the implementation of REDD + and the rehabilitation of forests in Togo. The programme assists the Ministry of Environment and Forest resources in overcoming major deficits in forest conservation and rehabilitation and in the dissemination of sustainable forestry. The programme builds on the central areas of action of the Togolese proposal for the preparation of the REDD mechanism (implementation of a national forest inventory, definition of the reference level for carbon storage in forests, elaboration A system for the measurement, reporting and verification of emission reductions).
Project Holder (Implementation Implemented)	Chalk
Implementation period	2013-2019
Budget total	Funded through the Climate Energy Fund of Germany
Main realizations and /or expected results	Assists the Ministry of Environment and Forest resources in overcoming major deficits in forest conservation and rehabilitation and in the dissemination of sustainable forestry.
Climate change gaps	Not fully scaled for affected area within the Mono Basin. Pilot program.
Intervention area	Interventions at the national level (institutional support) Implementation of 3 pilot sites: One in the central region, one in the plateau region, one in the Maritime region

4.3.2.8 PALCC Project

Objective and short description	Develop a national response to climate change challenges by reducing the climate vulnerability of Togo through implementation of conservation measures for forest resources, soil management and energy efficiency plays. In addition, improve the institutional context in relation to climate change.
Project Holder (Implementation Implemented)	TBD
Implementation period	2017-2027
Budget total	\$11.6M USD (10 M €) European Union funding
Intervention area	Whole country considered
Expected results	Sensitize political decision-makers about climate change, assess the state of forest resources in the country, and implement measures to mitigate climate change's impacts.

	Coordinate with NGOs and CSOs focused on the sustainable management of forest and lands as well as on power efficiency. In this framework, they must achieve 2/3 of goals set under PALCC. (These include tackling issues such as the reduction of forest area, carbonization, coastal erosion, bush fires, etc.)
Climate change gaps	Does not cover flooding and meteorological improvements for the Basin. The project is mainly based on sustainable management, rehabilitation and soil conservation and forest cover. Other actions include CC adaptation integration into national policies and strategies
Partners involved	ODEF

4 NEEDS, GAPS, AND CURRENT BARRIERS TO CC RESILIENCE

Climate change adaptation is a priority but the implementation of necessary measures specific to each area has been limited, particularly when it comes to community resilience. Knowledge, tools and capacities have been lacking to enable the development and implementation of actions with a longer-term vision focused on adapting to the full scale challenges posed by climate change itself while considering the protective role of ecosystems, rather than solely predicting and reacting to the impacts of individual events. The lack of an ecosystem-focused vision of natural resources, and the lack of knowledge and realization of the value of ecosystem services - particularly those related to freshwater ecosystems has also been limited in addressing vulnerabilities. This project proposes to increase water resource resilience through promotion of ecosystem services which confers resilience to CC associated with water and that deal preventively with identified climate drivers. To do so it will address the following gaps and barriers that have impeded the development of an ecosystem based adaptation model in the past.

4.1 LIMITED EXPERIENCES WITH THE EFFECTIVE AND SUSTAINABLE APPLICATION OF EBA:

While, a major base of knowledge and experience has been developed on natural resource management, sustainable land management, and agricultural biodiversity this has not been fully developed for understanding the water resource availability of the Basin fully. Need to scale the Sustainable Land management program fully.

4.2 LIMITED UNDERSTANDING OF CC RISKS AND VULNERABILITIES

Limited topographical and water flood data in the face of CC is available for each community. For the creation of long term plans for agricultural development and sustainable water resource accessibility this will need to be developed to support sustainable CC adaptation.

4.3 LIMITED KNOWLEDGE IN VULNERABLE COMMUNITIES OF CC IMPACTS AND ADAPTATION OPTIONS.

CC is typically seen by local people as a future issue rather than an ongoing process that poses immediate threats; this has in some cases meant, for example, that local people have been reluctant to heed Government advice about the need to relocate away from highly vulnerable areas (or are unable to eg. Continue to cultivate food crops in riparian areas subject to frequent flooding), and if not addressed is likely to limit their buy-in to and participation in adaptation strategies. It should be noted that technical standards of staff in institutions at local and national level are developing, a limited number of local communities have first-hand practical knowledge of the range of adaptation options that exist for achieving cost-effective and sustainable resilience to CC through participation with other past interventions.

4.4 LIMITED UTILIZATION OF INFORMATION ON CC BY COMMUNITIES AND DECISION MAKERS:

Scientific and technical institutions have generated limited amounts of data and analyses on the technical characteristics of basin, trends in climatic conditions, and the magnitude and nature of CC threats affecting the ecosystems and local populations. This has hindered key decision makers in developing effective national and regional programs to help sustainable livelihoods. This knowledge has not yet evolved to recommendations that would allow the formulation of responses and the bridging of sector gaps particularly at a local and community level.

4.5 INADEQUATE CROSS-SECTOR PROVISIONS AND CAPACITIES FOR CCA:

Inter-sector coordination between stakeholders (production sectors, scientific/technical and local governments) exist and have been progressively strengthened in recent years however there is still a limited capacity within institutional stakeholders in the environment sector and in the different social and productive sectors to plan and meet sector-specific targets for climate change adaptation or mitigation. There is still limited policy and enforcement tools that institutionalizes comprehensive local development addressing environmental impacts.

4.6 LIMITED INVESTMENT OF FINANCIAL AND MATERIAL RESOURCES

To date, CC adaptation has been hindered by a combination of limited availability of hard currency for investment in infrastructure as highlighted in section 1, and the limited development of instruments for valuing ecosystems and the adaptation services, or for prioritizing and channeling resources to adaptation activities.

5 PROJECT DEFINITION

The lessons learned from the various responses link the importance of the actions of combating climate change with sustainable management of natural resources. In order to reduce the vulnerability of populations dependent on the exploitation of resources and to support poverty reduction. This project has been identified to support the communities in the Mono Basin in the implementation of an integrated development model taking into account the vulnerabilities of ecosystems and of water resources facing the risks of drought and flooding.

5.1 OBJECTIVES AND FIELD OF INTERVENTION

5.1.1 Objectives

This project's aim is to strengthen the resilience of vulnerable communities and ecosystems to the impacts of climate change in the Mono Basin – Togo. The expected impact of the project interventions is the improvement of resilience of vulnerable communities in the Mono basin over the long term. Implementation of this project will contribute to the achievement of sustainable development Goals (ODD), directly targeting 13, 1 and 5, and also contributing to objectives 14 and 15 (co-benefits on the protection of biodiversity).

The project is structured around the following specific objectives:

- OS1. Strengthening the knowledge of water resources and integrated water resource management (IWRM) taking into account climate change
- OS2. Infrastructure deployment to improve the resilience of water resources and ecosystems in the face of climate change
- OS3. Deployment of good practices in relation to community livelihoods-practices aligned with resource resilience imperatives.

5.1.2 Field of intervention

The project aims to directly affect approximately 200 Localities (villages) spread over the three regions of the Basin and the 11 Prefectures with approximately 200 To 250 000 beneficiaries (10-15% of the total population of the basin). This will provide a good cross section of the different risk and vulnerability situations of the entire basin to support future scaling of the interventions. As an illustration, the prioritized work carried out by the Togolese Red Cross within the framework of its RCC-ACC project led to the

identification of 300 communities most at risk from flooding, of which about 100 are within the Mono Basin corresponding to approximately 100 000 direct beneficiaries. Given the priority challenges facing the basin, sites are targeted at high-stakes water deductions from the point of view of the impacts on the surrounding communities – Due to the increased risk of floods and droughts.

The selection of priority areas of intervention will be made at the level of the prefectures – One to two sites per prefecture depending on the size of the prefecture (population)- In the context of the priority issues to be addressed and able to mobilize the actors in this selection process.

An initial participatory water conservation plan, at the prefecture level (inventory and status), will be developed as part of the preparation of the proposal and will aim to prioritize one or two sites in each prefecture. The identification work will be carried by the MERF, assisted by the prefectures and decentralized services. A first round of discussions at the prefecture level demonstrated effective awareness of the issues and priorities as a base of work and initial mobilization.

5.2 ACTIVITIES

The pre-defined business plan is presented below. It was prepared from the results of analysis, pre-identification of projects and consultation with the stakeholders. It will be refined as part of the full preparation proposal. The alignment of these activities with the national strategic priorities is presented in 6.1.

5.2.1 Output - OS1. Strengthening the knowledge of water resources and integrated water resource management (IWRM) accounting for climate change

As part of this project, the results concern the whole basin and further developed for the localities identified (OS2 and OS3); They will also provide a knowledge base to extend project activities to other locations in a later phase of deployment – In support the operationalization of the Basin Authority.

1.1. Tool developments for the management water resources at the basin level.

Activities focus on improvement of the knowledge of available water resources and existing community infrastructure considering variations in time and space in the context of climate change.

It is a matter of developing a model of the resource from the following activities:

- Mapping of Aquifer – develop vulnerability maps for each region/prefecture to better understand future flooding impact related to water resources and livelihoods.
- Setting up of a piezometric network on the basin
- Collect, Data processing to support decisions for planning objectives.
- Identification and understanding the methods for protecting recharge areas of the water table.
- Define and create standard operating practices related to the impact of Climate change on water resources to propose predictive scenarios and adaptation measures

A dissemination of work and extension of information to aid decision making to be carried out on the basis of the SIIEAU portal set up in 2015. The SIIEAU aims to integrate water related data and information on water resources in TOGO and their uses. It contributes at national and regional level to the system of coordination and monitoring of water resources. It mobilizes the actors, standardizes and encourages the sharing of information. For a better understanding of issues related to the water sector, the SIIEAU supports the implementation of fair and effective water management programs, while ensuring the sustainability of its use.

This website is the portal for the management and the dissemination of water related data, fed by the national stakeholders. It is administered by the SIIEAU team of the Ministry of Agriculture, Livestock and Hydraulic in Lomé.

1.2. Setting up of a system of observers to relay climate information (downhill and downstream), in support and complementarity with the activities of the Hydro-met project:

- Observer training at the prefecture level

- Communication strategy for relaying information to communities, mobilizing the local media (Local radios, social networks)

1.3. Actions of communication and sharing of experiences South-south (regional axis, with a focus on exchanges with Benin)

- These actions will take the form of participation in regional events on the field of adaptation to climate change. Study tours will also be organized, in particular with Benin, in the context of cross-border issues of basin management.

5.2.2 *Output - OS2. Eco-systems adaptation-based to flood proof community infrastructure to improve the resilience of water resources and promote soil conservation in the face of climate change:*

2.1 Ecosystems-based restorations to support existing water resource infrastructure – Resulting from the action plan based on the participatory preparation of the complete proposal: Prioritization will be made by the communities, targeting the following interventions:

- Construction/rehabilitation of multi-purposed water infrastructures from flooding.
- Construct climate resilient transhumance corridors, pasture parks and fodder plant production including building/rehabilitating pastoral water points and grazing areas to support livelihoods.
- Plant cover for riverine and shoreline restoration activities

5.2.3 *Output - OS 3. Deployment of good agricultural practices in relation to community livelihoods - practices aligned with resource resilience imperatives considering climate change impact*

3.1. Community-wide capacity building for target communities on good agricultural and land management practices from a climate change perspective; The results of the PGICT project will be used here, which has led to the identification of practices to be promoted, taking into account in particular the following principles: integrated management of agricultural land fertility, crop diversification, utilizing (piloting) alternative sustainable agricultural techniques (green fertilizers and bio pesticides).

3.2. Strengthening technical capacity for local communities: Capacity enforcement Structures working to support communities in the integrated management of land fertility (ICAT, NGOs)

5.3 IMPLEMENTATION MODALITIES

5.3.1 *Institutional Arrangements and organizational*

The project will be implemented following the National Implementation Modality (NIM) as part of the harmonized approach to resource transfers (HACT).

The Department of Environment and Reforestation resources is the national implementation entity under coordination of the Ministry of Land Planning and Development. Other sector ministries including the Ministry of Water Resources, Agriculture and Civil Society Organizations (CSOs) will be consulted especially related to operational implementation.

For setting up the implementing arrangements, three levels of interventions are identified:

1. Strategic control
2. Implementation
3. Monitoring and Evaluation.

The management organization of the proposal is described in the following organogram with supporting details below:

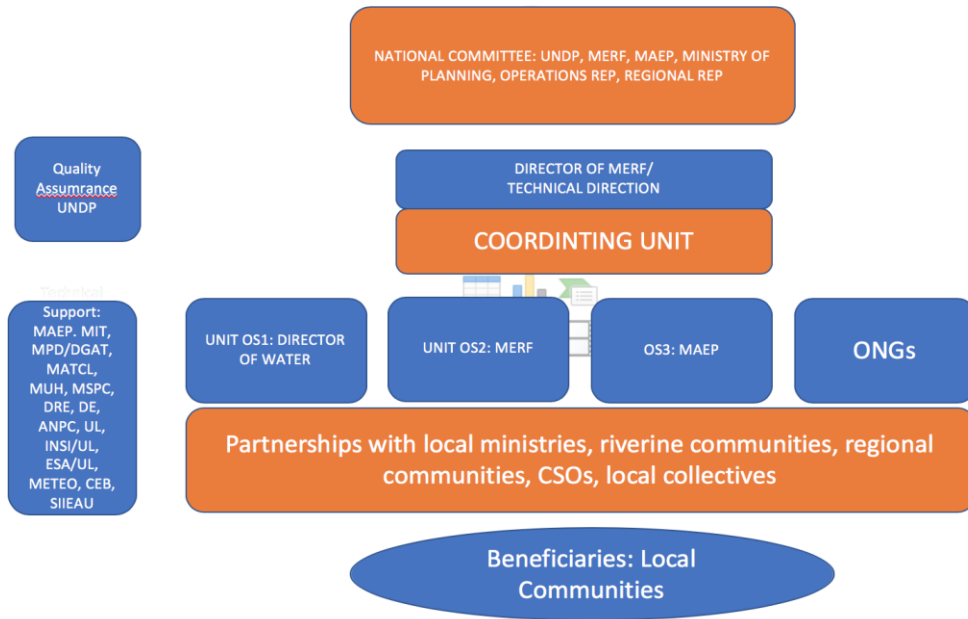


Figure 19: Project Organization diagram

1) Strategic steering committee

Project management will be carried out by a project steering committee (PSC) chaired by a representative of the Ministry of Environment. This committee will be composed of representatives from UNDP, MERF, Director of the Ministry of Agriculture, and the Department of Planning (Land and Development). As well as these representatives the committee will also include representatives from the MERF of the regions concerned and the authority of the Mono basin when it is operational. The inclusion of representatives from other ministries will be analyzed when the project is assembled.

The project steering committee defines the guidelines, validates the annual work plan and the related budget, and approves the technical and financial performance report for the previous year. It meets at least once a year.

2) Technical Implementation

A National Director of the Environment will be responsible for planning and the execution of the activities of the project. The management for the project will be coordinated by a dedicated project team within the National Directorate, which will consist of the following profiles:

- A project manager (Climate profile)
- A Hydrologist mission specialist
- A rural Engineering specialist
- An Administrative mission manager and accountant
- A monitoring and Evaluation officer
- A gender and social mobilization officer
- A communication mission manager
- Three regional coordinators (one per region)
- Technical experts providing as needed support (including a legal expert (land)) based on the approved work plan.

This project team will work in close collaboration with the executive entities of the project: the executing entities are the Water Directorate, the MERF, the Ministry of Agriculture, coordinating respectively OS1 (DRE), OS2 (MERF), OS3 (Min Agriculture). The team will also be assisted by a technical committee – the

climate task force set up in 2017. As the study progresses, there will be occasional calls for participation from national partners (see diagram above) as well as technical experts in support.

UNDP will facilitate the implementation of the project by providing support to the development of activities; support contract development, award and monitoring the financial resources and perform quality assurance during execution. The support services provisions as outlined in a letter of agreement – to include:

- Identification and recruitment of international consultants;
- Identification and recruitment or support for the recruitment process of national consultants;
- Acquisition of equipment and/or supplies and other materials;
- Direct payment to suppliers and management of financial resources and transactions on the basis of direct payment requests;
- Identification and delivery of training activities;
- Support to organize workshops, etc.

Support will be provided by the decentralized departments (prefecture level), NGOs and local partners to mobilize for specific needs, in particular for community awareness-raising and support implementation.

3) Control and Execution tracking

The control and supervision of the project will be the responsibility of UNDP - as an accredited multilateral entity of the Green Climate Fund - this will ensure the necessary reporting to the GCF.

UNDP will play a quality control role in the development of the project. All recruitment and acquisition of goods and services entrusted to the UNDP office will be carried out according to the rules of transparency and competitiveness and in accordance with the procedures of UNDP.

5.3.2 *Involvement of beneficiaries*

The proposed interventions for Mono directly involve the beneficiaries, not only in terms of developing awareness and understanding of problems and solutions, but also in the implementation of these solutions. This will empower beneficiaries to fully understand the basis of design and the needs to sustain the appropriate possible intervention. Training will be provided to strengthen their capacity for self-management of their environment and to ensure sustainability.

All the planned activities will be carried out in a framework of partnership between the different actors with a strong involvement of the local people. Planned interventions will require preliminary phases including social mobilization, selection of intervention sites and the practical implementation of the project activities in a participatory approach with all stakeholders.

In order to establish the conditions for involvement in the project, local conventions will use past successful experiences already in place as part of various initiatives. These agreements are signed by the various parties involved, namely in the first approach: the association, the Head de Canton Prefect, and the regional director of the environment. They will help specify, in detail, the rights, responsibilities and commitments of each party involved in the project.

5.4 COSTS AND IMPLEMENTATION TABLE – FINANCE

5.4.1 *Cost estimate*

The total cost for a progressive deployment of the Mechanism on 200 – 250 Locations Over 5 years is estimated at \$17.6M USD This estimate is tentative and will be revised as part of the complementary studies to be carried out.

The following table gives a breakdown of the costs (USD and FCFA) by component and year.

Table 10: Interim estimate of deployment costs (200 Locations)

Outputs	Total (USD)	Total (FCFA)	Year 1	Year 2	Year 3	Year 4	Year 5	% of Output

OS1: Strengthening the knowledge of water resources and integrated water resource management (IWRM) accounting for climate change	3M	17 Md	X	X	X			20
OS2: Eco-systems adaptation-based infrastructure to improve the resilience of water resources and ecosystems in the face of climate change	10M	55 Md		X	X	X	X (exit strategy)	56
OS 3: Deployment of good agricultural practices in relation to community livelihoods - practices aligned with resource resilience imperatives considering climate change impact (200 localities)	3M	17 Md		X	X	X	X	14
Sub -Total	16M	89 Md						
Project Management (10%)	1.6M	8.9 Md						
Total	17.6M	97.9M						

5.4.2 Financial Assembly

Additional funding will be provided By UNDP and the Government of Togo to cover management costs:

- UNDP: 0.6 M USD
- Government of Togo: 1 M USD (mainly in-kind input: provision of local personnel)

The contribution of GCF (US \$16 million) will be directly assigned to the implementation of the interventions. A complementary contribution of financial and technical partners (PTF) interested in supporting this process will be sought. This will include strengthening the local technical support for skills building activities by leveraging existing initiatives and results already achieved.

5.5 RISK MANAGEMENT

Two types of risks are differentiated for this Program:

- Risk of implementation Work (M): Due to errors or unforeseen circumstances, the program fails in the implementation of certain tasks; or misuse of resources in relation to the initial work plan is noted;
- Performance risks (P): The tasks are carried out in accordance with the work plan, but the expected results are not achieved either because of improper calibration of the initial assumptions or due to unanticipated external circumstances. The main risk here is that the projects being implemented do not contribute to improving the adaptation and resilience of the local communities. The fact that their implementation leads to negative consequences on the environment or on populations is also a risk to consider.

The main risks identified (A more detailed analysis will be carried out as part of the study) are listed in the table below which provides the context of subsequent analyses, and the type of assessment for the level of risk to be conducted. Qualitative assessment will be based on the corresponding potential impacts and the probability of occurrence.

Special procedures and specific risk management addressing the environmental and social safeguard clauses will be defined from the procedures in force within the UNDP⁶², consistent with the recommendation of the GCF in particular with regard to the environmental and social safeguards elements.⁶³

⁶² UNDP, Social-Environmental-Screening-Procedure, 2015

⁶³ GCF, GCF/B.07/11, Annex III: Interim environmental and social safeguards of the Fund
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Table 11: Project Risks table

Risk	Assumptions	Type (M/P)	Management measures
The capacity of the actors to absorb resources is not sufficient and leads to delays in the implementation	The project considers the capacity of the actors in charge of the execution in the calibration of the activities.	M	Specific focus on the consolidation of human resources in relation to the activities to be deployed Capacity Building of actors as part of the implementation of the interventions
Local communities are not (or little) involved in the process of selecting Infrastructure	The Choice of infrastructure is decided in consultation with Local communities	M	Infrastructure selection process based on the definition of an action plan with the Communities
Vulnerable groups and women are not directly beneficiaries of the interventions	The different interventions on the ground provide specific attention to the needs of the most vulnerable and women	M	Specific Attention to the mobilization and participation of women in capacity-building activities in the groups involved A dedicated funding line for women in the planned call for projects (OS3)
The modalities of involvement with the populations do not burden them with a long-term un-sustainable commitment	Contractualization of commitments with communities and associations is possible including definitive roles and responsibilities including operations and maintenance activities.	M	Clarification of formal opportunities for community involvement
Decentralized services are not very active in the implementation	Decentralized services are an essential link for the local support to Communities	M	Specific capacity-building Actions targeting contracted services Regional coordinators integrated within the team to activate the mobilization of local partners
Conflicts of interest between stakeholders inhibit the development of infrastructure (e.g. not made available to land)	The choice and the modalities of the implementation of the infrastructures are decided in close consultation with the stakeholders.	M	Integration of different stakeholders into agreements/contracts clarifying the division of tasks and responsibilities, including the conditions for the availability of land A legal expert integrated into the project team
Potential problems with contractors and service providers	Local-level procurement systems provide an acceptable fiduciary framework	M	Fiduciary control - Compliance control of procurements will be according to UNDP procedures
Identify projects not relevant to adaptation perspective	The Interventions carried out Lead to the development of infrastructure and the modification of practices in the direction of better resilience Local communities In front of the CC	P	Capacity building on the awareness of Climate change and adaptation requirements. Development of a vulnerability study and action plan with local stakeholders. Identify infrastructures Options Develop criteria for selecting good practice in the context of lessons learned from past projects and experienced feedback

The Maintenance of infrastructure is not ensured in the long term	The infrastructure and work implemented Work Are Sustainable.	P	Direct involvement in the communities in the creation of infrastructures which reinforces their acceptance of the works and willingness to support sustainability with development of formal agreements definition of tasks and responsibilities.
The projects implemented generate negative environmental and/or social consequences	The infrastructure is designed taking account communities limits to ensure limitation of environmental and/or social potential negative consequences	P	Screening process implemented following the Environmental and Social Guidelines the UNDP
The implementation of the projects is blocked due to political or security problems.	Because of political crises or the advance of terrorism, projects cannot be implemented.	M	UNDP-Government dialogue process to anticipate and manage potential blockages.

6 STRATEGIC ALIGNMENT

6.1 NATIONAL LEVEL

The project has been defined through direct consultation with the Government and stakeholders, to ensure alignment with the government's strategic and operating priorities. The consultations confirmed key players will institutionalize the project ensuring long term sustainability: the Director of Planning and the Ministry of Agriculture have highlighted the opportunity to register this project within the planning documents being prepared for Vision 2030 and New INV Agricultural programmes)⁶⁴. Generally this project is directly aligned with the Strategic Priorities for Adaptation and socio-economic development.

The strategic priorities for Togo in terms of adaptation have already been identified through the preparation of the planned Contribution determined at national level in 2015. The PNACC published in 2017 strengthened this work by prioritizing key sectors and measures in relation to the country's specific issues: the Agriculture and Water Resources sectors are highlighted as the most vulnerable, in particular through the measures listed in the following table. The project sheets were developed on the basis of the priority measures of the sector of agriculture: Construction and/or rehabilitation of water infrastructure for micro-irrigation and rural livestock drinking in all regions; Definition/development of corridors and areas of transhumance; Promotion of high-performance varieties resilient to climate change; Combating land degradation through the strengthening of integrated soil fertility management (GIFS).

Table 12: Priority measures identified by the PNACC for agriculture and water resources

Identified Adaptation Measures	Cost Millions (USD)
<i>Agriculture Sector</i>	105
Construction and / or rehabilitation of water reservoirs for micro-irrigation and livestock watering in rural regions	50
Definition and development of corridors and transhumance areas	20
Promotion of varieties of crops and plants resilient to climate change	10
Fight against land degradation by strengthening the integrated management of soil fertility (GIFS)	25
<i>Water Sector</i>	
Conservation of rainwater and reuse of wastewater	35
Improved water management in the water sector	20
Improved understanding of available water resources	16

The proposed project by its specific objectives and planned activities is thus directly aligned with the country strategic priorities: It contributes to the mobilization of funding for the implementation of priority measures by geographically targeting the Mono basin.

In a general way, the project is related with the strategy for accelerated growth and promotion of employment (SCAPE, 2013-2017) and the national development plan (under development 2018-2022) That governments plans emphasize the development of sustainable agricultural practices in all sectors, the preservation of natural capital, the reduction of the negative effects of climate change and the strengthening of the resilience of populations and territories at risk. Climate change is incorporated in the national strategic guidelines through the Third priority area of Axis 5 of the SCAPE, entitled "Environment, sustainable management of natural resources and a framework of life", as well as the risk analysis of the implementation of the strategy. Since April 2014, Togo has embarked on a process of developing the Vision Togo 2030 and, starting from 2016, in coordination with its National development Plan (PND 2018-2022) which

⁶⁴ Interview with the planning branch of the Ministry of Agriculture
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integrates the objectives of sustainable development (ODD) Particularly the ODD 13 entitled "Urgently taking action to combat climate change and its impact".

6.2 GREEN CLIMATE FUND

By implementing an integrated community approach for sustainable water resources and ecosystems, the project contributes directly to 3 of the 4 objectives of the GCF strategic result areas for adaptation impacts including:

- Livelihoods of people and communities
- Health, food and water security
- Ecosystems and ecosystem services

7 CONCLUSIONS AND NEXT STEPS

The supporting steps necessary to finalize the creation of the project based on the initial results.

The preparation work will include the following activities⁶⁵ :

1. Pre-configuration of the knowledge production tool on the water resource at the basin scale, including definition of technical specifications. Develop and understanding of the vulnerabilities and risks that communities face from more frequent flooding due to climate change. Development of vulnerability maps and better understanding of water resource infrastructure and sources that will inform an integrated water resources management plan for resilient and sustainable livelihoods. (PPF)
2. Selection of target locations and initial development of corresponding action plans.
 - a. Participatory based development for the identification of intervention locations and priorities: selection of priority areas of intervention will be made at the prefectures level – One to two sites per prefecture according to the size of the prefecture (population) will be considered, including the identification of the priority issues. The identification of this work will be carried out by the MERF, assisted by the prefectures and the decentralized services. A first round of prefecture-wide discussions showed there was effective awareness of issues and priorities as a basis for work and initial mobilization.
 - b. Defining an action plan for the target sites will be initially identified and supported with key info including:
 - Ensure plans consistent with pre-existing plans (Local development plans, site plans with existing issues)
 - Strengthen target communities, including the setting up or strengthening of existing village committees and other key stakeholder groups; ensure agreements/conventions are developed for operating and maintaining the priority infrastructure interventions.
 - Selection of mechanism of call for the most appropriate and cost-effective intervention options. (Comparative analysis of possible Options).
 - Detailed definition of complementary projects and identification of the expertise to be mobilized at national level.
 - Detailed risk analysis and of measures of related management, including environmental and social safeguard clauses.
 - Detailed institutional arrangements, including procedures for the flow of financial flows, direction and implementation of the project.
 - Development of the 5 year detailed budget and implementation plan.

⁶⁵ The needs of 'corresponding interventions are taken into account in the request for facility preparation for projects submitted in parallel to the submission of the project concept note.

8 ANNEX: LISTS OF PRESENCE OF CONSULTATION MEETINGS

8.1 MERF CONSULTATION MEETING – 27 NOVEMBER 2017

Name and names	STRUCTURE/Title
TCHIGUILOU Abizou	Responsible for the UNDP environment Programme
GUIRAN Gee	UNDP Consultant
AKPAMOU Kokouvi	Director/Planning
AMEGBLEAME Djidjonou	Director/Angel
ABI Hazou	Director/Angel
FOLLY Yao Djiwonou	Directeur/IRF
BAKABIMA Bakén ' ma	MRV/If/REDD +
DAMETOUGLE Totétiébé	Coordinator A./REDD +
KPENGUIE Palkipawi	Chef Service/Angel
DIMIZOU Aoufoh	Head section/DEP
YAOU Méry	Head of Division
AGBOSSOUMONDE Koffi	Project Manager ECO-VILLAGE/DEP
BROOHM Dumb	In charge of studies/
Mama Farid	Study Manager/DAAF
AFFO AGNON Omiandou	Study Manager/DAAF
KOTOKO	Head of AA/REDD +
KONZAHOU Essodina	Chef division/IRF
MOMIBIDJA Pakindamba	Coordinator South Region PALCC/PALCC
Mandy Canteen	Study Manager/FDD
AWITAZI Tchagou	Study Manager/FDD
KAZIMNA Mandibozi	In charge of studies/
ASSOUMANOU Barika	Charged with IEC/PALCC
Piwalimebé Concussion	SEP/ODEF
Manguizani Concussion	Study Manager/ODEF
AFENOUTSU Kossivi	Deputy Coordinator/PGICT
Sossou Komi	Head section/DEP
DITOATOU Kanfitine	Study Manager/SG
DAVON Maurice	Study Manager/DAAF
DANDJESSO Yawo	Assistant to the BNO Coordinator
KPIDIBA Good	Head Development Section AP/FDD
GOUNI Badadouna	Study Manager/DAAF
PIALABANA Akpa-Esso	Chef division IRF
AWESSO Balakyem	Chef section/DRF

8.2 LAUNCHING WORKSHOP OF THE PROJECT FORMULATION MISSION- NOVEMBER 30, 2017

Name and names	STRUCTURE/Title
TCHIGUILOU Abizou	Responsible for the UNDP environment Programme
GUIRAN Ghislaine	UNDP Consultant
Jonky TENOU	UNDP Consultant
MEBA T. Pagnibam	Juriste Environmentalist focal Point Convention Minamata
KOKOTI Diwégna K.	Chef service SIIEAUL/DSIS
N'koyi M'poh	Chief Climate Service Weather management
SANKOUTCHA Bouléwoué	DE/Geographer
YAOU Méry	Chef division LCC/DE

AYEVA Bouhari	Administrative Officer
Séloomé	DPPSE/MAEH
SEGNUAGBETO Homondi	FDS/UL
A.	ESA/UL
ADAMOU Farida	Of
Sammy Kay	NGO Friends of the Earth Togo
Martin A	DSID/Assistant
AGOUDA Affeyitom	Head section/DSID
TASMARE K. Josue	ONG OPED
KABIE B. Essossinam	NGO OPED/Assistant
BARANDAO Lémagué M'ba	MPD/DGAT in charge of studies
ATCHOLE-BADOMBENA Hodalo	MASPFA Study Manager (DGGPF)
BEMAH Cattle	Member/UONGT
FETOR Yao	Programme Manager/Inades
DITOATU T. Kanfitine	SG/MERF
TCHAMDJA Concussion	Representative DR Maritime
AKIBODE Nelson	In charge of prevention National Agency of Civil Protection
With Aminam	Ministry of Development at the Base
ADJINAKO Kantou	Ministry of Development Planning/DGMAP
WUEGAN A. Yao	FDS/UL
Hortense DORDOR	DE/MERF
KAZIMNA Mandibozi	Of
ASSOUMANOU Barika	Environmental management
BARRY Rachid	EC/DRE/MAEH
ADAKIM K. Essoh	CCAC/DE/MERF
Essobou-Toure	Project Manager
GAWU Amy Josée	DE/MERF
AGBOSSOUMONDE Koffi	ECO-VILLAGE Program Coordinator DEP/MERF
BOUYO Essonan	DE/MERF
AGRIGNAN Esso Sam	Point focal GCF
WOLOU Moutakilou	AJEDI NGO Program Manager
Adam	Like UONGTO
SILIADIN G. Essivi	Study Manager
DEGBE Ablavi	Study Manager
ASSOGBA Akouvi	Study Manager
EDOU Komla	PRBA Coordinator
ADISSA Biléyo	Member/MERF
KONDO Komla Akpé	AAF-PRBA
Volleyball Koffi	Point focal MDP
ESSIOMLE Kossivi	Point focal CCAC
Zolkiffly Abdou	Geographer
SAME Boundjouw	SG/MERF
ASSIMTI-Bye Bidébam	Lawyer/
DANDJESSO Yawo	Assistant Coordinator BNO
Galindo Abdel-	Environmentalist
Aunt Esso-dong	Study Manager
BAFEI P'Malinam Essolakina	Study Manager/DICSD
BAMALI P-Tahontou	Chef section/division CC
MESSOKO Kafui	Study Manager
KASSEGNE Abiabal	Study Manager

8.3 FIELD CONSULTATION – 4 DECEMBER 2017

8.3.1 Taligbo

Name and names	STRUCTURE/Title
ALIBO Yawo	Prefect of Yoto
BONGO Azanlété	Treasurer CPDD
Mawussénam ATTILA	DPERF-YOTO
GUIRAN Gee	Undp
TENOU Jonky	Undp
AGRIGNAN Ezzo-Sam	GCF/DE/MERF
Schaible Anani Agbétomefan	Ien. IEPP Yoto-East
AMEGBEGNON Kinholé	DPASPPA-Yoto
AWAKO	DPAEH/YOTO
ADAYISSO Yawo	CDD Kouvé
TCHASSANTE Foussni	ATOP
DZODZOGA James	IYF Coordinator
ATIKLE Chakraborty	Secretary CPDD-Yoto
AMEVO Yaovi	SC/Yoto
Togbui Agossou AFIDEGNON IV	Chief Canton
Togbui Akpodo Toklakpa III	Chief Canton
TSIGLO Yawo	Special delegate
MIGNANOU Yao	President CVD
AFOUTOU Akouvi	CVD Treasurer
GNAGBLODJRO Makpossinou	President of the JUPITER Group
KPEDOGOY Yaovi	1 ^{Er} VCT Advisor
MISSIAGBETO Komlan	SG Bas-Mono
SOGBO	Prefect of Bas Mono
MIBIOSSE Kashyap	CBD Secretary Low Mono
KATAKLA Kashyap	President CVD
AZIANOUKOU Kofi	President CVD
AGOSSA Améganvie	Low Mono Coordinator
MESSAN Joel	Low Mono

8.3.2 Préfecture of Vo

Name and names	STRUCTURE/Title
AGRIGNAN Ezzo-Sam	Point focal/MERF
TENOU jonky	Consultant/UNDP
GUIRAN Gee	Consultant/UNDP
Linlae	Prefect/Vo
Akintayo Kashyap	Maire/Commune of Vogan
AGBODJI	PDS vo/Conseil P vo
KOUDANOU Messanh	DP Environment VO
ASSEM Afen	Police Commissioner/Vogan
Agbegnon sexes	Nurseryman ONG saves Flora
MELESUSU Yao	Head of antenna NGO Credi VO
AMENOU DJI Avidy	SG Save-Flora
AKAKPO Adjoa	Coordinator/LA COLOMBE

KWAMI Tchansi	Development Advisor/The Dove
Anani TOSSA	Agricultural Animator/LA COLOMBE
ASSIGBLEY Edem	Coordinator/JVE
Kpotogbe Fogan	Executive Director NGO ASFECDI
AKAKPO Cesar	Nurseryman/Save Flora
Adair Kay	HRM/prefecture Advisor VO
ZOTI Ariankou	Surveyor/Adviser VO

8.3.3 Low Mono Prefecture

Name and names	STRUCTURE/Title
Lolo You loved NOUWODOU	Executive Director/ARCC-ONG
HOUNKPATI Sossou	Executive Chairman/Association Multicolore
AHOSSOUDE Elise	President of the Federation of Bas Mono/women's Association
Kakanou if	Président CCD/CVD-CCD
DJAKPATA Kokou	Président CVD DJ. KONDJII/CVD
DUEGGAH Doubi	Secrétaire CVD/CVD
FOUDEKA Claire	Secretary Grouping JUPITER
Soncy Sister	JUPITER Group member
ATTISSO Djigbodé	JUPITER Group member

8.4 WORKSHOP TO RESTITUTION OF THE PROJECT FORMULATION MISSION- DECEMBER 6, 2017

Name and names	STRUCTURE/Title
WOLOU Moutakilou	AJEDI NGO Program Manager
KABIE Essossinam	OPED NGO Assistant
BARANDAO Lémougué M'ba	Study Managers MPD/DGAT
Joshua TASMARE	Volunteer NGO OPED
BAFEI P'Malinam	toxicologist/DE
DANDJESSO Yawo	Manager/BNO
MESSI Natacha	Assistant/DSID
KOKOTI Diwégna	Chief Service SIIEAU DSID
N'koyi M'poh	Chief Climate Service DGMN
Sammy Kay	Sociologist ADT Togo
BASSAN Koffi	Teacher/Researcher
AYEVA Bouhari	Administrative Assistant
Lieutenant Colonel ABALO Piwalimébé	ODEF
Concussion Nabuyou Manguizani	ODEF Study Manager
GAWU Amy Josée	Environmentalist/
Zolkiffly Abdou	Of
AFFO AGNON Omiandon	DAAF
DITOATOU Kanfitine	/SG Study Manager
ADJEI-TOURE Issobou	In charge of studies/
KPIDIBA Kounkatonebelia	Head Development section of AP-FDD
BAMOUDNA Bagdougoua	DEP Division Chief
AWESSO Ballakyem	Chef section DRF
And Aninam	Chef section DDC/MDBAJEJ

Sélomé	DPPSE/MAEH Study Manager
ASSOUMANOU Barika	Sociologist PALCC
AWITAZI Tchagou	Environnementaliste DRF
Sossou Komi	Point focal TerrAfrica
AKOTCHAYE Kashyap	Chief Cooperation Partnership Section
GBANDEY Napo	DEP Study Manager
Gold-BOSSI Bouwessodjo	DEP Study Manager
KOTOKO Mouyoudei	Legal Officer/REDD +/MERF
BARRY Rachid	EC/DRE/MAEH
ATCHOLE-BADOMBENA Hodalo	DGGPF Study Manager (MASPFA)
AGBOSSOUMONDE Koffi	ECO-Village/DEP Programme Coordinator
ANIKANOU Akouvi	Program Associate
FOLLY Yao Djiwonou	DIRF/MERF
SAME Boundjouw	SG/MERF
MEBA T. Pagnibam	Chief Division of
ABI Hazou	Director Angel
LIASSIDZI	Dep
ADAKIM Kossivi Essoh	AAF/CCAC
TENOU jonky	UNDP Consultant
GUIRAN Ghilaine	Consultant
ADEMBAWA Aminou	DAAF
BEMAH Cattle	Member/UONGTO
ADJINAKOU Kantou	Chef section DGPD/MPD
Abdulsamad Kokou Agbeco	DGPD/MPD Study Manager
BOUYO Essonan	In charge of studies/
TCHAYE Nandja	Projet WACA assistant