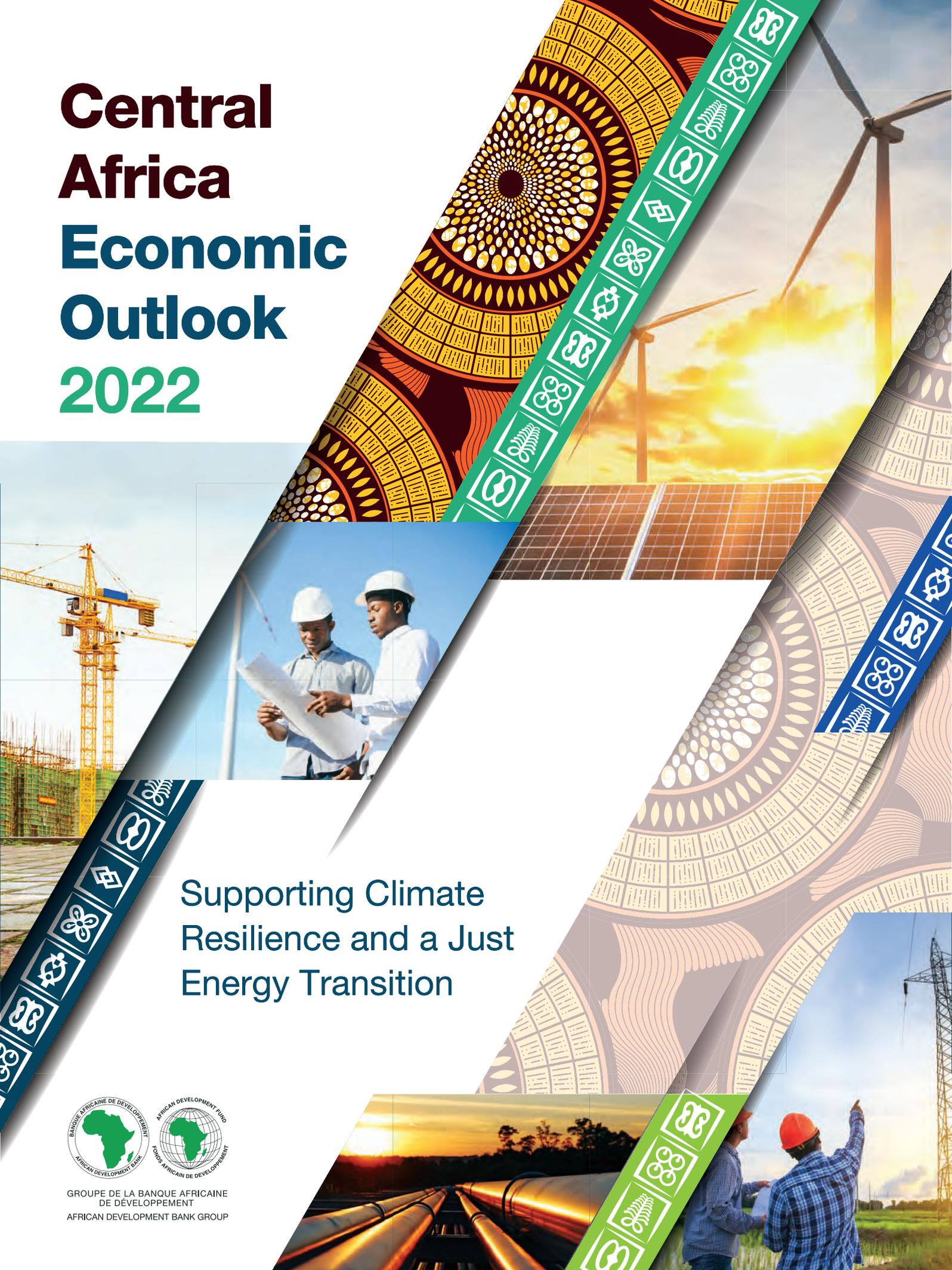


Central Africa Economic Outlook 2022

Supporting Climate
Resilience and a Just
Energy Transition



GRUPE DE LA BANQUE AFRICAINE
DE DEVELOPPEMENT
AFRICAN DEVELOPMENT BANK GROUP



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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	v
LIST OF TABLES	ix
LIST OF BOXES	ix
LIST OF FIGURES	x
LIST OF ACRONYMS AND ABBREVIATIONS	xi
EXECUTIVE SUMMARY	xiii
CHAPTER 1 : RECENT MACRO-ECONOMIC DEVELOPMENTS AND OUTLOOK	1
1.1 Macro-economic performance and outlook for the global economic environment: global economic recovery driven by emerging countries	2
1.2 COVID-19 pandemic in Central Africa: a contained health crisis	4
1.2.1 Sound health and economic measures taken to contain the pandemic	4
1.2.2 Varying vaccination rates across the region	5
1.3 Significant economic growth recovery in Central Africa, but below that of other regions	6
1.3.1 Regional growth driven by DRC and Cameroon	6
1.3.2 Tertiary sector, largest component of supply-side production	8
1.3.3 Tertiary sector, largest contributor to supply-side growth	9
1.3.4 Household consumption, the main demand-side contributor to GDP in all the countries	11
1.3.5 Household consumption, main driver of regional demand-side growth, particularly in Gabon	12
1.3.6 Accommodative monetary policies supported the region's economic recovery	13
1.3.7 Declining inflation in Central Africa and lower than in other regions	14
1.4 Public Finance: Improvement in budget balance sustained through the allocation of Special Drawing Rights to countries in the region, while debt needs to be monitored	18
1.4.1 Central Africa has the best fiscal performance on the continent thanks to higher revenues and despite increased public expenditure	18

1.4.2	Increasing foreign exchange reserves boosted by SDR allocations	20
1.4.3	Declining debt ratio in the region, but still high in Congo and Gabon	22
1.5	Improving the external account driven by export earnings, offering the region, the second-best performance	23
1.6	Poverty, economic inequalities, and conflicts: sources of fragility in Central Africa	25
1.6.1	Central Africa marked by low human capital and high levels of poverty and inequality	25
1.6.2	Fragility factors in the region that deserve special attention	28
1.7	Des perspectives économiques encourageantes, mais assombries par des risques liés à la crise en Ukraine et une éventuelle résurgence de la crise sanitaire	28
CHAPTER 2 : CLIMATE RESILIENCE AND ENERGY TRANSITION IN CENTRAL AFRICA		33
2.1	Climate vulnerabilities and their socio-economic impacts are the realities of climate change in Central Africa	34
2.1.1	Analysis of historical climate data: rising temperatures and declining rainfall throughout the region	34
2.1.2	Analysis of projected climate data: rising temperatures, rainfall and climate extremes	36
2.2	Climate change and extreme weather events will have major socio-economic impacts in Central	43
2.2.1	Agriculture, food systems and water resources are expected to be impacted	43
2.2.2	Transport, urban development would not be spared	46
2.2.3	Energy: Sector's exposure to climate change should encourage tapping of the region's renewable energy potential in order to achieve the energy transition	47
2.2.4	Health would be affected by increases in vector-borne diseases, morbidity and mortality	49
2.2.5	Climate Change, sources of migration and conflicts	52
2.3	Building climate resilience in Central Africa, a necessity to protect people and infrastructure	52
2.4	Towards a more just energy transition in Central Africa	57
2.4.1	Energy sector in the Central African Region	57
2.4.2	Energy situation: low supply and consumption rates in Central Africa	62
2.4.3	An energy transition still awaited in Central Africa	65

CHAPTER 3 : FINANCING OF CLIMATE RESILIENCE AND THE ENERGY TRANSITION	71
3.1 Financing climate resilience and the energy transition	72
3.1.1 Climate financing plans and mechanisms exist but remain under-financed and insufficient	72
3.1.2 Measures taken by Central African countries to finance a more just energy transition are presented in their respective NDCs	72
3.1.3 Climate financing flows received are outdated given the region’s existing needs	73
3.1.4 Considerable carbon credits could finance the energy transition in the region	76
3.2 Incentives to be given to finance climate resilience and the Energy Transition	77
3.2.1 Fiscal incentive measures to finance climate resilience	77
3.2.2 A budget cut to fund climate-friendly research and development projects	78
3.2.3 Government initiatives to develop the renewable energy market	78
3.2.4 Other innovative financing could close the wide climate financing gap in the region	78
CHAPTER 4 : CONCLUSION AND POLICY RECOMMENDATIONS	81
4.1 Macroeconomic policy recommendations	81
4.1.1 In the short-term	81
4.1.2 In the medium to long-term	82
4.2 Policy recommendations with regard to climate resilience and the energy transition	82
4.2.1 In the short to medium term	82
4.2.2 In the long-term	83
BIBLIOGRAPHICAL REFERENCES	85
ANNEX 1: IMPORT SUBSTITUTION STRATEGY OF THE CEMAC REGIONAL ECONOMIC AND FINANCIAL REFORM PROGRAMME	88
ANNEX 2: DESCRIPTION OF THE MAIN CLIMATE FUNDS	91
ANNEX 3: THE FIVE OPERATIONAL REGIONS OF THE AFRICAN DEVELOPMENT BANK	93
ANNEX 4: TRENDS IN THE NUMBER OF NEW COVID-19 CASES, PER COUNTRY	94

ANNEX 5: SOME COVID-19 RESPONSE MEASURES TAKEN IN CENTRAL AFRICA	95
ANNEX 6: IMF SUPPORT IN THE FORM OF SPECIAL DRAWING RIGHTS TO CENTRAL AFRICAN COUNTRIES TO BOOST POST COVID-19 RECOVERY	97
ANNEX 7: CLIMATE FINANCING NEEDS, CONTRIBUTIONS AND DEFICITS PER COUNTRY IN CENTRAL AFRICA	98

LIST OF TABLES

Table 1	Selected poverty and development indicators
Table 2	Selected inequality indicators (%)
Table 3	Projections of key macroeconomic aggregates, 2022-2023
Table 4	Central tendency and dispersion of average temperatures from 1990 to 2020
Table 5	Central tendency and dispersion of maximum temperatures from 1990 to 2020
Table 6	Central tendency and dispersion of minimum temperatures from 1990 to 2020
Table 7	Central tendency and dispersion of minimum temperatures from 1990 to 2020
Table 8	Impact of climate change on water resources, agriculture and food systems in central Africa
Table 9	Impact of climate change on the transport sector, urban development and towns and cities in Central Africa countries
Table 10	Impact of climate change on the energy sector in Central Africa countries
Table 11	Impact of climate change on health in Central Africa countries
Table 12	Climate change mitigation and adaptation policies and strategies
Table 13	Ratification of the Paris Agreement and the various climate-change-related documents prepared
Table 14	Carbon credit estimates for Central Africa countries

LIST OF BOXES

Box 1	Effects of rapid increase in maritime freight rates and costs on inflation within CEMAC
Box 2	Use of Special Drawing Rights in Central Africa
Box 3	Impact of climate change on the transport sector in Chad
Box 4	Climate change impacts on the health sector in DRC
Box 5	Renewable energy potential in Central Africa

LIST OF FIGURES

Figure 1	Real GDP growth rates by region in Africa (%)
Figure 2	Dynamics of new cases of death linked to COVID-19, by country
Figure 3	COVID-19 vaccination rates in Central Africa
Figure 4	Real GDP growth rates in Central Africa 2013-2023 (%)
Figure 5	Supply-side nominal GDP breakdown in Central Africa
Figure 6	Breakdown of Central Africa's constant price GDP growth rates
Figure 7	Contribution of demand components to real GDP in Central Africa
Figure 8	Changes in demand components of real GDP growth
Figure 9	Coverage of imports by foreign exchange reserves (in months)
Figure 10	Inflation rate trends per region 2013-2023 (%)
Figure 11	Inflation rate trends per country 2013-2023 (%)
Figure 12	Budget balance by region 2013-2023 (as % of GDP)
Figure 13	Budget balance by country 2013-2023 (as % of GDP)
Figure 14	Total public debt by country 2013-2021 (as % of GDP)
Figure 15	Current account balance by region 2013-2023 (as % of GDP)
Figure 16	Current account balance by country 2013-2023 (as % of GDP)
Figure 17	Mean temperature trends in Central Africa by 2100
Figure 18	Minimum and maximum temperature trends in Central Africa by 2100
Figure 19	Number of days during which mean temperature exceeds 35°C, 40°C, 42°C and 45°C respectively in Central Africa by 2100
Figure 20	Rainfall trends in Central Africa by 2100
Figure 21	Number of days with rainfall above 20 mm according to the various climate scenarios
Figure 22	Precipitation trends per country by 2100, by RCP
Figure 23	Electricity generation per source in Central Africa
Figure 24	Installed power capacity trends
Figure 25	Total primary energy production (quadrillions Btu) per country in Central Africa
Figure 26	Electricity distribution losses in Central Africa
Figure 27	Proportion of population with access to electricity in Central Africa countries
Figure 28	Energy consumption per capita in Central Africa (energy intensity)
Figure 29	Energy intensity by sector in Cameroon and CAR
Figure 30	Proportion of renewable energy in Central Africa's electricity generation
Figure 31	Percentage of the population with access to clean energy for cooking
Figure 32	Total climate finance needs in Central Africa for 2020-2030 (in USD million)
Figure 33	Central Africa – Climate finance flows received between 2010 and 2020 (in USD billion)
Figure 34	Central Africa – Annual climate financing gaps (in USD million)

LIST OF ABBREVIATIONS AND ACRONYMS

ACCF	Africa Climate Change Fund
AEO	Africa Economic Outlook
AF	Adaptation Fund
AfDB	African Development Bank
BCC	Central Bank of Congo
BDEAC	Development Bank of Central Africa States
BEAC	Bank of Central Africa States
CAR	Central Africa Republic
CEMAC	Central Africa Economic and Monetary Community
Central Afr	Central Africa
CPM	Monetary Policy Committee
DRC	Democratic Republic of Congo
East Afr	East Africa
ECF	Extended Credit Facility
Eq. Guinea	Equatorial Guinea
G20	Group of 20 Most Industrialised Countries
GCF	Green Climate Fund
GEF	Global Environment Fund
GHG	Greenhouse Gas
IMF	International Monetary Fund
IRENA	International Renewable Energy Agency
LDC	Least Developed Countries
MINEPDED	Ministry of Environment, Protection of Nature, and Sustainable Development
NDC	Nationally Determined Contributions
North Afr	North Africa
NRC	Norwegian Refugee Council
PNACC	National Climate Change Adaptation Plan
PREF-CEMAC	CEMAC Regional Economic and Financial Reform Programme
RCP	Representative Concentration Pathways
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SDR	Special Drawing Rights
SIDS	Small Island Developing States
Southern Afr	Southern Africa
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
West Afr	West Africa

EXECUTIVE SUMMARY

The Central Africa Region¹ experienced significant economic recovery in 2021, recording a real GDP growth rate of 3.1% compared to -0.4% in 2020, which is still 3.8 percentage points lower than the continental average of 6.9% recorded in 2021. Like other regions in Africa and the world, Central Africa has been hit by the COVID-19 pandemic since 2020. While the region was able to contain the effects of the health crisis and quickly get back on the path to growth, its rate is still below the African average.

Central Africa's economic recovery was heterogeneous across countries in the region in 2021. While DRC and Cameroon recorded economic growth of 6.2% and 3.6%, respectively, Equatorial Guinea (-3.2%), Chad (-1.2%) and the Republic of Congo (-0.6%) experienced an economic recession. Gabon and the Central African Republic recorded moderate growth of 1.5% each. In DRC, the good economic performance was driven by very favourable developments in mining production and world prices for key mining exports following the recovery of global economic activity. Cameroon's performance was driven by a buoyant agricultural sector, which benefited from the upturn in agricultural commodity prices, and the fossil fuel sector, which recorded an increase because of higher natural gas production in 2021. As for CAR, its economic growth in 2021 (1.5%) was due to the gradual improvement of the security and political situation, which certainly had a positive impact on private investor confidence. This led to reduced unemployment and increased output driven by the mining, oil, trade, and services sectors. Economic trends in Chad (-1.2%) were affected by the global COVID-19 health crisis, the decline in oil production that could not be offset by the recovery in world prices, the impact of political shocks and recurrent attacks by armed gangs, and the effects of climate change. The Republic of Congo's underperformance (-0.6%) stemmed from the combined effects of poor results in the non-oil sector and the decline of the oil sector. The non-oil sector recorded a weak recovery of 0.9% in 2021, which was not sufficient to offset the decline in oil production.

The public finance situation is improving because of the significant decline in the COVID-19 pandemic, marked by a drop in new cases of infection and deaths. Consequently, pandemic-related expenditures have. Since the last quarter of 2021, the health situation has improved significantly in most member countries of the Central Africa region. The number of new cases of infection and deaths dropped sharply in each of the countries in the region during the second half of 2022. This trend is expected to continue in 2023 in view of the various measures taken by the countries to contain the pandemic. The public finance situation has benefited from the positive developments in the health crisis. Consequently, the region's overall budget deficit in 2021 stood at 1.1% of GDP, down 1.3 percentage point from its 2020 level. The main factors behind this improvement are lower pandemic spending and higher oil revenues (5.1%) and

² The African Development Bank's Central Africa operational region includes the six member countries of the Economic and Monetary Community of Central Africa States (Cameroon, Central African Republic, Chad, Equatorial Guinea, and Gabon) and the Democratic Republic of Congo.

non-oil (8.9%) revenues, which allowed for an increase in current expenditure (1.7%) and capital expenditure (19.8%). The improvement in the public finance situation was, however, limited by the public debt service, which is increasing in the region despite efforts to contain the public debt ratio.

In response to the COVID-19 health crisis, most central banks have pursued an accommodating monetary policy, taking a range of measures to support economic activity and mitigate the potential effects of the crisis.

The Central Bank of Congo (BCC) has taken measures such as lowering the key rate and easing reserve requirements, promoting electronic means of payment (elimination of certain transaction fees in electronic money operations, etc.), freezing loan classification rules and suspending late payment penalties on overdue receivables during the crisis period, postponing the regulatory minimum capital requirement for banks at the equivalent of USD 50 million by one year, i.e., to 1 January 2022, etc. The key interest rate was reduced from 18.5% to 8.5% between 2020 and the end of 2021. The Bank of Central Africa States (BEAC) reduced its main interest rates. It also increased the amount of liquidity injected into the money market to CFAF 500 billion.

Economic recovery in the region has been accompanied by a decline in inflation. The average inflation rate stood at 3.9% in 2021, down from 5.4% a year earlier. Foreign exchange reserves improved from 3.7 to 4.3 months, mainly due to the recovery in commodity prices and BEAC's monetary policy. In addition, the current account balance of the region's economies improved from a deficit of 4.0% to 2.1% of regional GDP. The region stands to benefit from the increase in oil, gas and mining prices resulting from the war in Ukraine, as most of its countries are exporters of oil and mining products. As a result of better expenditure control, the region's budget balance deficit was reduced from 2.4% to 1.1% between 2020 and 2021.

The short-term outlook projects recovery in economic growth rates and improvement of the fiscal situation in Central Africa. Indeed, the macro-economic outlook projects growth rates of 4.6%, on average, in both 2022 and 2023. Higher inflation rates are expected in the region, albeit below the level reached. Indeed, the average inflation rate is expected to be 5.7% and 5.6% in 2022 and 2023 respectively, exacerbated by high commodity prices, drought, export restrictions in major food exporting countries, and global supply shortages due to the war in Ukraine. The budget balance is expected to continue improving over the next two years, standing at -0.2% and 0.1% of GDP in 2022 and 2023 respectively. The region's current account balance is also projected to stand at +0.2% and -0.9% of GDP in 2022 and 2023 respectively.

Risk factors that could affect the economic outlook are present and relatively prevalent, despite signs that the COVID-19 health crisis could ease significantly. Continuation of the war in Ukraine and prolonged restrictions on exports from Russia could put further upward pressure on food and energy prices. This would weigh heavily on commodity imports from countries in the region, increase food insecurity, fuel social tensions, and penalise the most vulnerable segments of the population. Furthermore, political instability and increased security risks (particularly in Cameroon, CAR, and DRC) could significantly worsen the economic outlook.

To mitigate these risks and accelerate economic recovery, short, medium, and long-term measures will be needed.

In the short to medium term, it will be essential to: (i) protect lives and accelerate the vaccination campaign to reduce the risk of new waves of COVID-19 and the emergence of new variants; (ii) contain the persistent inflationary pressures without undermining growth; and (iii) initiate or reinforce measures to protect the most vulnerable segments of the population from rising energy and food prices, without increasing debt-related vulnerability. In the medium to long term,

It will be necessary to: (i) adopt virtuous fiscal policies to increase domestic resource mobilisation and address tight global financial conditions more appropriately; (ii) continue, or even accelerate, economic diversification measures, with particular focus on local food production; (iii) promote measures aimed at substituting imported foodstuffs with those produced locally so as to adapt eating habits to national realities; and (iv) promote human capital development and strengthen policies to facilitate social inclusion and reduce poverty and inequalities.

Central Africa is exposed to climate change-related risks, but the countries are struggling to implement transformative programmes to build the region's economic resilience. Climate change will increase average minimum and maximum temperatures in Central Africa to a range of 1°C to 4°C and rainfall to a range of 13% to 22% compared to the average over the past thirty years. It will also increase extreme weather events, drought, flooding, land and coastal erosion, landslides, and high wind events. In addition, climate change will reduce water resources and cause water stress, as well as increase development rates of certain pathogens (mosquitoes, pests, and plant diseases), soil and forest degradation, and population displacement. Climate change imposes significant costs that vulnerable and resource-poor people cannot bear alone. The current national and international programmes in place are struggling to provide populations with technical and financial means to enable them to sustainably cope with constraints imposed by climate change. Investments and capacity-building programmes for policymakers and populations are needed to mitigate the effects of climate change. Funding is therefore one of the main obstacles in the fight against climate change in Central Africa. The countries in the region have adopted national and sector plans for climate change adaptation and mitigation. Adaptation and mitigation investments often require a large proportion of national wealth (23% of GDP for DRC). However, these countries are struggling to implement the measures they have chosen due to the lack of funding and skills, as they, like other African countries, are finding it difficult to obtain funding from international climate funds.

Eco-friendly energy production is very underdeveloped in Central Africa, despite the region's significant renewable energy potential. Countries in the region have a poor energy mix; they have limited installed electricity capacity because of low power generation by hydro-power plants. This accounts for their dependence on imports to cover their power consumption needs. In the region, electricity does not contribute much to the promotion of relevant self-employment and employment initiatives in the agricultural, industrial, and services sectors. Central Africa has abundant renewable energy resources, particularly solar energy and hydropower, but power generation from eco-friendly energy resources is underdeveloped.

The Central Africa region is currently facing a financing gap to cope with climate change, lay the foundation for low-carbon development, and develop or adopt climate change adaptation and resilience technologies. The cumulative financing needs for the region to adequately respond to climate change are estimated to average US\$172.32 billion over the period 2020-2030, which represents an annual cost of US\$ 15.67 billion. Over the same period, on average, adaptation costs for the region are estimated at USD 63.86 billion, mitigation costs at USD 70.62 billion, and loss and damage due to climate change at USD 37.25 billion, representing respectively 37.1%, 41%, and 21.6% of the region's climate financing needs. However, Central Africa has only been able to mobilise small amounts of climate resources. Indeed, over the 2010-2020 period, climate finance flows received are estimated at USD 10.1 billion, or an average of USD 921.84 million per year. Therefore, if the average annual inflow of climate financing received over the 2016-2020 period is used as a benchmark, the region's climate financing gap will amount to USD 14.27 billion per year. Per country, this annual deficit is estimated at a simple arithmetic average of USD 2 billion or a weighted average (by population) of about USD 5 billion. However, Central Africa countries have a considerable amount of carbon credit that they could use to initiate a just energy transition. Indeed, using the average international price of USD 31 per carbon credit, the carbon

credits for Central Africa could be estimated at USD 365 billion, and at USD 811 billion using the discounted social cost of USD 70.

Climate change is a threat to Central Africa economies and populations and requires concerted action.

Consequently, policy recommendations for building resilience to climate change and achieving a just energy transition could focus on the following short-, medium-, and long-term measures. In the short to medium term, the measures could focus on: (i) producing climate data and conducting national and sub-regional vulnerability studies; (ii) updating or, where appropriate, implementing national and/or regional programmes for capacity-building and management of climate change-related risks and disasters; (iii) building the capacity of populations and public policymakers on climate risks, as well as assessing implementation needs of their nationally-determined contributions; and (v) providing clean energy sources for households. In the medium to long term, this will involve: (i) promoting and complying with international commitments, as well as promoting sub-regional sector programmes to combat deforestation; (ii) investing in energy transition; and (iii) mobilising external funds, as well as establishing national climate funds.

CHAPTER 1

RECENT MACRO-ECONOMIC DEVELOPMENTS AND OUTLOOK

Key Messages

- The international economic environment in 2021 was marked by general economic recovery, driven mainly by emerging countries.** The global economic recovery partly accounts for the rising commodity prices on the international market, particularly those of energy products, of which most Central Africa countries are producers. In terms of the global economic outlook, 2022 will be marked by uncertainties due to the pandemic and, even more so, the consequences of the war in Ukraine. Indeed, the war in Ukraine has already begun to affect food prices and those of energy products such as oil and gas. This could result in widespread inflation. Inflation is expected to be about 6% in developed countries and 9% in developing countries. Low-income countries could be the most affected by the socio-economic consequences of the war in Ukraine.
- The Central Africa region is undergoing economic recovery after a year of recession due mainly to COVID-19.** Real GDP growth stood at 3.1% in 2021 following a contraction of 0.4% in 2020. However, the growth remains below the continental average (+6.9%) and is very heterogeneous within the region. It was driven by DRC (6.2%) and Cameroon (3.6%), while CAR, Equatorial Guinea (-3.2%), Chad (-1.2%) and the Republic of Congo (-0.6%) experienced an economic recession. Gabon and the Central African Republic recorded moderate growth of 1.5% each.
- Generally, Central Africa's macro-economic fundamentals improved in 2021.** The public finance situation is improving, with the region's overall budget deficit declining by 1.3 percentage points from its 2020 level of 2.4% of GDP. The key factors behind such improvement are the increase in oil revenue (5.1%) and non-oil revenue (8.9%). However, improvement in the public finance situation was limited by public debt servicing, which is increasing in the region despite efforts to contain the public debt to GDP ratio. The accommodating policies of governments and central banks (BEAC and BCC) have helped to support economic activity and mitigate the potential effects of the crisis.
- The short-term outlook projects an upturn in economic activity in Central Africa.** Indeed, growth rates of 4.6% are expected for 2022 and 2023. The region's average inflation rate is expected to stand at 5.7% and 5.6% in 2022 and 2023 respectively, representing the lowest rates among the five regions. It should be noted, however, that prices could be affected by high commodity prices, drought and export restrictions in major food exporting countries, and global supply shortages due to the war in Ukraine. The budget balance is projected at -0.2% of GDP in 2022, a significant improvement over the previous year. The current account balance is projected at 0.2% of GDP, an improvement over 2021.
- However, this outlook could be threatened by various shocks, including the Russia-Ukraine war, security**

risks in the region, climate change, etc. Soaring oil and food prices are weighing particularly on the external and budget balance of commodity-importing countries and heightening fears of likely food insecurity. High food prices will disproportionately hurt the most vulnerable populations, especially in urban areas. However, the crisis also appears to be an opportunity for the many oil-exporting countries in the region, given the rising prices on the international market.

1.1 MACRO-ECONOMIC PERFORMANCE AND OUTLOOK FOR THE GLOBAL ECONOMIC ENVIRONMENT: GLOBAL ECONOMIC RECOVERY DRIVEN BY EMERGING COUNTRIES

The global economy, though still struggling with the effects of the COVID-19 pandemic, recorded a strong growth rate in 2021. The global economic recovery has been driven mainly by emerging economies. According to statistics from IMF's April 2022 World Economic Outlook (WEO), the growth rate of global real gross domestic product (GDP) stood at 6.1% in 2021, up from -3.1% in 2020, a rebound of about 9 percentage points. This rebound in global economic activity is the result of accommodative fiscal and monetary policies implemented to mitigate the effects of the crisis and accelerate post-pandemic growth. These policies included budget support and gradual reinjection of liquidity by advanced economies. These policies have led to a profound imbalance in public accounts.

In the advanced economies (US, Eurozone, and Japan), the real GDP growth rate was estimated at 5.2% in 2021, following a 4.5% contraction in 2020. For emerging and developing countries, growth was more robust in 2021 at 6.8%, a jump of 8.8 percentage points compared to the growth rate in 2020 (-2.0%). This significant increase in growth can be attributed to the economic recovery in India and China following the easing of the 2019-2020 restrictive measures due to COVID-19. Indeed, India and China recorded economic growth rates of 9.2% and 8.1% respectively in

2021, up 7.3 and 5.8 percentage points respectively from 2020. Similarly, Turkey's emergence and geostrategic positioning have also contributed to the performance of emerging countries, through its record growth rate of 9.5% (World Bank, 2022).

In Africa, despite the threat of a third wave of the COVID-19 pandemic, the real GDP growth rate was estimated at 6.9% in 2021, compared to -1.6% in 2020 (AfDB, AEO 2022). With this economic performance, Africa has achieved a significant improvement over its pre-COVID-19 performance. In particular, the region recorded an average economic growth rate of 3.3% over the 2013-2019 period. However, economic recovery has been heterogeneous across the regions (Figure 1). For example, North Africa and Southern Africa have achieved stronger economic recovery than the other three regions, namely West Africa, Central Africa, and East Africa (AfDB, AEO 2022). In particular, these two regions recorded an economic rebound of 13.2 percentage points and 10.3 percentage points more in 2021, compared to the economic performance in 2020. This performance is about three times that of the other three regions.

The COVID-19 crisis has had an impact on the real sector of Central Africa economies (see Annex 3 for a regional breakdown). The energy sector was impacted by the rise in oil prices in 2021 after a decline between 2019 and 2020. This energy shock has certainly had an impact on the competitiveness of the industrial sector, which is highly dependent on energy. As for the agricultural sector, it has performed well due to the double effect of price and demand. Indeed, the decline in imports has led to a rise in food prices, which has enabled the agricultural sector to increase its performance in terms of both value and volume, given the rise in domestic demand. The commodities market was marked in 2021 by an increase in the price of energy products, while non-energy commodities remained stable. Thus, the energy commodity price index rose from 82.89 points in 2020 to 137.24 points, an increase of 65.6% (World Bank, 2021). Energy and non-energy commodity prices are expected to stabilise in 2022 on the assumption of improvement in supply, but not considering the conflict in Ukraine.

Global Economic Environment Outlook: The global economy has entered 2022 with uncertainty as regards the COVID-19 pandemic situation and, even more so, the consequences of the armed conflict between Ukraine and Russia. The war has already led to an upsurge in food prices, particularly for wheat-based products, as well as for energy products such as oil and gas (IMF, 2022). The soaring prices will spread to all sectors of activity and lead to higher inflation. Inflation is therefore expected to be nearly 6% in developed countries, compared to about 9% in developing countries. Low-income countries will once again be the most affected by the social and economic consequences of the war in Ukraine. Well

before the start of the Russia-Ukraine conflict, global growth was expected to fall from 6.1% in 2021 to 4.4% in 2022, one half percentage point lower than projected in the October 2021 edition of IMF's World Economic Outlook (IMF, 2022), thereby reflecting lower forecasts in the two largest economies, The United States of America and China.

In addition, global economic activity is expected to continue to improve in 2023 as COVID-19-related restrictions are gradually lifted in several advanced countries in line with progress made in vaccinating the populations, and as fiscal and monetary policies continue to support economic recovery.



Source: AfDB Statistics Department (ECST), September 2022.
 N.B.: (e) = Estimates; (p) = Projections.

The main risks to economic growth are essentially the impact of new variants of the COVID-19 pandemic and the effects of the Ukrainian crisis. As a result of the economic, financial, social, and geostrategic consequences that could arise, these risks could increase inequality and exclusion if they materialise. Similarly, they could affect the prices of some commodities, particularly gas and oil, as well as those of cereals, especially wheat, of which Russia and Ukraine are major producers. The already high wheat and maize prices in Europe, which could also affect Central Africa countries, especially net importers of these foodstuffs, is one of the consequences of the Ukrainian crisis.

1.2 COVID-19 PANDEMIC IN CENTRAL AFRICA: A CONTAINED HEALTH CRISIS

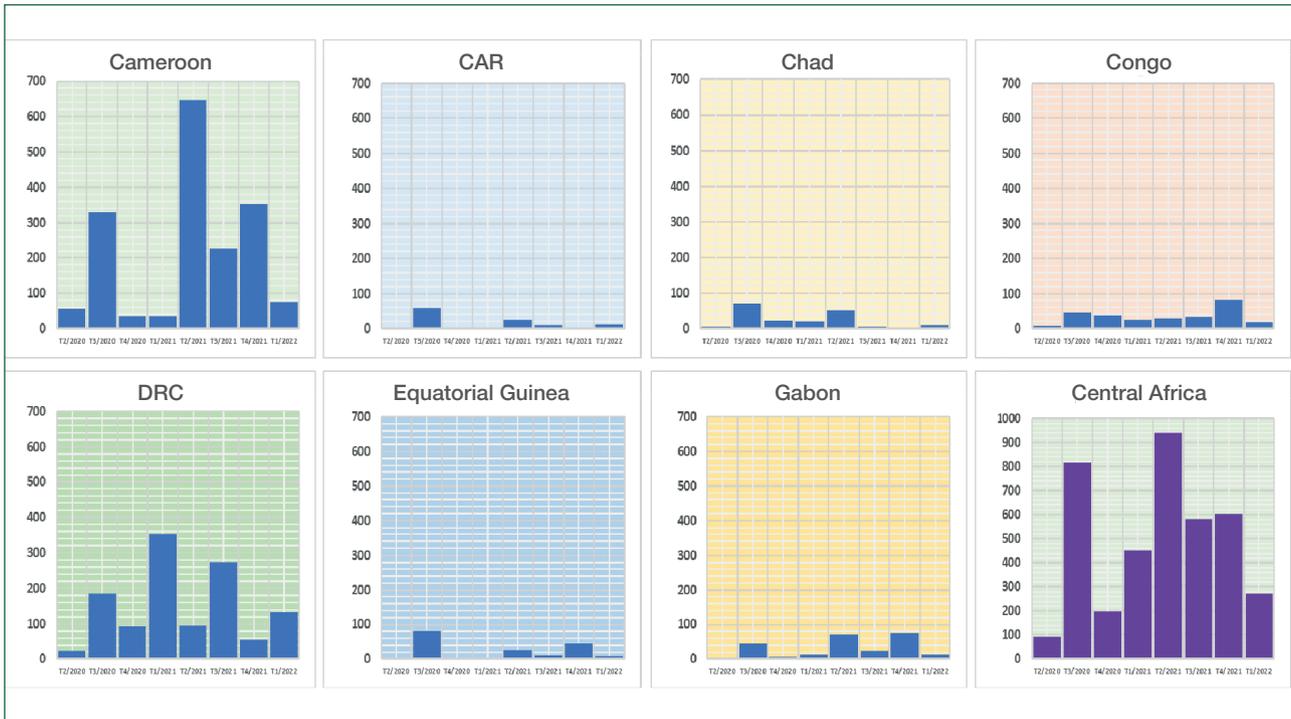
1.2.1 Sound health and economic measures taken to contain the pandemic

The evolution of the pandemic in Central Africa in 2021 indicates that the pandemic was brought under control from the third quarter of 2021 onwards (Figure 2), at which time the number of new cases and deaths declined (Figure 2). These results stem from the policies implemented by the governments of the various countries in the region regarding strict compliance with barrier measures, the wearing of masks, and incentives for vaccination.

The COVID-19 pandemic is affecting the region's economies through several mechanisms, in particular: (i) lower commodity prices; (ii) lower tourist flows; (iii) higher prices of imported foodstuffs; and (iv) slowdown in economic activity and decline in domestic demand due to COVID-19-related restrictions.

Figure 2 shows the number of new COVID-19 cases by country in the Central Africa region. It can be noted that the evolution of the pandemic, in terms of the number of new cases of infection, is not homogeneous in the region. Indeed, some countries in the region, such as Cameroon and Chad, managed to slow down the evolution of the virus from the second half of 2021, compared to its momentum since the first half of 2020. Pandemic control policies, such as vaccination coverage, the wearing of masks, the ban on gatherings, and strict barrier measures in public places have been more effective in Cameroon and Chad compared to other countries in the region. Finally, this figure shows that the number of new cases of infection has clearly dropped in 2022 in all countries, as well as in each country in the region. This trend is expected to continue in 2022 and 2023 in view of the decline in the number of deaths (see Figure 4) across the region and in all the countries in the first quarter of 2022. However, weather conditions, especially resumption of the rainy season from the second half of 2022 onwards, could reduce expectations for a decline as recorded in the first quarter of 2022.

Figure 2: Dynamics of new cases of death linked to COVID-19, by country



Source: Our World in Data, 2022.

1.2.2 Varying vaccination rates across the region

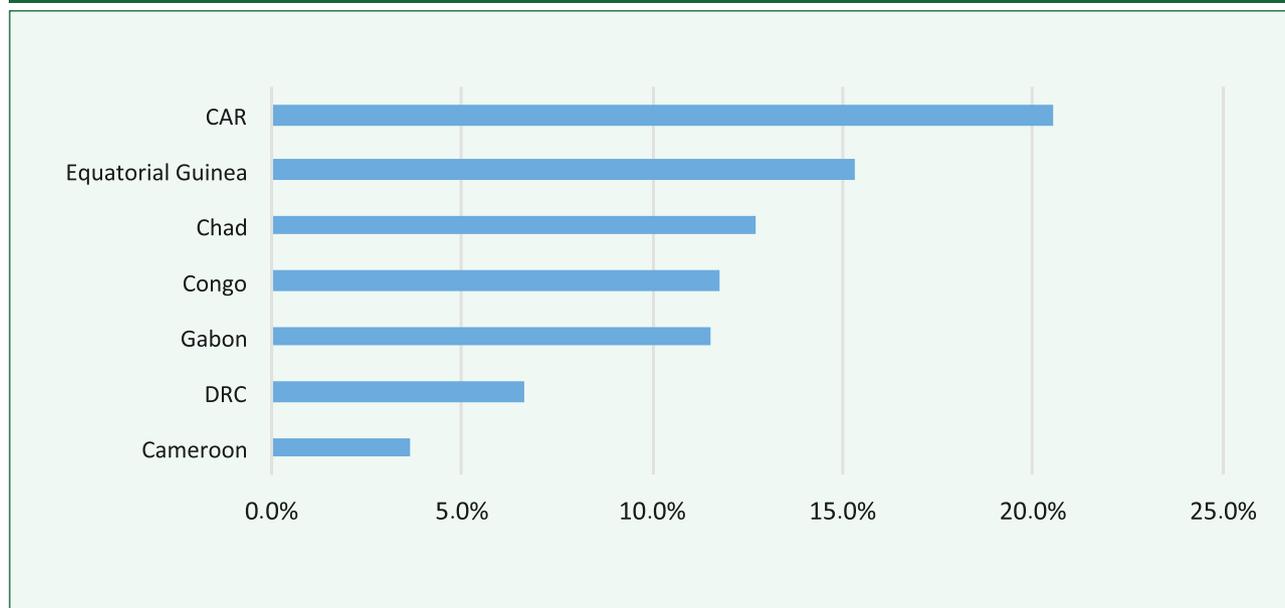
CAR and Equatorial Guinea have recorded vaccination rates above 15% (Figure 3), compared to the regional average of 11.9%. On the other hand, DRC and Cameroon have the lowest vaccination rates. There are multiple reasons for the low vaccination rate in DRC, especially low community engagement, as noted in the national consultation of 7 January 2022. The Government continues to implement the Multisector COVID-19 Emergency and Mitigation Programme and the National Health Development Plan which has been extended to 2022 with the support of development partners. In addition, the Government has

also begun to remove certain barrier measures such as curfews.

All countries in the sub-region have taken measures to combat the spread and effects of the COVID-19 pandemic.

The measures are as varied as the preparation of national strategies, the establishment of structures and special funds dedicated to the fight against COVID-19, tax breaks, communication strategies, etc. The table in Annex 5 presents some of the measures implemented in response to COVID-19 in Central Africa. Under these measures, Central Africa countries also benefited from new issues of IMF's Special Drawing Rights (SDRs) for a total amount of USD 1,415 million in 2021.

Figure 3: COVID-19 vaccination rates in Central Africa



Source: AfDB Statistics Department (ECST), data as at 30 April 2022.

1.3 SIGNIFICANT ECONOMIC GROWTH RECOVERY IN CENTRAL AFRICA, BUT BELOW THAT OF OTHER REGIONS

1.3.1 Regional growth driven by DRC and Cameroon

GDP growth in the Central Africa region stood at 3.1% in 2021, reflecting weak economic performance in the region compared to the African average of 6.9%. However, this weak economic performance indicates a 3.8 percentage points increase in real GDP in comparison to its 2020 level (-1.6%). The weak regional economic growth in 2021 was also quite diverse within the countries of the region (Figure 4).

In 2021, DRC and Cameroon recorded the best economic performance in the region with real GDP growth rates of 6.2% and 3.6% respectively (Figure 4). In DRC, these macro-economic results were due to the good performance

of the mining sector (copper and cobalt) and the dynamic non-extractive sector, which grew by 3.3% in 2021 (compared to -1.3% in 2020). In Cameroon, recovery in the non-oil sectors and continuation of investment programmes, particularly for the 2021 African Cup of Nations (AFCON), accounted for the country's good performance. Indeed, the agricultural sector, which accounts for about 25% of GDP, benefited from higher prices for agricultural products, while the fossil fuel sector also played a major role in Cameroon's economic recovery thanks to an increase in natural gas production in 2021. The easing of COVID-19 restrictive measures has also had a positive impact on activity in the services sector.

Equatorial Guinea (-3.2%), Chad (-1.2%) and Congo (-0.6%), remained in recession even though the Congo (-0.6%), remained in recession even though contractions in GDP are smaller than in 2020. This performance was due to the impact of the COVID-19 pandemic. The contraction of GDP in Chad (an oil-exporting country), despite the rise in oil

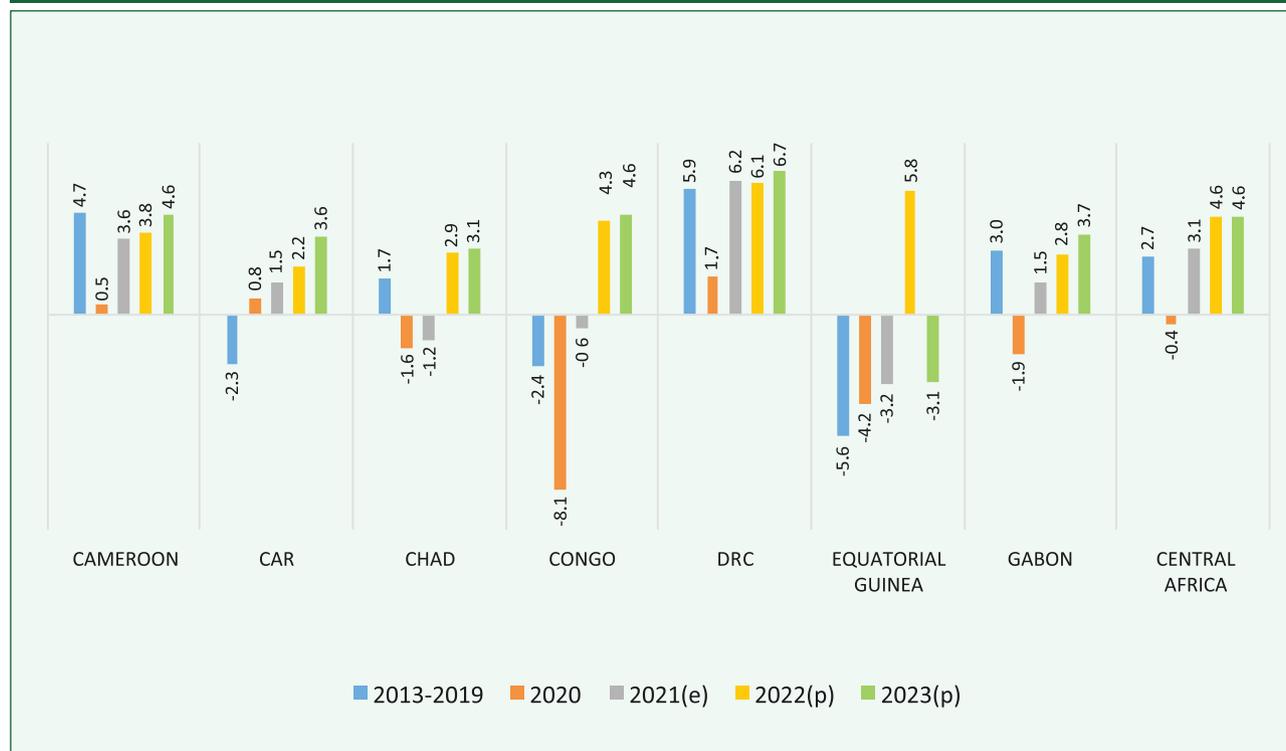
prices, could be due to decline in oil production (about 4.1%) in the first quarter of 2021, compared to the 2020 level. Similarly, the rise in armed attacks in Chad in 2021 also played a key role in the decline in economic activity. As the only Sahelian country in the region, Chad's economy is also strongly affected by climate change, particularly in the agricultural and livestock sectors. This situation keeps the Chadian economy in a state of fragility, thereby highlighting the need for urgent action to reduce dependence on oil, build the resilience of the agricultural sector, and improve internal security. The poor performance (-0.2%) of the Republic of Congo stems from the combined effects of low contribution of the non-oil sector and decline of the oil sector. The non-oil sector recorded a weak recovery of 0.9 % in 2021, which was insufficient to offset the decline in the oil sector. On the other hand, the oil sector recorded a significant decline (-2.9%) because of the drop in production caused by the ageing of the main oil fields, which could not be offset by the recovery in world crude oil prices. The challenge for the country is to accelerate diversification, which requires courageous reforms and strategic investments to increase the attractiveness and competitiveness of the non-oil sector. However, the Government is facing two major challenges, namely the high debt ratio which reduces budget margins for supporting investments, and the low efficiency of

public spending due to weak economic and financial governance.

Overall, as regards the countries of the Central Africa Economic and Monetary Community (CEMAC), there was an increase in the prices of their main export products during the third quarter of 2021. As a result, the region's economy recovered by 3.1% in 2021 following 0.4% contraction in 2020. The recovery will continue and stand at 4.6 % in 2022. Indeed, according to statistics from the Bank of Central Africa States, the overall index (excluding oil and natural gas) rose by 8.7%, compared to 7.8% increase in the second quarter of 2021 and 19% in the first quarter of 2021. This momentum was driven by the soaring price of crude oil per barrel on international markets. The energy products price index rose by about 14.1% in the third quarter compared to 12.2% in the previous quarter due to the rising natural gas prices (69.3% in the third quarter of 2021, 5.7% in the previous quarter). It should be noted that this sector is not very employment-intensive and therefore needs targeted inclusion measures. As for non-energy products, the price index rose by 1.8% in the second and third quarters of 2021. In addition, the main export products of the Democratic Republic of Congo (DRC), such as copper and cobalt, also benefited from this upward trend.



Figure 4: Real GDP growth rates in Central Africa 2013-2023 (%)



Source: AfDB Statistics Department (ECST), September 2022.

N.B.: (e) = Estimates; (p) = Projections.

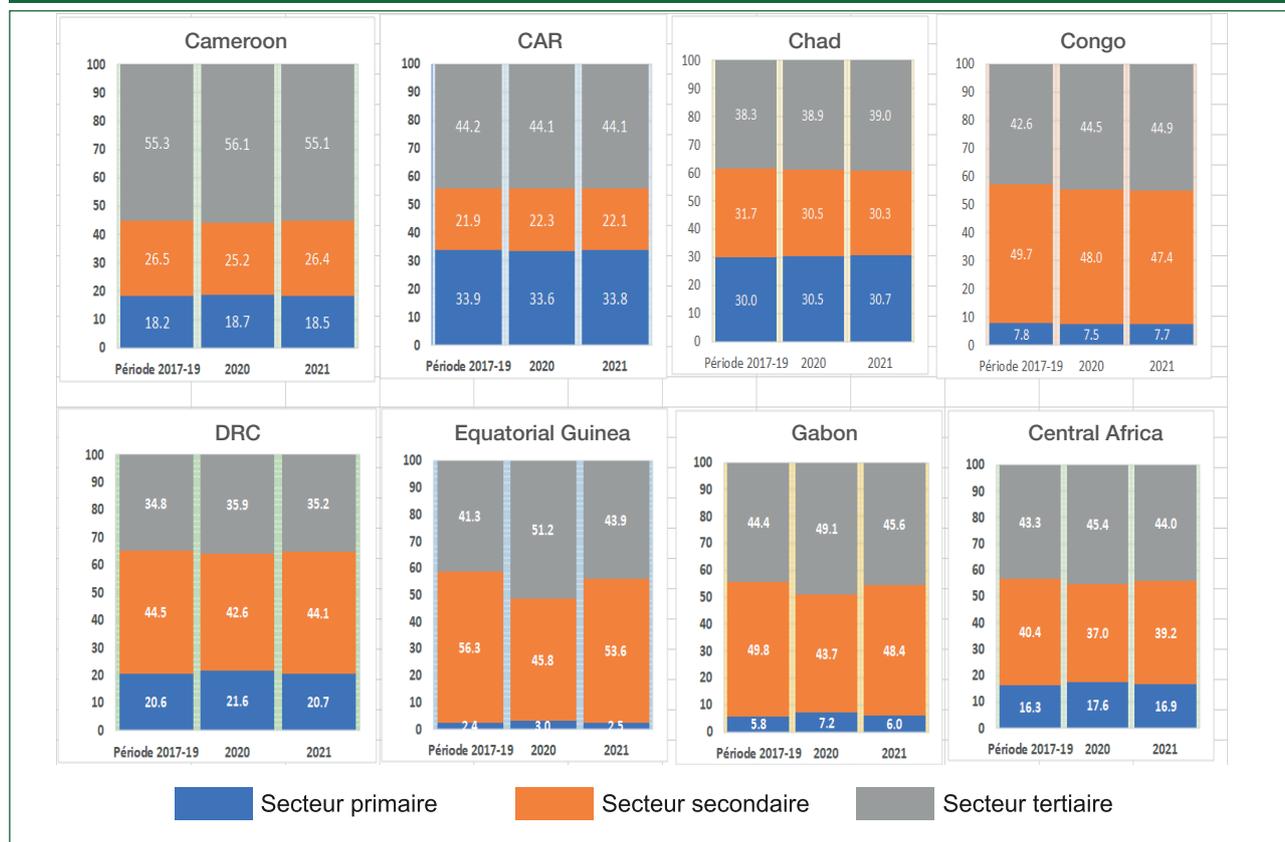
1.3.2 Tertiary sector, largest component of supply-side production

The supply-side GDP breakdown helps to highlight the sectors that contributed most to the total production, as well as identify any discrepancies within the countries of the region.

The low economic growth of Central Africa countries reflects contrasting sector dynamics over the 2019-2021 period. Indeed, while 2020 was a year of economic contraction for most countries in the region, except for CAR and DRC, 2021 appears to be a year of economic recovery for the region.

The regional GDP breakdown for 2021 shows that it was mainly dominated by the tertiary sector (44.0%) and the secondary sector (39.2%) (Figure 5). These results are mainly due to the economic structure of most African countries, which is dominated by the tertiary sector. On the other hand, the agricultural sector is steadily declining in favour of the secondary and tertiary sectors. This change can be interpreted as the result of an economic development process. Moreover, an analysis of sectoral GDP by country shows that Cameroon is the country where the tertiary sector contributed most to GDP (55.1%). More than half of Cameroon's GDP in 2021 therefore came from the tertiary sector. Apart from DRC, whose tertiary sector accounted for 35% of GDP in 2021, all the other countries in the region recorded a tertiary sector share of over 40 % of GDP.

Figure 5: Supply-side nominal GDP breakdown in Central Africa



Source: AfDB Statistics Department (ECST), May 2022.

1.3.3 Tertiary sector, largest contributor to supply-side growth

Analysis of the GDP growth rate breakdown helps to identify the sector driving economic growth. It also highlights the specificities of each country, i.e., the sector that contributed most to GDP growth in each country compared to the regional trend (Figure 6).

Regional economic growth boosted by the dynamic services sector, particularly in DRC and Cameroon

The tertiary sector was the main driver of economic growth in the region in 2021, with a contribution of 1.6 percentage points. After the deepest recession of every economic sector in the region in 2020 following the COVID-19 health crisis, the

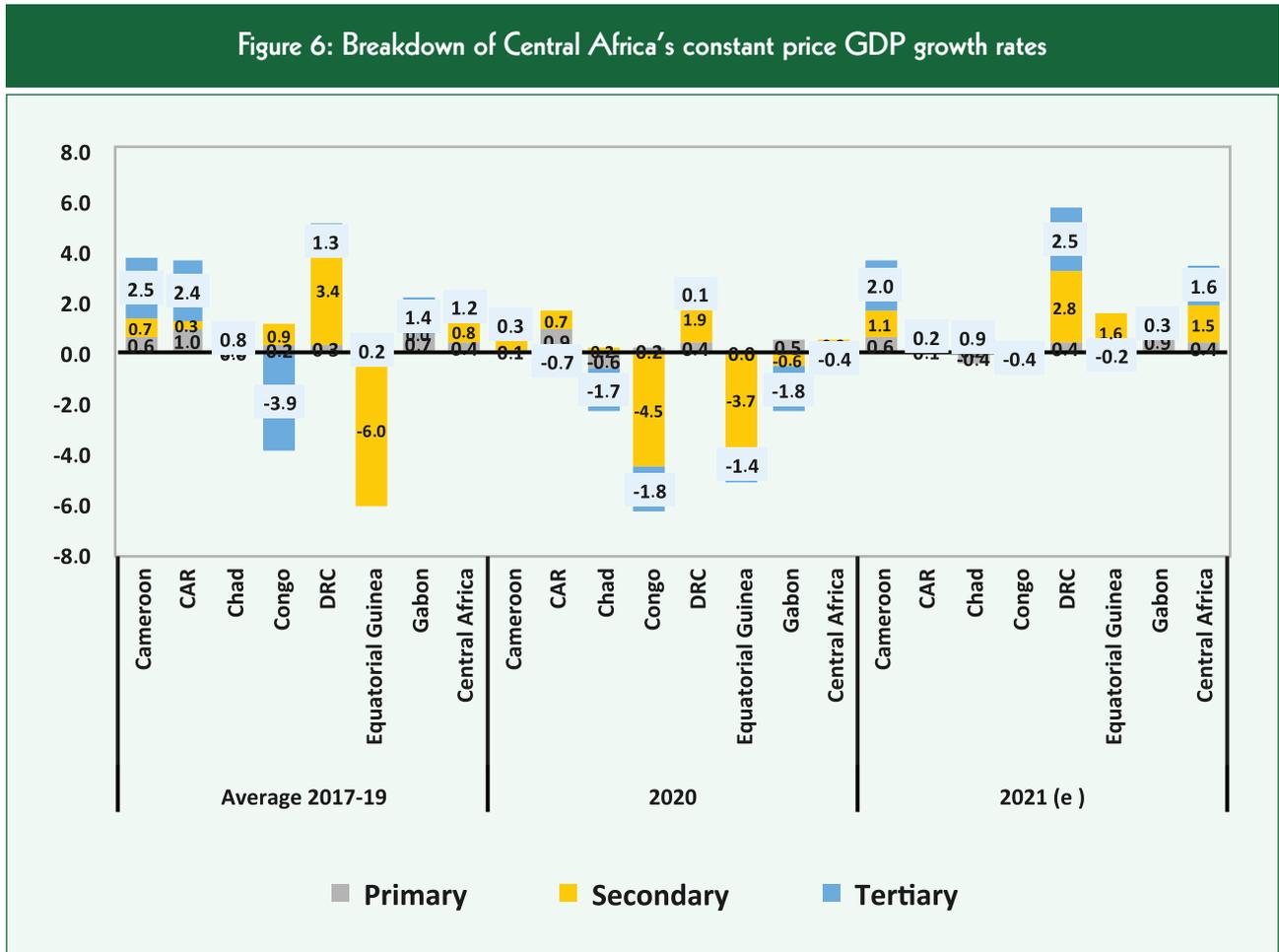
services sector recorded a recovery in 2021. It contributed 1.6 percentage points to the region's real GDP growth (Figure 6). This contribution stemmed from growth of about 5.2% higher than its 2020 level (-3.7 percentage points). Economic recovery in the tertiary sector is mainly due to the gradual lifting of restrictions put in place to combat the COVID-19 pandemic, as well as to subsidy policies implemented by the countries to support businesses. In particular, the recovery of trade and transport activities helped the sector to emerge from the recession that affected it in 2020. In addition, the secondary sector boosted regional growth by 1.5 percentage points. The international health crisis paralysed international trade, resulting in a sharp decline in imports by countries in the region, all of which are net importers of manufactured goods. The decline in imports helped to increase the production capacity of local industries. The tertiary sector's contribution to regional growth

was higher in DRC (2.5 percentage points) and Cameroon (2.5 percentage points).

Low primary sector contribution to regional GDP growth

The primary sector contributed to 0.4% of the region's real GDP growth in 2021 (Figure 6). This low contribution by the primary sector to GDP growth appears to stem more from structural factors (climate change, dependence on mining and oil) than from cyclical factors (COVID-19).

The primary sector's pre-COVID-19 contribution stood at 0.4%. The primary sector was suffering from a decline in agricultural yields due to the adverse effects of climate change. Furthermore, the primary sector's low contribution to GDP growth resulted from the contraction of oil and mining operations due to several factors such as the decline in international market prices and constraints on reserves of the exploited resources. Indeed, the primary sector's low contribution to real GDP growth in 2021 was almost homogeneous across the region except for Gabon, Cameroon, and DRC, which recorded high contributions to real GDP growth.



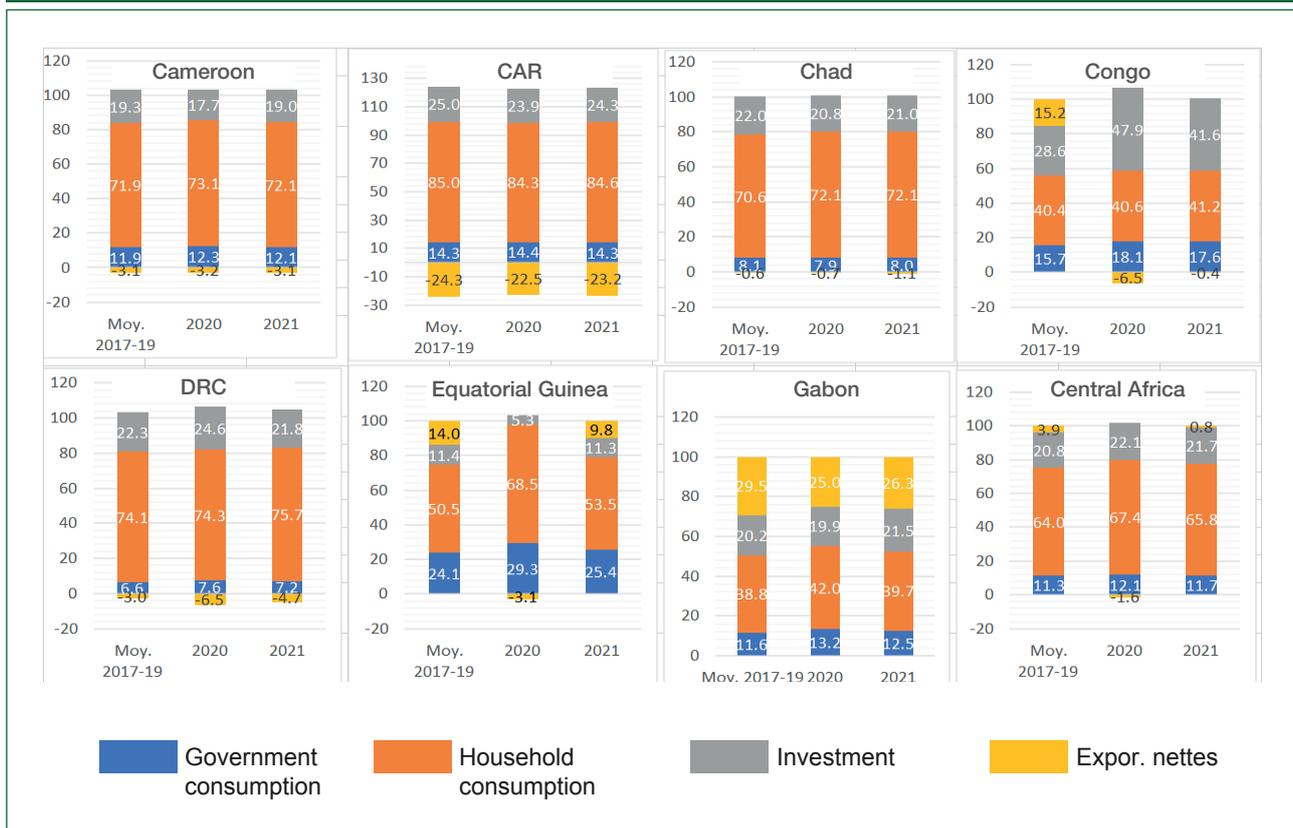
Source: AfDB Statistics Department (ECST), May 2022.
 N.B.: (e) = Estimates.

1.3.4 Household consumption, the main demand-side contributor to GDP in all the countries

The main driver of economic recovery in the region in 2021 was household consumption, which contributed to 65.8% of the (Figure 7). Though on the decline in some countries (Equatorial Guinea and Gabon), household consumption continues to dominate demand in each country of the region. This seems to be due to the gradual lifting of COVID-19

restrictions. Indeed, household consumption in the region has been the largest contributor to overall production, even with the COVID-19 health crisis. Rising consumer spending on food, housing, education, and transportation due to population growth were the main factors that maintained the high contribution by private consumption given the high population growth rate. At the regional level, investment accounted for 21.7% of GDP. This demand component was highest in Congo (41.6%) and lowest in Equatorial Guinea (11.3%).

Figure 7: Contribution of demand components to real GDP in Central Africa



Source: AfDB Statistics Department, May 2022.

1.3.5 Household consumption, main driver of regional demand-side growth, particularly in Gabon

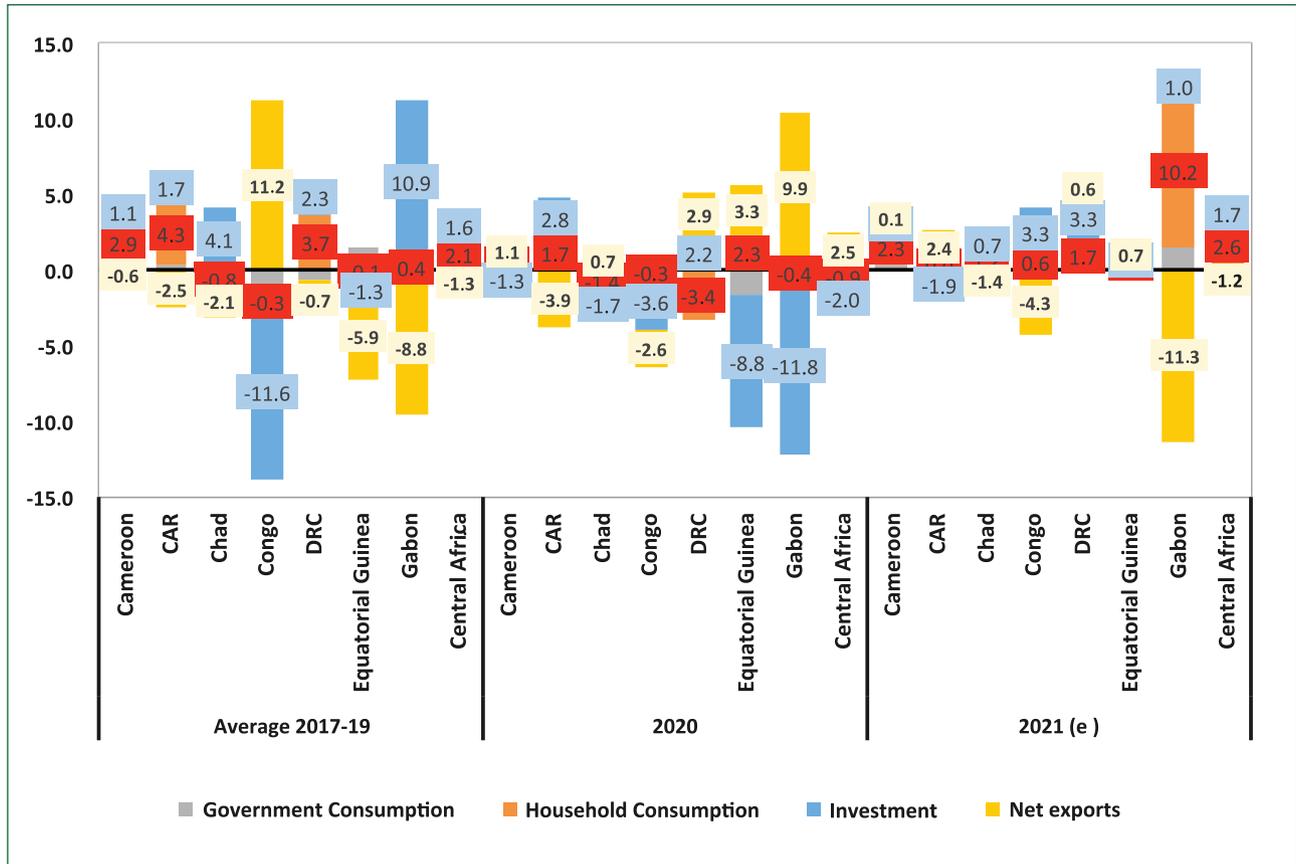
Analysing the demand-side real GDP growth breakdown has the advantage of highlighting the main demand components that drive real GDP growth.

Household consumption contributed most to real GDP growth in 2021, with a 2.6 percentage points contribution (Figure 8). This performance was 3.5 percentage points over the 2020 level. It was due to economic recovery and increase in employment following the easing of

COVID-19 restrictive measures in 2021.

Economic recovery driven by household consumption in Gabon. The contribution of household consumption was strongest in Gabon, with a contribution of 10.2 percentage points. This robust performance had a regional impact despite the small size of the Gabonese population (about 1.7% of the regional population). In DRC and Congo, investment made a significant contribution to real GDP growth in 2021, with similar contributions of 3.3 percentage points. These results stemmed from the countries' interventionist economic recovery policies following the 2020 recession due to COVID-19.

Figure 8: Changes in demand components of real GDP growth



Source: AfDB Statistics Department (ECST), May 2022.
N.B.: (e) = Estimates.

Net exports reduced real GDP growth by 1.2 percentage points in 2021 (Figure 8). This poor performance underscores the low growth of exports compared to that of imports in the countries of the region, thereby reflecting a deterioration in the trade deficit. This result is due to the high dependence of countries in the region on imports of foreign finished products. Comparing these achievements to those of the pre-COVID-19 period (2017-2019), however, there was an improvement in net exports' contribution to growth from -8.8 to -1.2 percentage points. Consequently, COVID-19 seems to have had a clear positive impact on net exports' contribution to economic growth through lower imports.

1.3.6 Accommodative monetary policies supported the region's economic recovery

In response to the COVID-19 health crisis, most central banks pursued an accommodative monetary policy by taking a series of measures to support economic activity and mitigate the potential effects of the crisis. In this regard, the Central Bank of Congo (BCC) took measures such as: lowering the key interest rate and easing reserve requirements, promoting electronic means of payment (eliminating certain transaction fees in electronic money operations, etc.), freezing loan classification rules and suspending late payment penalties on overdue debts during the crisis period, postponing by one year (i.e., to 1 January 2022) the regulatory minimum capital requirement for banks at the equivalent in Congolese francs of USD 50 million, etc. The key rate fell from 18.5% to 8.5% between 2020 and the end of 2021.

At its 30 December 2021 meeting, the BCC's Monetary Policy Committee (CPM) lowered its key rate from 8.5% to 7.5% and decided that reserve requirements should henceforth be held in local currency. According to the CPM, these measures would strengthen the financing of the economy with local currency and thereby support the de-dollarization of the economy for greater control of inflation. It should be noted that these measures were taken to support the good outlook of the Congolese economy in 2022, i.e., projected growth of 6.1% and annual inflation of about 5%. However, the CPM was also of the opinion that achieving

these results would require "strict implementation of the sound economic policies initiated in 2021, particularly compliance with the Stability Pact between the BCC and the Ministry of Finance, maintaining a solid framework for monetary and fiscal policy coordination, and careful implementation of macro-economic and structural reforms to put the economy on a path to strong, sustainable, inclusive and diversified growth."

As for the Bank of Central Africa States (BEAC), it lowered its main interest rates. Specifically, BEAC reduced the tender interest rate by 25 basis points from 3.50% to 3.25%. It also reduced the marginal lending facility rate by 100 basis points. BEAC also increased the amount of liquidity to be injected into the money market to CFAF 500 billion. Other measures taken by BEAC include broadening the range of private bills admitted as collateral for monetary policy operations and increasing tax relief on public and private bills admitted as collateral for BEAC refinancing operations.

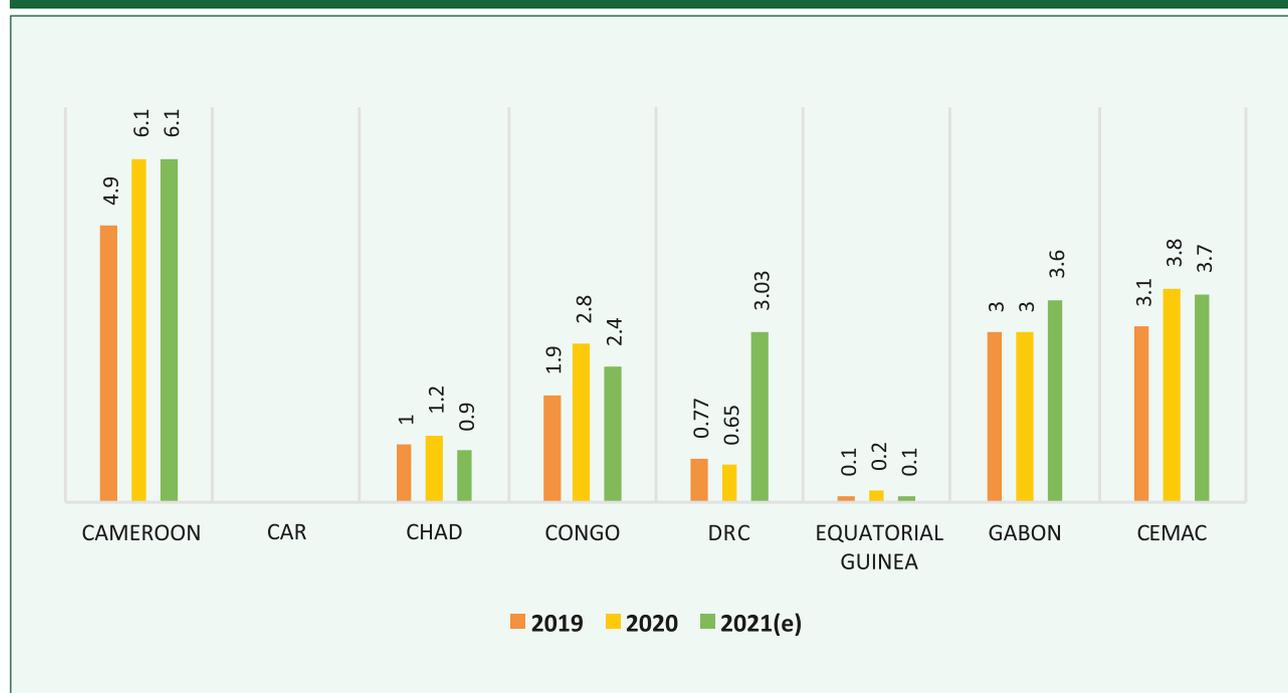
At its meeting of 20 December 2021, BEAC's MPC noted the slow and moderate economic recovery in 2021 after the recession in 2020 due to the COVID-19 pandemic. BEAC's projections for 2022 show an acceleration in real GDP growth to 3.7% from 1.9% in 2021, driven mainly by a rebound in non-oil activity. The projections also point to a slight increase in inflation to 2.2% from 1.7% in 2021, mainly under the pressure of imported inflation. The currency's external coverage ratio is projected to increase from 68.4% in 2021 to 73.1% in 2022, while foreign exchange reserves, which stood at 3.72 months of imports of goods and services at the end of December 2021, compared to 3.82 months in 2020, would rise to 3.91 months in 2022.

In the medium term, the economic recovery that began in 2021 is expected to continue in 2022-2024, against a backdrop of reduced global uncertainty thanks to efforts to combat the COVID-19 pandemic and the expected recovery in commodity prices. Furthermore, given the gains from the structural reforms implemented under the CEMAC Regional Economic and Financial Reform Programme (PREF-CEMAC) and the second-generation programmes with the IMF, and in light of the CEMAC macroeconomic outlook presented above, the Monetary Policy Committee

has maintained its key policy instruments since November 2021:

- Tender interest rate increased from 3.25% to 3.50% (BEAC's main key rate)
- Marginal lending facility rate increased from 5.00% to 5.25% (ceiling rate)
- Deposit facility rate at 0.00% (floor rate)
- Minimum reserve ratios at 7% on demand liabilities and 4.50% on term liabilities.

Figure 9: Coverage of imports by foreign exchange reserves (in months)



Source: BEAC and BCC Statistics, 2021.

1.3.7 Declining inflation in Central Africa and lower than in other regions

The average inflation rate in the Central Africa region stood at 3.9% in 2021, down from 5.4% one year earlier (Figure 10). The inflation rate in Central Africa was the lowest on the continent compared to other regions; it was 4.7% in North Africa, 10.4% in Southern Africa, 12.7% in West Africa and 40.7% in East Africa. This achievement compared

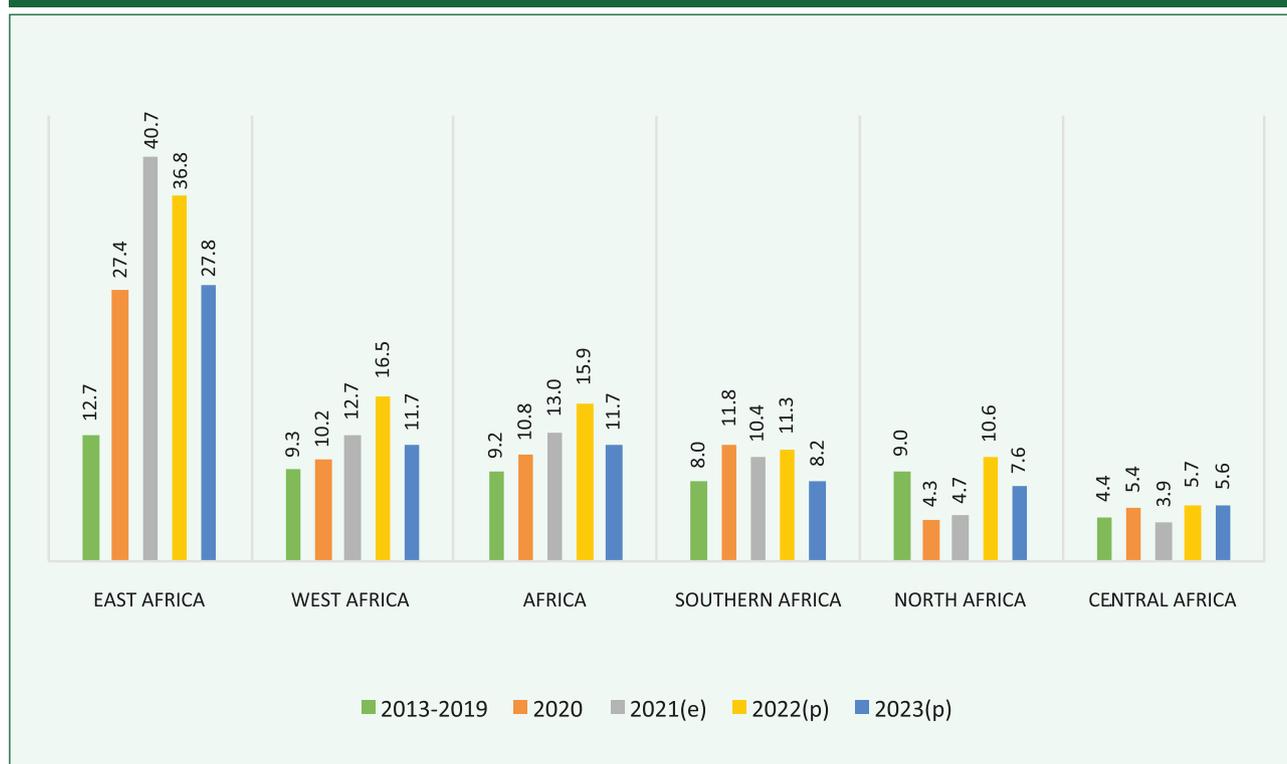
to the other regions is partly due to the monetary policies.

Despite the decline in 2021 compared to 2020, the inflation rate remains high compared to 2.7% recorded in 2019 due to combined factors such as: (i) the increasing pressure from imported inflation and sea freight costs; (ii) the rise in food and non-alcoholic beverage prices (even though prices are down compared to 2020, they are still high compared to 2019); and (iii) the speculative practices of some trader-distributors.

High inflation usually erodes the purchasing power of households, which face not only rising food prices but also the high cost of transport, gas, electricity, water, and housing. In addition to the initiated price control policy, Governments

could decide to sell certain staple products at subsidised prices through formally constituted organisations (trade unions, associations of craftsmen, transporters, etc.) to discourage the speculative practices of trader-distributors.

Figure 10: Inflation rate trends per region 2013-2023 (%)

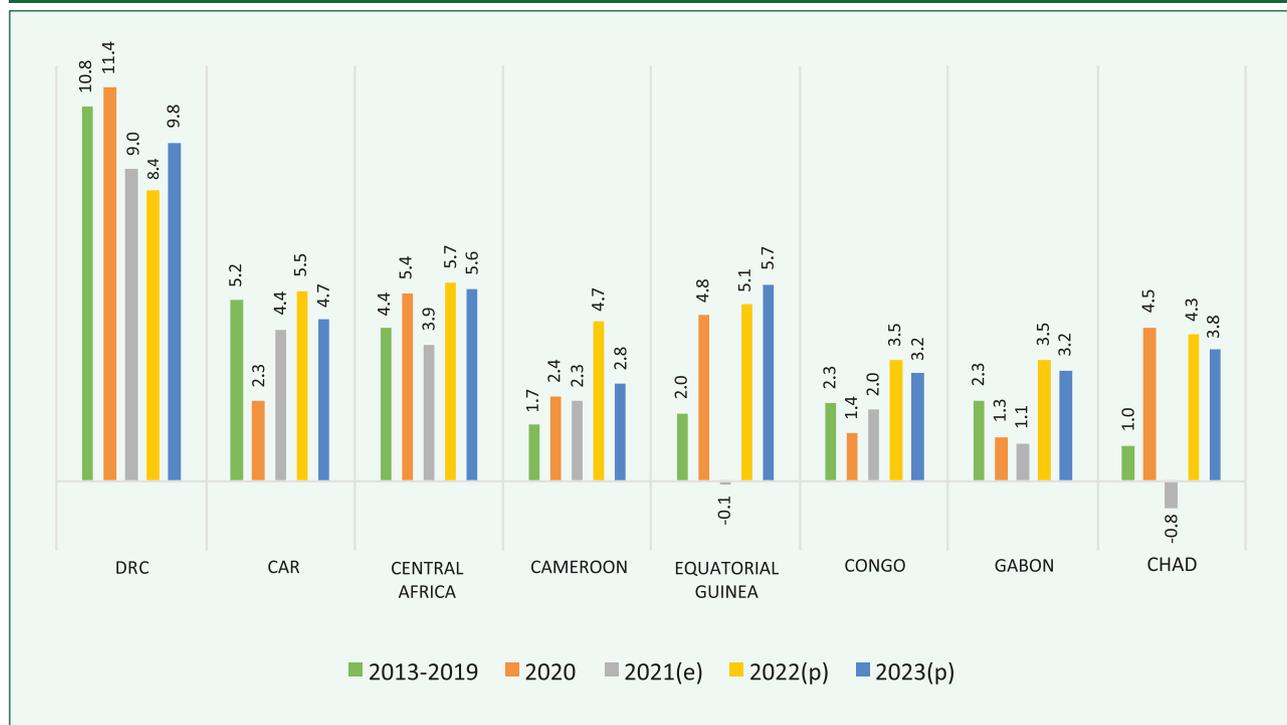


Source: AfDB Statistics Department, September 2022.

In CEMAC countries, inflation has been brought under control. This situation primarily stems from BEAC’s price stability policy. It is also due to the measures taken by governments in the region to combat the deterioration of the people’s purchasing power, which have mainly taken the form of price controls in the trade sector (price controls for certain staple products to mitigate the effects of rising freight costs and speculative practices by traders/distributors).

Inflation ranged from -0.8% in Chad to 9% in DRC (Figure 11) in 2021. Out of the six economies in the CEMAC zone, only CAR recorded an inflation rate above the 3% limit (CEMAC Community threshold). Inflation rose from 2.3% in 2020 to 4.4% in 2021 due to security and social tensions that disrupted supply channels for staple food products, particularly the Douala-Bangui corridor (CAR’s main source of supply).

Figure 11: Inflation rate trends per country 2013-2023 (%)



Source: AfDB Statistics Department (ECST), September 2022.

N.B.: (e) = Estimates; (p) = Projections.

As the only country outside the CEMAC zone in the region, DRC recorded an inflation rate of 9% in 2021, compared to 11.4% in 2020. It had already fallen from 29.3% in 2018 to 4.7% in 2019, due to better coordination of monetary and fiscal policies (AfDB, 2020). The increase in the general price level from 2020, despite the good performance in 2019, was mainly due to the combined effects of the higher cost of imported goods following the depreciation of the national currency against the US dollar and the COVID-19

health crisis. The current level of inflation reflects the relative stability of the exchange rate (1.4%) in 2021, in line with the Stability Pact of the Macroeconomic and Monetary Framework signed between the Government and the BCC in August 2020 (which prohibits monetary financing of the budget deficit). To that end, the BCC gradually lowered its key interest rate from 18.5% to 8.5% in 2021 to boost credit and bring inflation below its annual target of below 7%. This target could be achieved in 2023 (6.3%), after a decline to 7.5% in 2022.

Box 1: Effects of rapid increase in maritime freight rates and costs on inflation within CEMAC

What are the causes of the recent upsurge in shipping costs

Demand for goods rebounded in the second half of 2020 and into 2021 as consumers purchased goods rather than services during the pandemic-related lockdown and restrictions. Working from home, online shopping, and increasing computer sales put unprecedented pressure on supply chains. The sharp increase in containerised trade flows faced supply-side capacity constraints, particularly container shipping capacity, container shortages, labour shortages, ongoing COVID-19-related access and exit restrictions in port regions, and port congestion. This mismatch between exploding demand and de facto reduced supply capacity led to record container freight rates on virtually all trade routes. However, the United Nations Conference on Trade and Development (UNCTAD) points out that transport costs are also influenced by structural factors, particularly the quality of port infrastructure, the trade facilitation environment, and maritime transport connectivity, and that shipping costs may also vary from country to country.

For example, the Shanghai Containerized Freight Index (SCFI) spot rate on the Shanghai-Europe route was below USD 1,000 per TEU in June 2020. It jumped to about USD 4,000 per TEU by the end of 2020, and rose to USD 7,395 by the end of July 2021. In addition, cargo owners have experienced delays, surcharges, and other costs, as well as the difficulty of being able to move their containers quickly.

Impacts of shipping costs on import prices, inflation, and economic recovery

According to a study on the impact of freight costs on import and consumer price levels released on 18 November by UNCTAD, if the current upsurge in container freight rates continue, it could increase global import price levels by 11% and consumer price levels by 1.5% by 2023. Moreover, the impact of high shipping costs will be greater in Small Island Developing States (SIDS), which could see import prices rise by 24% and consumer prices by 7.5%. In the least developed countries (LDCs), consumer price levels could rise by 2.2%.

In the case of CEMAC, analysis of the correlation between imported inflation and CEMAC inflation indicates a positive relationship with a reaction time of 6 to 12 months, which is necessary for the transfer of the additional cost to consumers, given the existing rigid price setting (presence of price certification systems in some countries). Consequently, if we stick to international assumptions on maritime logistics, the increase in imported inflation observed from the end of the first quarter of 2021 and which would continue to 2022 would impact CEMAC inflation over the 2022 and 2023 period.

Based on this assumption, CEMAC countries should be prepared to face stronger inflationary pressures in 2022 and 2023 than in 2021, due to freight costs that imply additional costs for both industrial and commercial enterprises and that will be passed on to the prices of products and services for households.

Similarly, there are certain tax-customs measures, such as the one taken on 16 November 2021 by Cameroon. The Government decided to grant economic operators an 80% discount on the freight bill when calculating the customs value of goods imported by sea, until the end of February 2022. This decision reduced the customs duties and taxes payable on imports, but negatively affected the amount of customs revenue for the Government.

In response to this situation, UNCTAD recommends that countries should:

- Consider a series of measures for infrastructure and tangible and intangible services. Improving the quality of port infrastructure would reduce average global shipping costs by 4.1%, while costs would be reduced by 3.7% through better trade facilitation measures and by 4.4% through the improvement of liner shipping connectivity;
- Monitor markets to ensure a fair, transparent, competitive trading environment and better data sharing, as well as foster better collaboration among maritime supply chain stakeholders;
- Continuously monitor and analyse shipping market trends to identify ways to reduce costs, improve efficiency, and facilitate maritime trade; and
- Diversify into higher value-added products to better cope with external shocks, especially for smaller economies.

Source: BEAC Monetary Policy Report, December 2021.

1.4 PUBLIC FINANCE: IMPROVEMENT IN BUDGET BALANCE SUSTAINED THROUGH THE ALLOCATION OF SPECIAL DRAWING RIGHTS TO COUNTRIES IN THE REGION, WHILE DEBT NEEDS TO BE MONITORED

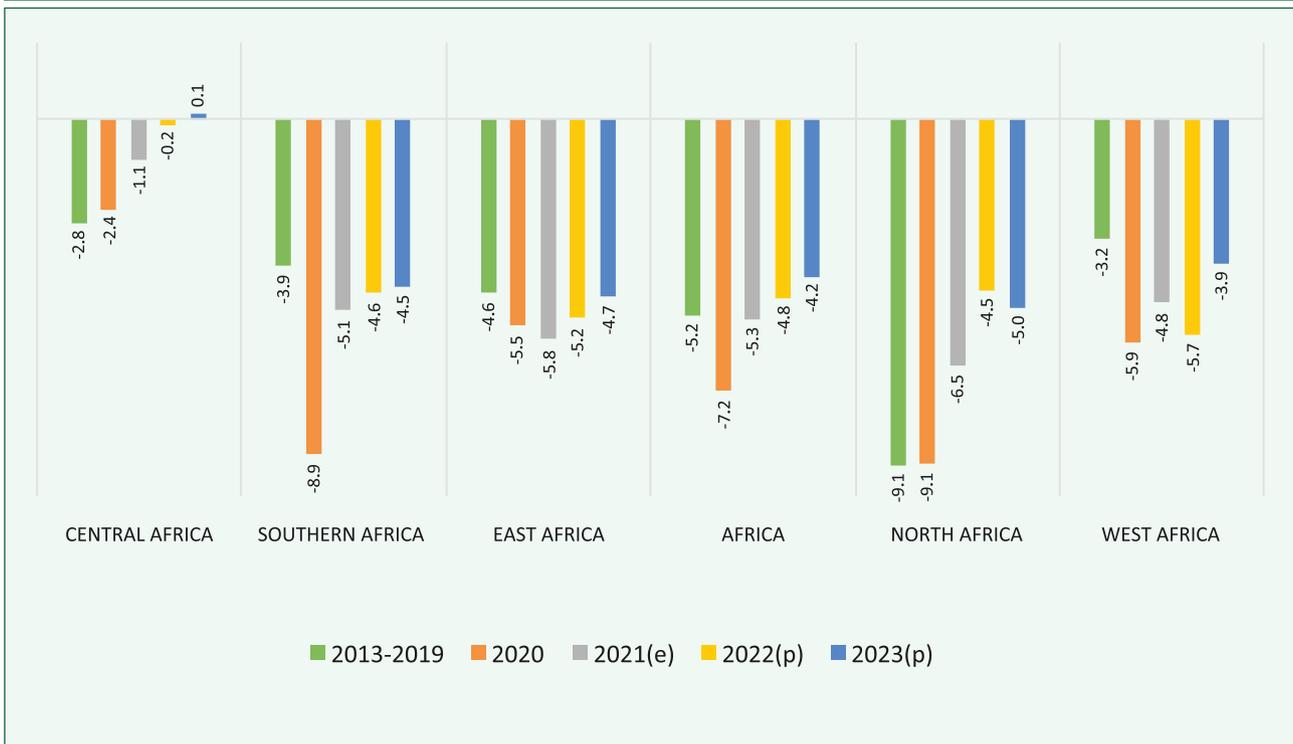
1.4.1 Central Africa has the best fiscal performance on the continent thanks to higher revenues and despite increased public expenditure

Compared to other regions, Central Africa has the best fiscal performance (Figure 12). The region's budget balance improved in 2021, with a deficit of 1.1% of GDP, compared to a deficit of 2.4% in 2020. The average budget balance for

all of Africa stood at a deficit of 5.3% of GDP in 2021. As regards the regions, Southern Africa had a balance of -5.1% of GDP, West Africa -4.8%, East Africa -5.8%, and North Africa -6.5% of GDP.

In 2021, the public finance situation recorded an improvement in fiscal revenue mobilisation. Indeed, oil revenue increased by 5.1% and non-oil revenue by 8.9%. The increase in oil revenue stemmed from the combined increase in production and price per barrel of crude oil on the world markets, while the increase in non-oil resources was due to economic recovery in 2021. As for budgetary expenditure, it increased by 1.7% for current expenditure and 19.8% for capital expenditure. There was an overall budget balance, including grants, of -1.9% of GDP.

Figure 12: Budget balance by region 2013-2023 (as % of GDP)



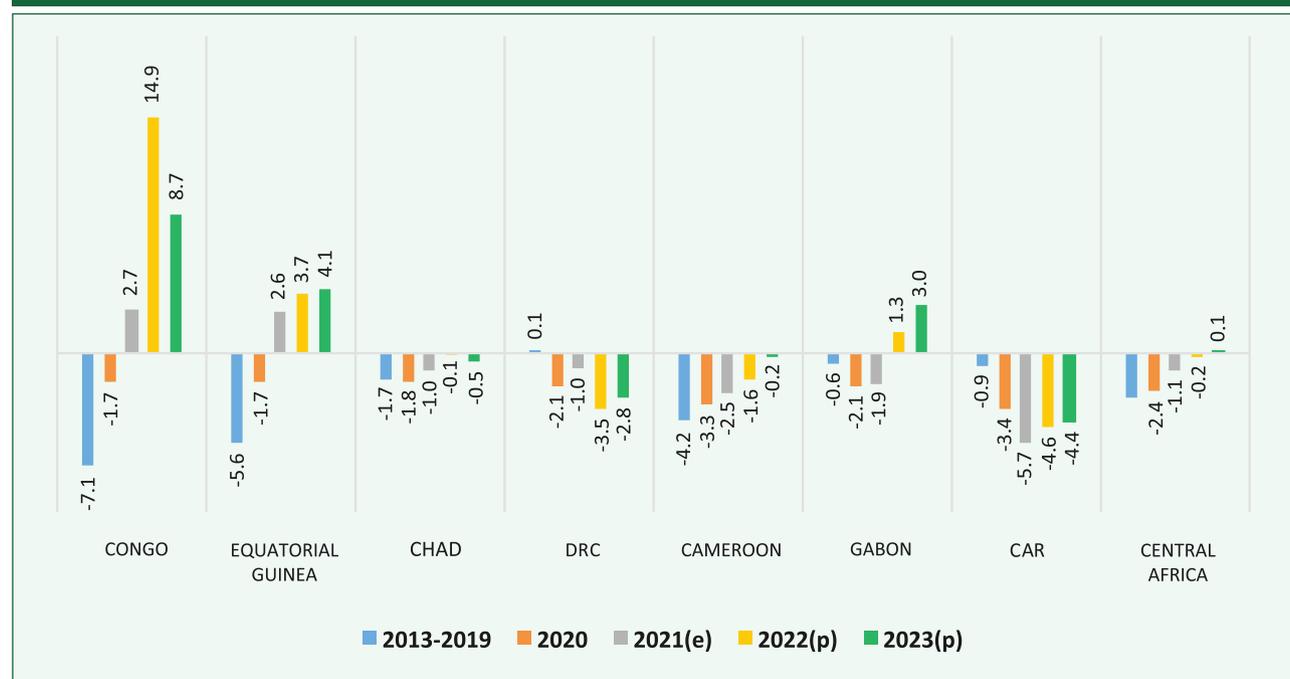
Source: AfDB Statistics Department (ECST), September 2022.

N.B.: (e) = Estimates; (p) = Projections.

At country level, Congo and Equatorial Guinea recorded the best fiscal performance. They were the only countries without budget deficits in 2021, but with budget surpluses of 2.7% and 2.6% of GDP respectively, compared to deficits of

1.7% each in 2020 (Figure 13). The Central African Republic (-5.7% of GDP) and Cameroon (-2.5% of GDP) had the largest deficits. The fiscal deficit was relatively smaller in the other countries: 1.0% in DRC and Chad and 1.9% in Gabon.

Figure 13: Budget balance by country 2013-2023 (as % of GDP)



Source: AfDB Statistics Department (ECST), September 2022.
 N.B.: (e) = Estimates; (p) = Projections.

Compared to 2020, deficits have only worsened in Congo and CAR, while the other countries in the region have seen a reduction in their budget deficit in 2021 (see Figure 13).

Like other African countries, the countries in the region received exceptional emergency financial support from the IMF. The financing was intended to help countries meet the challenges arising from the recession in the region in 2020, which was a consequence of the COVID-19 health crisis. In this regard, financing under the Extended Credit Facility (ECF), the Extended Fund Facility (EFF) and the

General Allocation of Special Drawing Rights (SDRs) supported Government efforts in Cameroon, Chad, CAR, DRC, Congo, Gabon, and Equatorial Guinea. The efforts were aimed at supporting rapid post-COVID recovery, strengthening medium-term external and fiscal sustainability, and implementing the countries' structural reform agendas for sustained, more inclusive and diversified growth. Furthermore, Gabon and Equatorial Guinea benefited from the Rapid Financing Instrument. The additional resources helped Gabon to strengthen its health services, protect the most vulnerable groups of people, and support the private sector, particularly

small businesses. As for Equatorial Guinea, the additional resources helped the Government to increase health and social spending for households hard hit by the pandemic and the explosions in Bata. The resources also allowed Equatorial Guinea to provide limited and temporary tax relief to the private sector to mitigate the adverse impacts on business and employment.

1.4.2 Increasing foreign exchange reserves boosted by SDR allocations

As at 4 February 2022, DRC's foreign exchange reserves stood at USD 3.5 billion, or 3.03 months of imports of goods and services from its own resources. At the end of December 2020, the reserves amounted to USD 708.89 million, or 0.65 months of imports. This level of reserves was due to purchases of foreign currency by the Central Bank

of Congo (BCC) on the foreign exchange market, receipt of foreign currency under the Extended Credit Facility (ECF), and the general allocation of SDRs by the IMF (BCC, February 2022).

As for CEMAC countries, as at 31 October 2021, the foreign exchange reserves of the Bank of Central African States (BEAC) stood at USD 4,518 billion, or 3.72 months of imports of goods and services, compared to USD 4,452 billion one year earlier (3.82 months), an increase of 1.48%. This increase follows the allocation of SDRs by the IMF on 23 August 2021 to the six (6) CEMAC countries. The foreign exchange reserves comprised 77.8% in external demand assets, 16.6 % in assets held with the IMF, 4.5% in gold stocks, and 1.1% in other external foreign currency holdings managed by the trading room.

Box 2: Use of Special Drawing Rights in Central Africa

Special Drawing Rights (SDRs) are an international reserve asset created in 1969 by the IMF to supplement its member countries' official foreign exchange reserves and are based on five major international currencies (dollar, euro, yen, British pound, and yuan). On 23 August 2021, the IMF made a new general allocation of SDRs, equivalent to USD 650 billion, to its members to help them cope with the consequences of the COVID-19 pandemic and rebuild their foreign exchange reserves. The countries of the Central Africa region also benefited from the allocation, as did the other members. The use of the funds, by country, could be summarised as follows:

Cameroon: The amount allocated to Cameroon under the IMF's new general SDR allocation in August 2021, amounting to SDR 264.5 million (about USD 377.5 million), was deposited with BEAC. The use of this allocation would take into account the expectations of the region's community institutions, particularly the clearance of domestic debt arrears, and support the actions of the various pillars and guidelines of the new economic and financial programme signed by the country with the IMF in July 2021.

Congo: Congo received SDR 155.3 million (about USD 197 million, or 1.56 % of GDP and 13.8% of foreign exchange reserves). These resources, deposited with BEAC, would be used in the 2022 budget to support the National Development Plan. In accordance with the recommendations of the CEMAC Heads of State Summit and the IMF, the resources would help finance the deficit, clear domestic arrears and external debt, particularly recently restructured external commercial loans, as well as cover social expenditure and the fight against COVID.

Gabon: Gabon received SDR 207 million (about USD 294.7 million, or 2% of GDP) to support its post-COVID-19 recovery and increase its liquidity. The SDR allocations received by Gabon were deposited with BEAC and there is a management and on-lending agreement between BEAC and the Gabonese Government to make these resources available as needed. For the time being, about 30% will be used to pay off domestic debt and the rest will be kept at BEAC to strengthen the region's foreign exchange reserves.

CAR: CAR received SDR 83.55 million (about USD 140 million, or 6% of GDP). The SDRs allocated to CAR are deposited with BEAC as foreign reserve funds. The Government intends to partially settle its debt to domestic commercial banks, as well as meet the residual financing needs facing the country. To date, CAR has used about 36% of its SDRs, equivalent to SDR 30 million. The Government has decided that the rest of the allocation would be kept as a reserve that could be used to facilitate the response to negative shocks, including those that could result from a resurgence of the pandemic, and for growth.

DRC: DRC received SDR 865.4 million (about USD 1.45 billion, or 2.6% of GDP or 30.3% of total gross international reserves) on 23 August 2021. In line with the Congolese Government's decision, half of the SDRs were allocated to consolidate BCC's foreign exchange reserves and the other half is expected to finance priority investments under the local development programme for the country's 145 territories (PDL-145T). The programme aims to achieve territorial equity and improve the living conditions and environment of rural populations. The cost of the programme is estimated at USD 1.66 billion and will be spread over three (3) fiscal years to cover the entire country in the health, education, infrastructure, agriculture, rural development, energy, and transport sectors.

Equatorial Guinea: Equatorial Guinea received SDR 150.9 million (about USD 140 million, or 9% of GDP in 2021) deposited with BEAC as foreign exchange reserves. There are ongoing discussions on the use of the resources. In collaboration with the IMF, the Government is reviewing its priorities and options. Some of the resources could be used to partially settle the public debt to commercial banks, meet needs related to the economic and health (COVID-19) crisis, and cover expenses related to the explosion in Bata. The IMF recommended that the country should prioritise structural measures for economic diversification, in accordance with the "Vision 2035" development plan. The rest of the allocation would be held as reserves that could be used to build the country's resilience and facilitate response to any adverse shocks, including those that could result from a resurgence of the pandemic.

Chad: Chad received an allocation of SDR 134.4 million (about USD 190 million, equivalent to about 45% of external assets and 3.5% of GDP). This allocation was temporarily deposited with BEAC to strengthen its foreign exchange reserves. In anticipation of the new programme concluded with the International Monetary Fund (IMF) in December 2021, the Government intends to use the resources to clear its domestic debt, particularly with banks, recapitalise other debts, clear pension arrears, finance some new expenditures arising from the political context (transition), and strengthen its external position.

Source: AfDB AEO Country Notes 2022.

1.4.3 Declining debt ratio in the region, but still high in Congo and Gabon

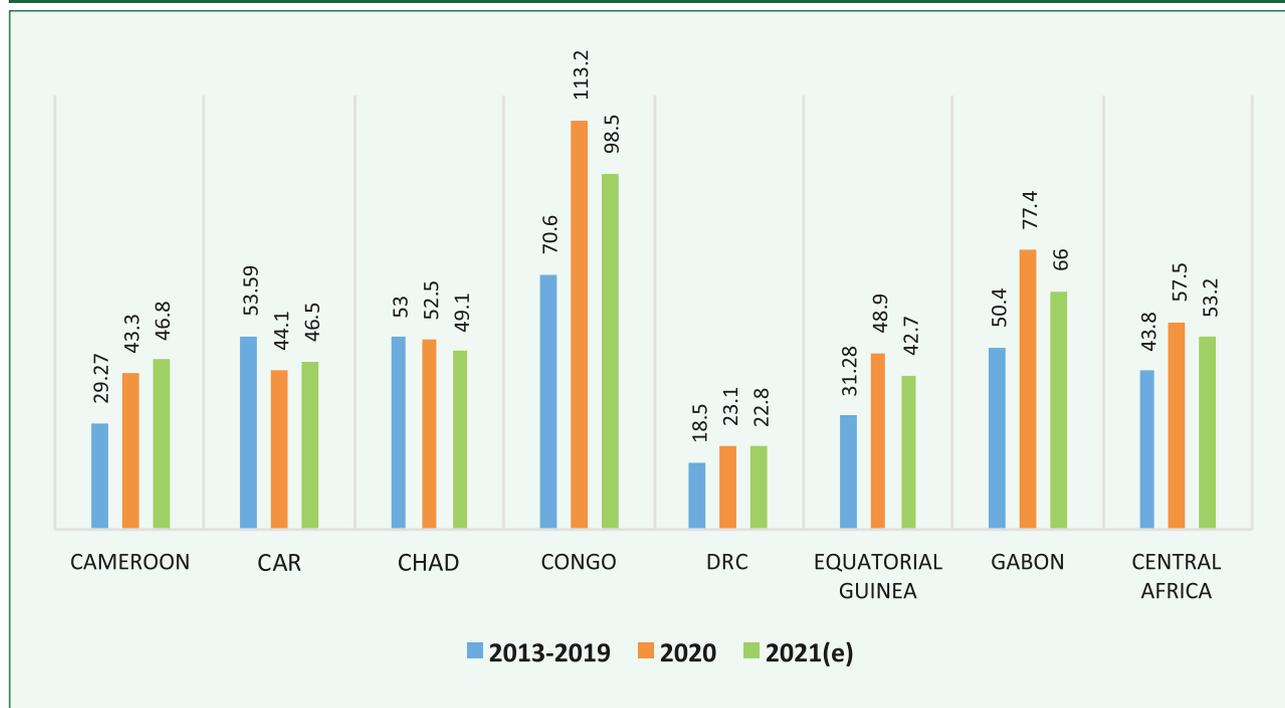
The average total public debt ratio of Central Africa countries has declined. The region's average debt-to-GDP ratio fell from 57.4% in 2020 to 53.1% in 2021, partly driven by the clearance of domestic payment arrears to support economic activity and the increase in nominal GDP in 2021. The countries with the highest public debt ratios were Congo (98.5%) and Gabon (66%). DRC had the lowest debt ratio at 22.8% of GDP in 2021. External debt as percentage of GDP for countries in the Central Africa region declined from 34% of GDP in 2020 to 32.3% of GDP in 2021.

Congo recorded a decline in its public debt ratio from 113.2% in 2020 to 98.5% of GDP in 2021. This significant drop stemmed from the debt restructuring strategy initiated in 2019, which allowed the country to renegotiate its debt to China and two major private external creditors, and clear more than USD 3 billion in external payment arrears. Consequently, the IMF deemed the debt "sustainable" following

the restructuring operations and prudent implementation of fiscal policy.

According to the IMF (January 2021), CAR is at high risk of debt distress and has a limited revenue base; furthermore, the country relies heavily on grants to meet its most pressing financing needs. As for Chad, the IMF (December 2021) noted that "The combined effect of shocks from the COVID-19 pandemic, volatile oil prices, rising insecurity, and the threat of a climate change-induced food crisis has put Chad's already vulnerable economy under pressure. The macro-economic outlook has deteriorated further, with the country's macro-economic weaknesses more pronounced than expected and its liquidity needs becoming more pressing. Consequently, Chad's public debt is no longer sustainable. Chad is the first country to seek debt treatment under the G20 common framework beyond the Debt Service Suspension Initiative (DSSI) and has been in default since December 2021. According to the IMF, reaching restructuring agreements with major official and private creditors in the first half of 2022 is critical to getting the new ECF arrangement off to a good start.

Figure 14: Total public debt by country 2013-2021 (as % of GDP)



Source: AfDB Statistics Department (ECST), May 2022.

N.B.: (e) = Estimates; (p) = Projections.

1.5 IMPROVING THE EXTERNAL ACCOUNT DRIVEN BY EXPORT EARNINGS, OFFERING THE REGION, THE SECOND-BEST PERFORMANCE

Central Africa's current account balance, though in deficit, is improving (Figure 15). In 2021, the current account deficit stood at 2.1% of GDP, down from 4.0% in 2020, thereby establishing the second-best performance of all regions, after Southern Africa, whose current account balance showed a surplus of 2.7% of GDP. This performance was due to a combination of the international community's financial support to the region in response to COVID-19, increased export earnings, as well as efforts made to combat corruption, tax evasion and money laundering, one of whose strong signals is Gabon's accession to the Extractive Industries Transparency Initiative (EITI). At the continental level, the

average current account balance improved from -3.7% of GDP in 2020 to -2.2% in 2021.

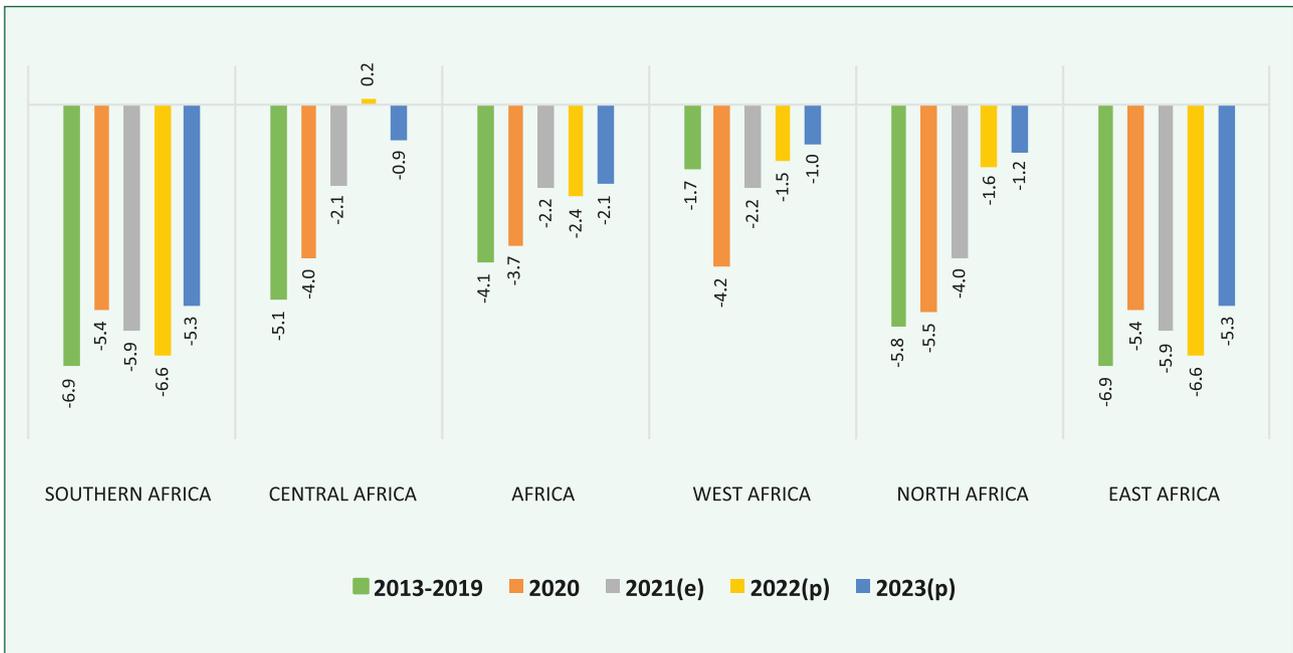
In Central Africa, the improvement in the region's current account balance was due to increased export earnings (oil, gas, diamonds, gold, manganese, timber, and cocoa), the allocation of SDRs by the IMF, and, above all, the current account surplus of 15.5% of GDP recorded by Congo following consolidated efforts made under the CEMAC Regional Economic and Financial Reform Programme.

The current account balance of the countries in the region, though in deficit, improved significantly, except for Cameroon and CAR. For these two countries, the current account balance deteriorated from -3.5% of GDP in 2020 to -4.0% of GDP in 2021 for Cameroon and from -8.5% of GDP in 2020 to -10.5% of GDP in 2021 for CAR (Figure 16). This situation was due to

robust growth in imports, a consequence of the customs tax measure taken by Cameroon's Government for the benefit of

economic operators, and to the decline in the volume of CAR exports, a consequence of insecurity on many of the corridors.

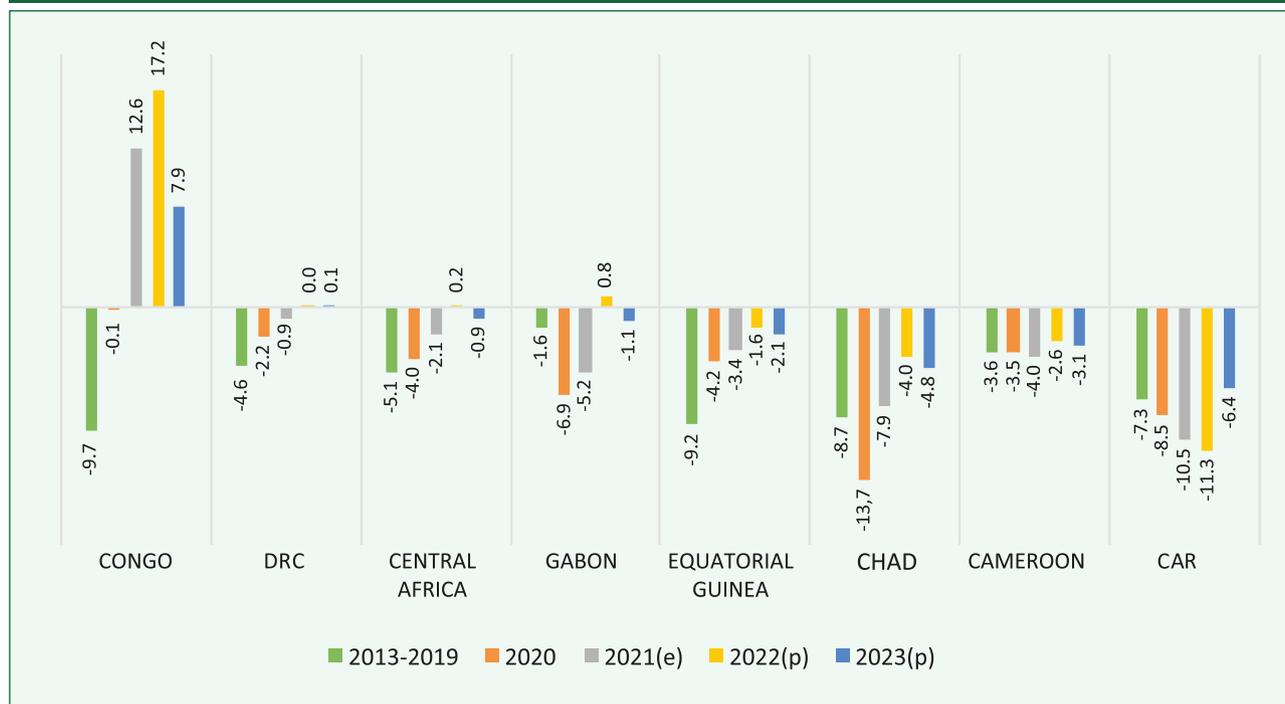
Figure 15: Current account balance by region 2013-2023 (as % of GDP)



Source: AfDB Statistics Department (ECST), September 2022.

N.B.: (e) = Estimates; (p) = Projections.

Figure 16: Current account balance by country 2013-2023 (as % of GDP)



Source: AfDB Statistics Department, 2022.

1.6 POVERTY, ECONOMIC INEQUALITIES, AND CONFLICTS: SOURCES OF FRAGILITY IN CENTRAL AFRICA

1.6.1 Central Africa marked by low human capital and high levels of poverty and inequality

Central Africa currently experiences significant discrimination and exclusion, especially due to gender. The transfer of economic growth gains to the discriminated and excluded segments of the population - women, young people, and rural populations - is slow to materialise in the region (Tables 1 and 2). Groups on the margins of the economic system have less access to decision-making and are not proportionally

represented. The COVID-19 pandemic aggravated the situation by causing the cessation of several vital production units, especially informal units, thereby making the economic situation of populations already highly discriminated against and excluded from the economic system more difficult.

The region is divided into two sub-groups in terms of poverty and inequalities. Ranked among the least developed countries in Africa according to per capita income and the United Nations Development Programme (UNDP) Human Development Index, the sub-group comprising DRC, Chad and CAR has low per capita incomes and high levels of unidimensional and multidimensional poverty² (Table 1). Unidimensional poverty, as measured by income, conceals

² Poverty is not a multidimensional phenomenon since lack of income can be solved sectorally, but a multidimensional problem that requires integrated multisector solutions.

disparities because poverty can be associated with poor health, inadequate education, low income, insecure housing, difficult or unprotected work, political disempowerment, food insecurity or rejection of the rich. These dimensions, which are not taken into account by unidimensional poverty, form the basis of multidimensional poverty.

Moreover, these three (3) countries are confronted with armed and/or inter-ethnic conflicts that slow down the transfer of growth gains to the population, in general, and to the discriminated and excluded segments, in particular. The lack of up-to-date and solid data makes it impossible to conduct polished and appropriate analyses, hence the need to adopt public policies likely to generate these statistics and data.

CAR is the least developed country in Central Africa terms of per capita income and according to the UNDP Human Development Index. In addition, the country is marked by significant inequalities, low levels of governance, and high levels of poverty (one of the highest in the region). Nearly three-quarters of CAR's population lived below the national poverty line in 2017 and about 71% of the population currently lives in extreme poverty on less than USD 1.90 per day. The UNDP estimates that 46.1% and 55.8% of the population lived in poverty and extreme multidimensional poverty respectively in 2019. With a Gini index of 0.562, CAR experiences significant inequalities. Moreover, the richest 10% of the population hold 64.91% of the national income. The country's security crisis, coupled with the COVID-19 health crisis, is not likely to foster economic recovery and reduce discrimination and exclusion. About 3.1 million people are in need of humanitarian assistance.

Nearly half of the population (42%) in Chad lives below the national poverty line (2018). About 51.7% and 64.6% of the population live in poverty and multidimensional extreme poverty respectively (2019). Income distribution is highly unequal, with the richest 10% of the population holding 49.3% of national income. The country also has levels of governance that need to be improved.

DRC is the second country in sub-Saharan Africa with the largest number of poor people. The country had a monetary poverty level of 56.2% in 2020. About one-third of its population lived in poverty and multidimensional extreme poverty in 2019. DRC is ranked 179th on the UNDP Human Development Index and has a Gini index of 0.42. The country also has levels of governance that need to be improved. The socio-economic situation could deteriorate in the event of armed and inter-ethnic conflicts.

The second sub-group comprises Cameroon, Gabon, Congo, and Equatorial Guinea. The sub-group is marked by a higher level of per capita income, a lower level of poverty and, above all, more relative stability in terms of security that can promote the transfer of economic gains to poor and discriminated groups. Less than one quarter of Cameroon's population lived below the international poverty line of USD 1.90 per day in 2014. The incidence of poverty was estimated at 37.5% in 2014. Meanwhile, Congo's poverty rate is marked by high unidimensional poverty (nearly 46.1%) and low multidimensional poverty. Congo is an unequal country, with the richest 10% of the population holding 37.9% of the national income. Regarding human development, Congo ranked 149th in the world with an average index of 0.574 in 2019, up from 0.573 in 2018.

Table 1: Selected poverty and development indicators

Country	Country	CAR	Chad	Congo	DRC	Equatorial Guinea	Gabon
GDP per capita in 2020 (current dollars)	1 537.1	492.8	659.3	1 846.1	544	7 143.2	6 881.7
National Poverty Line (%)	37,5 in 2014	75 in 2017	42 in 2018	46.1 in 2020	56.2 in 2020	76.8 in 2006	33.4 in 2017
International Poverty Line (USD 1.90)	26 in 2014	71 in 2017	38.1 in 2011	55.1 in 2011	77.2 in 2012	NA	3.4 in 2017
Multidimensional poverty index (%)	23.2 in 2018	46.1 in 2019	51.7 in 2019	11.2 in 2015	33.1 in 2018	NA	15 in 2017
Proportion of population in severe multidimensional poverty (%)	24.6 in 2018	55.8 in 2019	64.6 in 2019	9.4 in 2015	36.8 in 2018	NA	5.1 in 2012
HDI Ranking 2019	150	188	187	138	179	144	115
Economic inequalities (Gini index)	46.6 in 2014	56.2 in 2008	43.3 in 2011	48.9 in 2011	42.1 in 2012	NA	NA
Mo Ibrahim Index of African Governance (ranking of 54 African countries)	37	50	47	45	49	51	29
Human capital index in 2020	0.4	0.29	0.3	0.42	NA	NA	0.46

Source: World Development Indicators, World Bank, and AEO Country Notes 2022.

Gabon is an upper-middle-income country. It is ranked 115th in the world on the Human Development Index because of its poor performance in education and limited access to basic services. The country is marked by significant social inequalities with an estimated Gini index of 0.40 in 2017. Its poverty rate of 33.4% in 2017 is 8% higher than the average for middle-income countries. About 15% of the population lives in multidimensional poverty, including 5% in severe deprivation.

Equatorial Guinea has one of the highest per capita income levels on the continent with a GDP/capita of USD 7,143 in 2020. Equatorial Guinea's Human Development Index (HDI) in 2019 stood at 0.59. Inequality is rife in the country, with the richest 10% of the population holding 51.64% of national income. The country has levels of governance that need to be improved.

Women lag far behind men in terms of education. The gender gaps in education have a negative impact on the employment of women and young people. Job creation does not match the high economic potential of the area and unemployment is very high. Unemployment and underemployment among young people (15-24 years old), especially young women, is higher than in the rest of the society.

The unemployment rate was about 6.1% in Cameroon and 34.5% in CAR in 2021, compared to 9.2% in Equatorial Guinea and 10.27% in Congo in 2020. In addition, the underemployment rate in Cameroon stood at 65% in 2021. In CAR, the unemployment rate is higher in urban areas (36%) than in rural areas (30%), and affects women (42.5%) more than men (28.5%). Unemployment rates in Equatorial Guinea and Gabon are higher among women and young people.

Table 2: Selected inequality indicators (%)

Country	Cameroon	CAR	Chad	Congo	DRC	Equatorial Guinea	Gabon
Share of total pre-tax income held by 10% of the wealthiest population (2019-2021)	52.05	64.91	49.3	55.93	48.84	51.64	43.32
Share of total pre-tax income held by 1% of the wealthiest population (2019-2021)	15.85	31	15.71	20.52	14.63	17.59	11.02
Share of total pre-tax income held by 50% of the least affluent population (2019-2021)	10.63	7.63	12.3	9.92	12.64	11.45	14.42

Source: World Development Indicators, World Bank, 2021.

1.6.2 Fragility factors in the region that deserve special attention

Central Africa is marked by several fragility factors that deserve special attention when formulating and implementing economic development policies. The factors include political instability, a volatile security environment, dependence of economies on raw materials, governance dysfunctions that hamper the efficiency of institutions and reduce the impact of public policies on development, and vulnerability to natural and man-made disasters. The humanitarian situation is also a serious cause for concern in Congo, DRC, CAR, and the Lake Chad Basin. In this regard, the negative impact of the COVID-19 pandemic on the population's fragility is alarming because of increased exclusion, poverty, and inequality. Recurrent Boko Haram attacks in Chad, as well as in Northern and South-Western Cameroon have resulted in numerous tragic losses of life and jeopardised peace and stability in Central Africa. The attacks are also having a negative humanitarian impact in Central Africa as they have caused the displacement of people from West Africa to Central Africa, as well as internal displacements in Cameroon and Chad.

1.7 ENCOURAGING ECONOMIC OUTLOOK, BUT OVERSHADOWED BY RISKS RELATED TO THE CRISIS IN UKRAINE AND POSSIBLE RESURGENCE OF THE HEALTH CRISIS

The combined efforts towards COVID-19 vaccination and clearance of domestic payment arrears are likely to support economic recovery in Central Africa. Such economic recovery could be achieved by boosting consumption and private investment. This should lead to a rebound in the construction, public works, agropastoral and tourism sectors, as well as a probable improvement in world commodity prices.

The short-term outlook for the Central Africa region points to recovery in economic growth and improvement of key macro-economic aggregates. The macro-economic outlook projects average real GDP growth of 4.6% for both 2022 and 2023. Inflation is expected to increase in the region compared to 2021 (3.9%). Furthermore, the average inflation rate is expected to stand at 5.7% and 5.6% in 2022 and 2023 respectively, exacerbated by high commodity prices, drought and export restrictions in major food exporting

countries, and global supply shortages due to the war in Ukraine. The budget balance is expected to improve over the next two years to -0.3% and 0.1% of GDP in 2022 and 2023. The region's current account balance is projected at +0.3% and -0.8% of GDP in 2022 and 2023 respectively.

However, in 2022, economic activity in Central Africa is expected to evolve in an uncertain environment despite signs that augur the end of the COVID-19 health crisis. The low COVID-19 vaccination rate, a factor that contributes to the persistence of the pandemic, could slow down the sustainable recovery of economic activity. Furthermore, a new geopolitical crisis in Europe culminated in the outbreak of the conflict between Russia and Ukraine in February 2022, with its consequences for the economies of the region. The consequences are numerous: higher prices for wheat products, of which Russia is the world's leading producer, soaring costs of fossil fuels, particularly oil and gas, and higher costs of sea, air, and rail transport. In addition, the world economy is likely to experience recession as a result of economic sanctions imposed by both sides.

The Russia-Ukraine war has caused a global economic shock that is affecting the region at a time when it is struggling to recover from the health crisis. Furthermore, this new global shock comes at a time when the countries have little or no room for manoeuvre to deal with it. Soaring oil and food prices are weighing heavily on the external and budget balances of the countries, most of which are commodity importers, and heightening fears of likely food insecurity. High food prices will disproportionately hurt the most vulnerable segments of the population, especially in urban areas. However, the crisis also appears to be an opportunity for net oil exporting countries, which could benefit from favourable prices for exports of oil products whose prices on the international market are rising.

Indeed, the war in Ukraine has caused major disruptions in supply chains and led to soaring prices for several commodities. For most of these commodities, prices are expected to be significantly higher in 2022 than in 2021, and to remain so. The price of Brent crude oil is expected to average USD 100 per barrel in 2022, 42% increase over 2021 and its highest level since 2013. Non-energy commodity prices are also expected to rise by about 20% in 2022, with the highest increases for commodities of which Russia and/or Ukraine are key exporters. Wheat prices, in particular, are expected to rise by more than 40% in 2022, reaching a record level in nominal terms. Although prices are generally expected to peak in 2022, they are likely to remain much higher than expected.

In general, the war in Ukraine is expected to have a significantly negative impact on growth in sub-Saharan African countries, particularly those in Central Africa, with higher inflation and lower economic growth. Indeed, Russia and Ukraine are major world producers of wheat. In 2019, Russia became the world's leading wheat exporter and Ukraine the fifth (OEC, 2021). Consequently, the war could lead to a decline in global supply, resulting in higher prices in importing countries, especially Central Africa countries that are net importers of wheat and other wheat-based manufactured food products. However, some countries in the region could benefit from the war through the price effect. Indeed, oil-producing countries such as Congo, Equatorial Guinea, Chad, Cameroon, and Gabon could benefit from higher crude oil and gas prices to boost their economic growth in 2022. Similarly, the suspension of Russian energy exports to the European Union could boost exports from some CEMAC countries in 2022. For example, French imports from CEMAC countries increased by 42% in 2020. The increase was mainly due to hydrocarbon imports from Chad, which accounted for 46% of France's total imports from the CEMAC zone in 2020 (DGT/France, 2020).



Table 3: Projections of key macroeconomic aggregates, 2022-2023

	Real GDP Growth Rate (%)		Inflation Rate (%)		Overall budget balance, including grants (as % of GDP)		Current account balance, including grants (as % of GDP)	
	2022	2023	2022	2023	2022	2023	2022	2023
Cameroon	3.8	4.6	4.7	2.8	-1.6	-0.2	-2.6	-3.1
CAR	2.2	3.6	5.5	4.7	-4.6	-4.4	-11.3	-6.4
Chad	2.9	3.1	4.3	3.8	-0.1	-0.5	-0.4	-4.8
Congo	4.3	4.6	3.5	3.2	19.4	8.7	17.2	7.9
DRC	6.1	6.7	8.4	9.8	-3.7	-2.8	0.0	0.1
Equatorial Guinea	5.8	-3.1	5.1	5.7	3.7	4.1	-1.3	-2.1
Gabon	2.8	3.7	3.5	3.2	1.3	3.0	0.8	-1.1
Central Africa	4.6	4.6	5.7	5.6	-0.2	0.1	0.2	-0.9

Source: AfDB Projections, September 2022.

The major risks to the region's macroeconomic outlook in 2022 concern the weak impact that the global economic recovery could have on international demand for countries in the region (erratic price trends for export commodities, weak external demand for countries in the region), the security situation in the region, persistent deficits in certain factors of production, particularly energy, and climatic disasters, particularly floods and drought, which could affect agricultural output.

Finally, it is recommended that the following actions be pursued in the short term: (i) preservation of the lives of the

population through widespread vaccination campaigns; and (ii) protection of vulnerable people by maintaining social inclusion measures and pursuing the consolidation of public finance. In the medium term, measures should be taken to: (i) increase investments in the health and education systems; (ii) reduce debt-related vulnerability; (iii) strengthen internal resource mobilisation and financing of the region's economies; (iv) reduce food dependence on the outside world; (v) diversify the economy, particularly export products; (vi) reinforce the coordination of various supranational policies; and (vii) consolidate national and regional statistical production systems.

CHAPTER 2

CLIMATE RESILIENCE AND ENERGY
TRANSITION IN CENTRAL AFRICA

This chapter on climate change and a just energy transition in Central Africa attempts to summarise knowledge on climate change in Central Africa and present the results.

Key Messages

- The analysis of historical data for the seven (7) Central Africa countries shows a rapid increase in mean temperature (+0.38°C) over the past 30 years (1990-2020).** Furthermore, the low figures for the variation coefficient and standard deviation suggest not only that the data are clustered around the mean, but also that the variation in climate variables is regular. The increase in mean temperature is higher (over 0.5°C increase) in countries such as Congo (+0.67°C), Gabon (+0.65°C), Equatorial Guinea (+0.54°C), while it is less in DRC and almost zero in Chad.
- This trend is also accompanied by multiple disruptions** related to rainfall, impacts on the natural ecosystem, as well as human and social production systems (agriculture, forestry, fisheries, urbanisation, etc.). Central Africa is an area with high levels of rainfall, except for Chad. On average, Central Africa countries receive about 1,490 millimetres (mm) of rainfall per year, with Equatorial Guinea and Chad representing the two extremes with nearly 2,196 mm and 343 mm respectively.
- Climate change poses a threat to the population and economic infrastructure.** The analysis of policy responses to climate change and energy transition in Central Africa indicates that all the countries in the region are State Parties to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the various clean development mechanisms. The countries have invested in the development of institutional, legislative, and regulatory frameworks to address climate risks, with international community support.
- Central Africa countries have all adopted environmental policies and measures in line with international practice.** In this regard, they ratified the Paris Agreement in December 2017 and have all prepared their Nationally Determined Contributions (NDCs) and National Climate Change Adaptation Plans (NCCAPs). The various climate change mitigation and adaptation policies and strategies are summarised in the NDCs and NCCAPs, which require significant funding. For example, DRC requires a total investment of USD 48.68 billion (86.4% of GDP) for its action plan to reduce greenhouse gas emissions by 21% by 2030.
- Energy transition remains a challenge for Central Africa countries.** In addition to the current constraints, the countries are already facing a large energy deficit. None of the countries in the region has a real energy transition strategy to date.

2.1 CLIMATE VULNERABILITIES AND THEIR SOCIO-ECONOMIC IMPACTS ARE THE REALITIES OF CLIMATE CHANGE IN CENTRAL AFRICA

2.1.1 Analysis of historical climate data: rising temperatures and declining rainfall throughout the region

Over the past three decades (1990-2020), average temperatures in Central Africa have been 25.24°C. Chad has recorded the highest temperatures at around 27°C, while the other countries have temperatures averaging around 24-25°C. An analysis of the historical data of the seven countries of Central Africa reveals an accelerated increase in average temperature (+0.38°C) over the past thirty years (1990-2020). Moreover, low values of the variation coefficient and standard deviation suggest that, not only are the data grouped around the average, but also that the variation of climate variables is regular (Tables 4 to 6). The increase in average temperature is more pronounced (over 0.5°C increase) in countries such

as Congo (+0.67°C), Gabon (+0.65°C), Equatorial Guinea (+0.54°C), but lower in DRC and almost zero in Chad (Table 4). The average rise in temperature appears to be driven more by the increase in maximum temperature (+0.48°C) than by the increase in the minimum temperature (+0.34°C), with the same trends observed in all the countries (Tables 6 to 8).

The annual mean temperature in Cameroon rose by 0.7°C between 1960 and 2007 with wide regional disparities (Ministry of Environment, Nature Protection and Sustainable Development, MINEPDED, 2015). In DRC, the average annual temperature increased by 0.17°C per decade over the past 30 years (Ministry of Environment and Sustainable Development, 2021). In Chad, average maximum and minimum temperatures followed the same upward trend with, however, more significant variations in minimum temperatures since 2003 (First National Climate Change Adaptation Plan of the Republic of Chad, 2021; Brodie et al., 2019). Minimum temperatures rose by 2°C over the 1951-2010 period and maximum temperatures by 1°C, with high values between 2002 and 2010.

Table 4: Central tendency and dispersion of average temperatures from 1990 to 2020

	CAR	Cameroon	DRC	Congo	Gabon	Equatorial Guinea	Chad	Central Africa
Mean temperature (°C)	25.30	24.87	24.37	24.85	25.35	24.53	27.39	25.24
Temperature anomaly between 2020 and 1990 (°C)	0.30	0.39	0.14	0.67	0.65	0.53	-0.04	0.38
Standard deviation	0.30	0.23	0.19	0.28	0.26	0.24	0.35	0.27
Variation coefficient (in %)	1.18	0.94	0.78	1.15	1.04	0.99	1.26	1.05

Source: Climate Change Knowledge Portal, World Bank, 2022.

Table 5: Central tendency and dispersion of maximum temperatures from 1990 to 2020

	CAR	Cameroon	DRC	Congo	Gabon	Equatorial Guinea	Chad	Central Africa
Mean temperature (°C)	31.80	30.33	30.05	29.61	29.55	29.55	35.36	30.89
Temperature anomaly between 2020 and 1990 (°C)	0.33	0.57	0.03	0.67	0.66	0.66	-0.01	0.42
Standard deviation	0.28	0.23	0.19	0.29	0.27	0.27	0.34	0.26
Variation coefficient (in %)	0.89	0.75	0.62	0.96	0.90	0.90	0.96	0.85

Source : Climate Change Knowledge Portal, Banque mondiale, 2022

Table 6: Central tendency and dispersion of minimum temperatures from 1990 to 2020

	CAR	Cameroon	DRC	Congo	Gabon	Equatorial Guinea	Chad	Central Africa
Mean temperature (°C)	18.86	19.46	18.74	20.15	21.21	20.58	19.46	19.78
Temperature anomaly between 2020 and 1990 (°C)	0.27	0.21	0.24	0.66	0.65	0.43	-0.06	0.34
Standard deviation	0.32	0.30	0.20	0.29	0.27	0.24	0.36	0.28
Variation coefficient (in %)	1.69	1.53	1.08	1.42	1.25	1.17	1.84	1.43

Source: Climate Change Knowledge Portal, World Bank, 2022.

Regarding precipitation patterns observed over the past 30 years, Central Africa, except of Chad, remains an area with high levels of rainfall, far higher than the continental average (Table 7). On average, the countries of Central Africa receive about 1,490 mm of rainfall per year. The two extremes are Equatorial Guinea which receives almost 2,196 mm of rainfall and Chad which receives 343 mm. An analysis of the historical data for the 7 countries of Central Africa reveals a reduction in total annual rainfall (-31.69 mm) over the past 30 years (1990-2020) as well as two trends: a decrease in precipitation in Equatorial Guinea (-237.9 mm), Gabon

(-160.3 mm) and Cameroon (-42.6 mm) and an increase in Chad (+125.74 mm), CAR (+52.82 mm), DRC (+21.3 mm) and Congo (+19.19 mm). Maidment et al. (2015) confirm the absence of a homogeneous trend in Central Africa where they note an increase in precipitation volume in some countries and a decrease in others. However, Gutiérrez et al. (2021) observe a global reduction in average precipitation and an increase in precipitation deficits.

In **Cameroon**, a general but gradual decrease in rainfall has been observed. According to MINEPDED (2015), the rate of

decrease has been about 2.2 % per decade since 1960. In DRC, an increase of about +1.7 to +4.5°C in the mean temperature (compared with the 1971 to 2000 reference period) is probable by the end of the century. Haensler et al. (2013) add that a significant increase in the lengths of heat

waves and reduction in the duration of cold periods is to be expected. Chad experienced a period of wet years in the 1970s, then two decades of drought (1970-1980) and from the 1990s, rainfall improved overall, but is highly erratic (Broudic et al, 2019).

Table 7: Central tendency and dispersion of average rainfall from 1990 to 2020

	CAR	Cameroon	DRC	Congo	Gabon	Equatorial Guinea	Chad	Central Africa
Mean temperature (°C)	1 357.31	1 588.36	1 505.22	1 623.95	1 813.51	2 195.86	342.75	1 489.57
Temperature anomaly between 2020 and 1990 (°C)	52.82	-42.67	21.30	19.19	-160.32	-237.90	125.74	-31.69
Standard deviation	39.87	60.28	48.60	98.54	135.30	285.00	35.44	100.43
Variation coefficient (in %)	2.94	3.80	3.23	6.07	7.46	12.98	10.34	6.69

Source: Climate Change Knowledge Portal, World Bank, 2022.

In addition to variations in temperature and rainfall, in **Cameroon** an increase has been observed in extreme events such as droughts, storms and violent winds, floods and mass movements (landslides, mud flows, rock falls, mudslides, etc.) caused by intense precipitation (MINEPDED, 2015).

2.1.2 Analysis of projected climate data: rising temperatures, rainfall and climate extremes

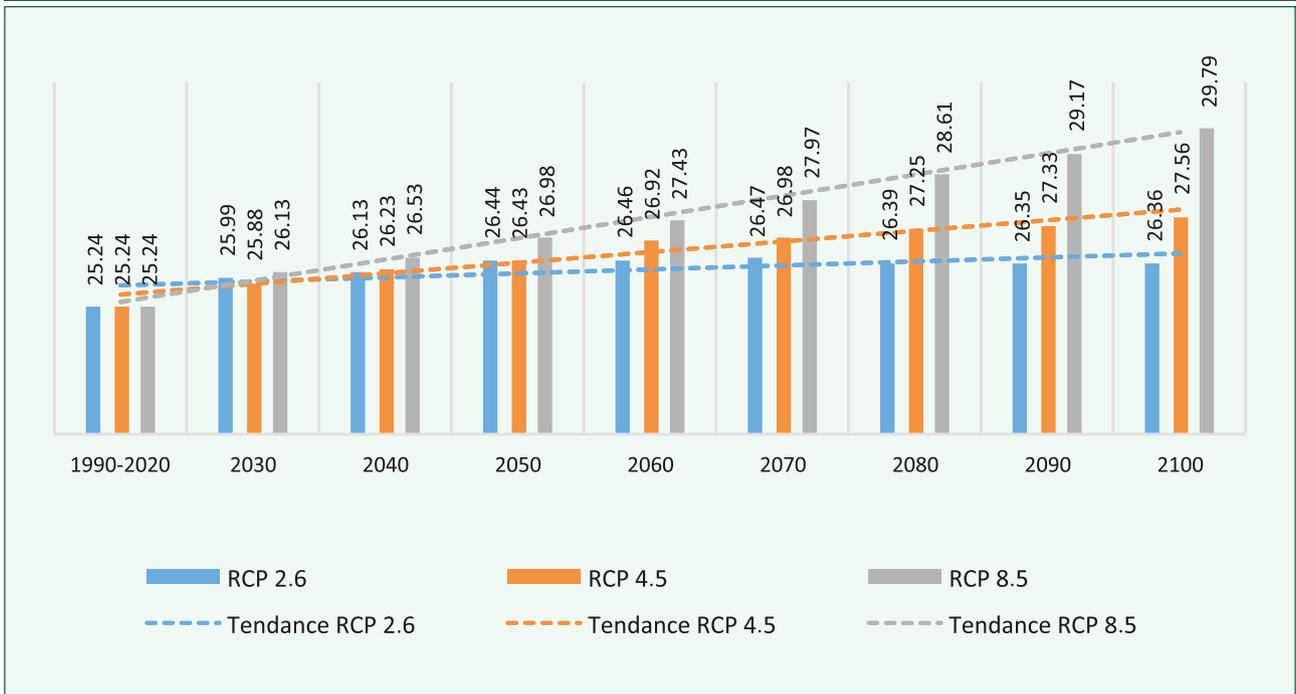
The analysis of projected data reveals that, overall, the mean temperature in Central Africa will rise by the end of the century (2100), according to all GHG concentration assumptions. An increase in mean, minimum and maximum temperatures in Central Africa between entre 1°C (RCP 4.5) and 4°C (RCP 8.5) is expected compared to the mean for the past thirty years (Figures 17 et 18). The projections are in line with the work of authors like Fotso-Nguemo et al. (2017), Diedhiou et al. (2018), Mba et al. (2018) and Tamoffo et al. (2019). The country analysis shows the same trend.

In **Cameroon**, recent climate projections, especially in the north of the country (MINEPDED, 2015; Cameroon NDC, 2021) indicate an increase in temperature. In **Chad**, simulations show a rise in temperatures of about 1.2°C to 4.5°C by 2030, 2050 and 2100 (First National Climate Adaptation Plan of the Republic of Chad, 2021). Rising temperatures will be harmful to production systems, ecosystems and populations. Chad will be the hardest hit country, for it already has high temperature levels and low precipitation volume. In **DRC**, the annual mean temperature has risen slightly over the last 30 years to +0.17°C per decade. In future, global climate model projections suggest a sharp increase in mean temperature. By the end of the century, a temperature increase of +1.7 to +4.5°C (compared to the reference period of 1971 to 2000) is probable. A sharp increase is also expected in the duration of heat waves and a sharp reduction in the duration of cold periods (Ministry of Environment and Sustainable Development of DRC, 2021). In **CAR**, the climate is characterised by an increase in annual mean temperature of about 0.3°C per decade, which began in the 1970s. Temperature projections show an increase of

0.7 to 1.5°C by 2030 for the RCP 8.5 scenario and of 1.4 to 2.7°C by the middle of the 21st century compared to the

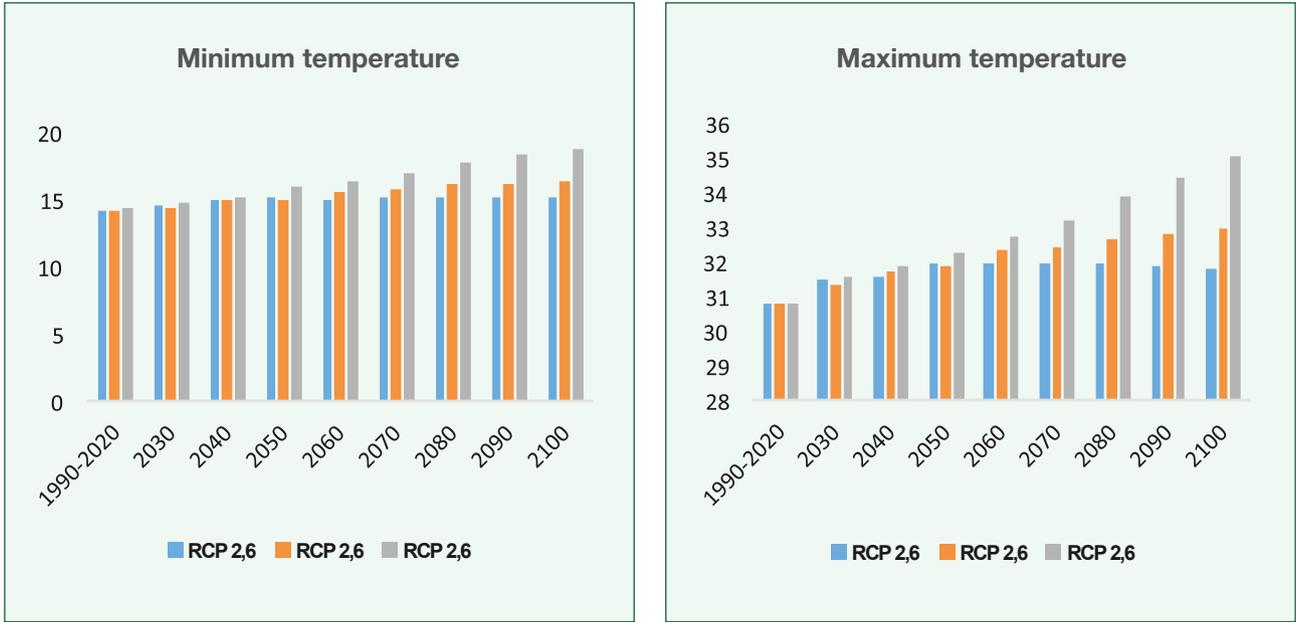
1986-2005 reference period (Ministry of Environment and Sustainable Development of CAR, 2021).

Figure 17: Mean temperature trends in Central Africa by 2100



Source: Climate Change Knowledge Portal, World Bank, 2022.

Figure 18: Minimum and maximum temperature trends in Central Africa by 2100

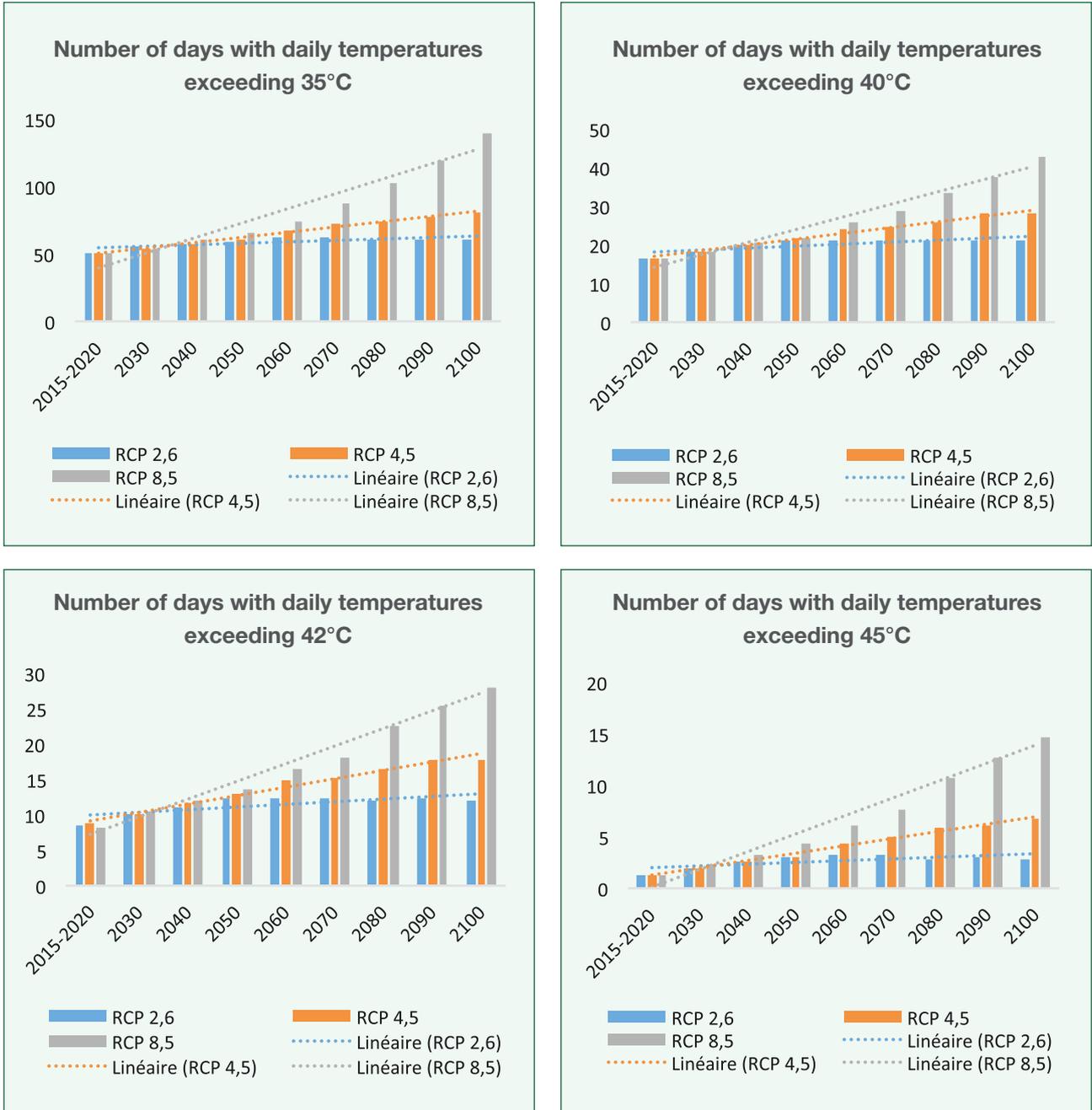


Source: Climate Change Knowledge Portal, World Bank, 2022.

The data analysis also shows an increase in the number of days (9 to 90 days per year) during which the maximum temperature reaches 35°C according to GHG concentration assumptions by 2100 (Figure 19). **Gabon** and **Equatorial Guinea** are expected to record the lowest number of days with temperatures reaching 35°C while the other countries are expected to experience a significant increase in the number of days with temperatures reaching 35°C. By 2100, and according to GHG concentration assumptions, the increase in the number of days, during

which the maximum temperature reaches 40°C, 42°C and 45°C respectively, varies between 5 and 26 days, 3 and 20 days and 2 to 13 days per year (Figure 19). The increase in the number of days with temperatures exceeding 40°C only concerns three countries in the area, i.e. Chad, CAR and, to a lesser extent, Cameroon. These projections are in line with those of Gutiérrez et al. (2021) and Ranasinghe et al. (2021) in Central Africa. An increase in the number of extreme heat days would be a threat to the population’s health.

Figure 19: Number of days during which the mean temperature exceeds 35°C, 40°C, 42°C and 45°C respectively in Central Africa by 2100

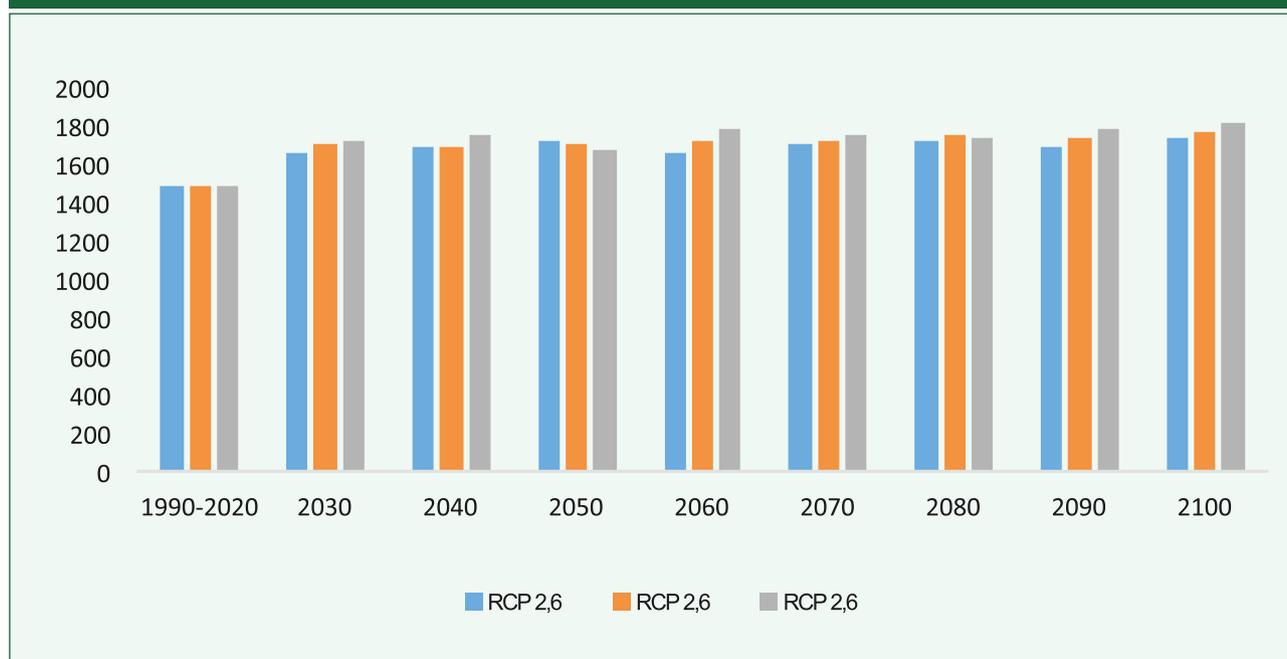


Source: Climate Change Knowledge Portal, World Bank, 2022.

The analysis of projected data³ shows that, overall precipitation volumes in Central Africa will increase by the end of the century (2100), according to all the GHG concentration assumptions. On average, Central Africa will receive between 13% (RCP 2.6) and 22% (RCP 8.5) of the volume of additional

precipitation by the end of the century compared to total precipitation volume over the past thirty years (Figure 20). Coppola et al. (2014) and Pinto et al. (2015) observed the same upward trend in annual mean precipitation of 10 to 25%.

Figure 20: Rainfall trends in Central Africa by 2100



Source : Climate Change Knowledge Portal, Banque mondiale, 2022

However, this general trend masks certain disparities. Gabon and Equatorial Guinea will receive about 400 to 500 mm of additional rainfall while Cameroon, Congo and DRC will respectively receive 254-300 mm, 270-296 mm, 250-420mm of additional rainfall by the end of the century. Lastly, increases in precipitation volume will be modest in CAR and erratic in Chad which will record a decrease or slight increase in precipitation volume according to GHG concentration

assumptions by the end of the century (Figure 22).

In Cameroon, the scenarios predict strong variability of future precipitation with values of -12 to +20 mm of rain per month (from -8 to +17 %) in the 2100s (Cameroon’s NDC, 2021). Rainfall projections for future decades in Chad present contradictions from one document to another which makes it impossible to reach a consensual conclusion on a relatively

³The serious shortage of weather station data on the regions has created great uncertainty regarding estimated precipitation trends observed and mistrust of changes, in particular, extreme, in precipitation.

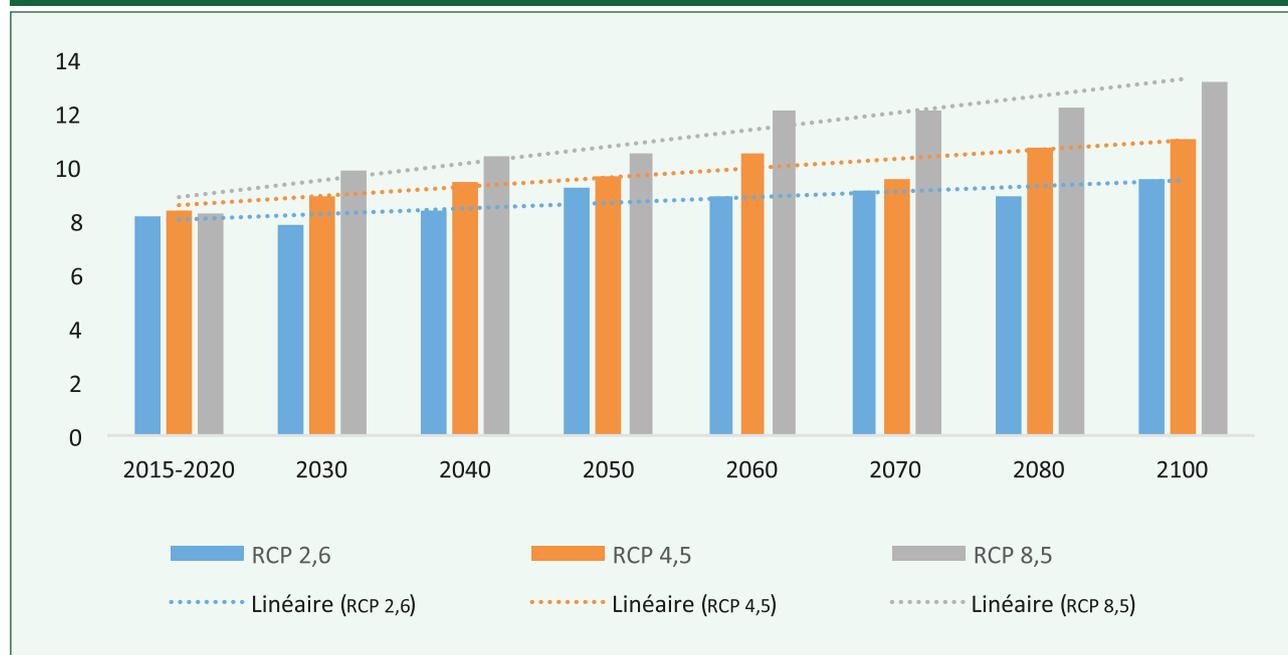
cohesive scenario (First National Climate Change Adaptation Plan of the Republic of Chad, 2021; Broudic et al., 2019; Institute for Research and Application of Development Methods, IRAM, 2013).

Rainfall extremes will also trend upwards. The number of days with rainfall above 20 mm will increase by a few days in all the countries of Central Africa (between 1 to 5 days) with little variation by country (Figure 21). In addition, the intensity of extreme precipitation will increase (high level of confidence) (Dosio et al., 2019; Gutiérrez et al., 2021; Ranasinghe et al., 2021; Seneviratne et al., 2021) and this could cause flooding in the zone.

Climate extremes are expected to increase. Climate changes will also result in a rise in the number of extreme climate events, droughts, floods, land and coastal erosion,

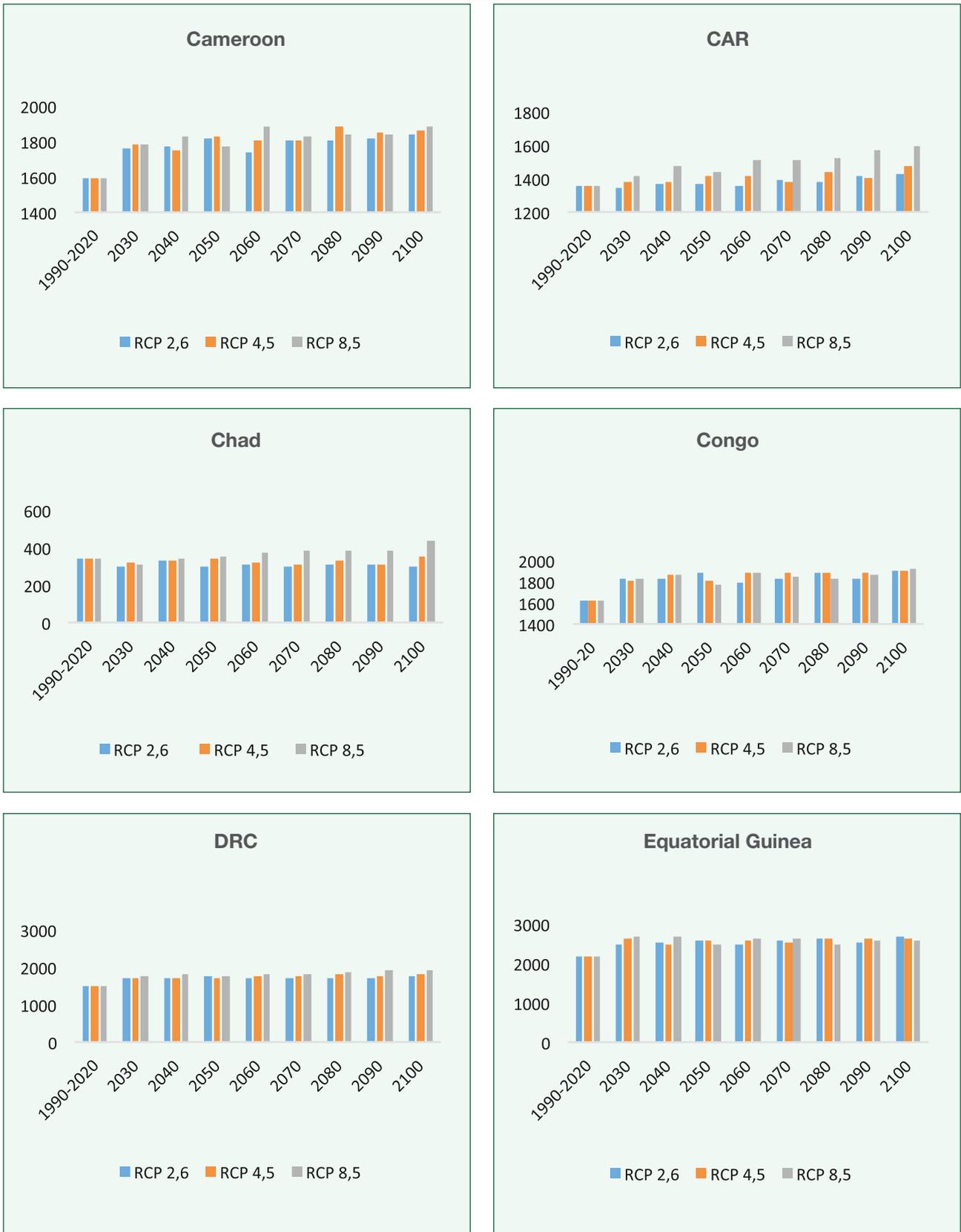
land shifts and major wind events. In **Cameroon**, climate change will cause an increase in the erosive potential of water courses, deforestation, recurrent droughts in the north of the country, instability in the length of the rainy seasons as well as rising sea levels of between 9 to 38 cm in 2050, then 86 cm in 2100 (MINEPDED, 2015). The projections indicate at least five to ten floods per year depending on the intensity of the rain (Cameroon Vulnerability Assessment, 2021). **Chad** is expected to experience an increase in the number of bushfires in terms of intensity and frequency (First National Climate Change Adaptation Plan of the Republic of Chad, 2021). Coastal erosion and increased flooding are expected to worsen in Gabon in future. In **DRC**, climate change is characterised by long dry seasons, violent precipitations causing flooding, land degradation and volcanic eruptions. **Equatorial Guinea** will also experience rising sea levels with more frequent storms.

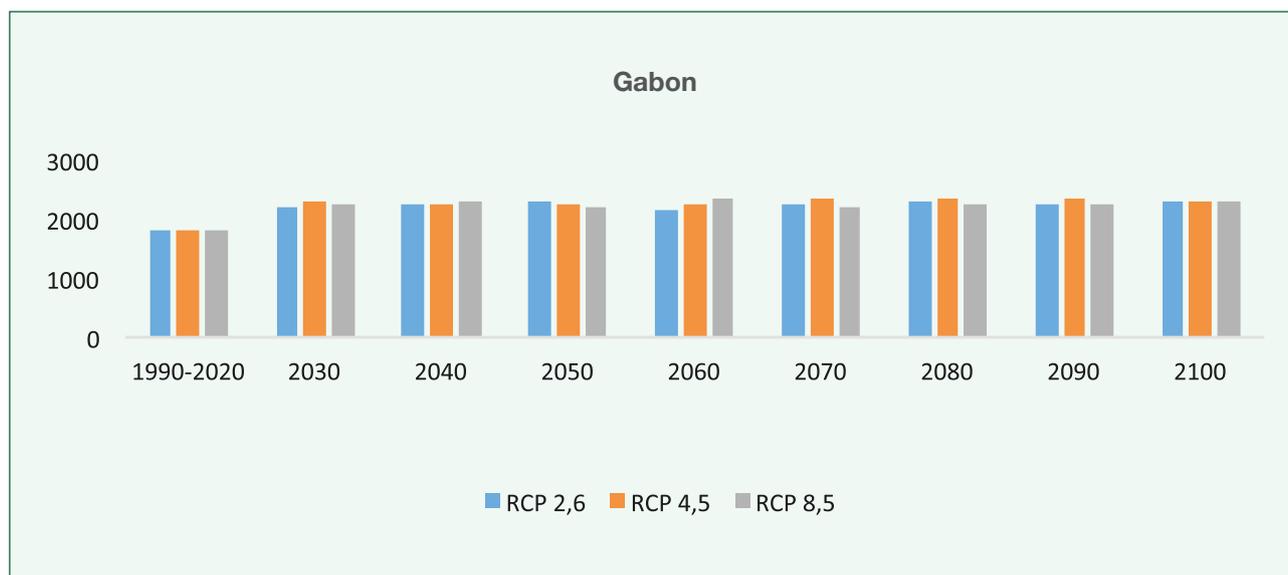
Figure 21: Number of days with rainfall above 20mm according to the different climate scenarios



Source: Climate Change Knowledge Portal, World Bank, 2022.

Figure 22: Precipitation trends per country by 2100, by RCP





Source: Climate Change Knowledge Portal, World Bank, 2022.

2.2 CLIMATE CHANGE AND EXTREME WEATHER EVENTS WILL HAVE MAJOR SOCIO-ECONOMIC IMPACTS IN CENTRAL AFRICA

2.2.1 Agriculture, food systems and water resources are expected to be impacted

Climate change will have socio-economic impacts on the region. At regional level, these will assume the form of increases in temperature, precipitation volume and the frequency of extreme climate events. Variations in climatic factors (temperature and precipitation) will affect the availability of water for humans, crops and animals and could create water stress (water shortages or surpluses depending on the case), increased pressure from pests, an increase in plant diseases, soil degradation as well the loss of soil fertility. For its part, the impact of climate change on the agricultural sector will depend on the population's adaptation capacity. Climate change will not only impact agricultural production (plant, animal and aquaculture) but also the processing, storage, distribution and consumption systems (Table 8).

Overall, the studies show that climate change could affect agricultural production. These climate events are expected to cause an increase in precipitation volume, temperature and climate extremes. The rising volume of water coupled with a scarcity of resources to manage this water surplus, could cause floods, harm the growing cycle of cultivated or wild plants and induce an increase in attacks by pests. Moreover, the strong variations in temperature could create frequent water stress, increase evapotranspiration and reduce the area of arable land.

Climate change is expected to have different impacts on men and women. Economic and social inequalities (unequal access to economic and social capital) could heighten the impacts of climate change which would be felt more by women. Indeed, because of the unequal roles they are assigned, the lower social status conferred upon them, their lack of access to resources and their weak participation in household and workplace decision-making processes, women are expected to be more severely impacted by climate change.

In **DRC**, climate change could cause a change in rainfall patterns linked to higher temperatures, thereby causing an increase in extreme hydrological phenomena such as floods, droughts, landslides and the disruption of aquatic ecosystems services (Ministry of Environment and Sustainable Development of DRC, 2021).

In **Cameroon**, studies show that climate change could increase evaporation and reduce relative humidity, reduce agricultural yields and increase the amount of harvest losses (MINEPDED (2015); Cameroon's NDC, 2021). These agricultural losses are expected to increase famine and food insecurity. Climate change could also affect food availability through the harmful effects of adverse weather conditions on road and marketing infrastructure. Climate extremes could disrupt or impede agricultural producers' access to farms and product outlets. Moreover, since Cameroon is the breadbasket of Central Africa, the harmful effects of climate change on the production and transportation of agricultural products could threaten the region's food security.

In **CAR**, climate change could result in drought and excessive rainfall that could lead to an overall decrease in production (cattle, crops and labour), lack or non-availability of food, decrease in monetised income, worsening of poverty and population migration to other areas, conflicts or social unrest, environmental degradation and central government dependency on the outside world (Ministry of Water, Forests, Hunting, Fishing and Environment of CAR, 2008). Climate change could also cause a reduction in activities and forest revenue.

In **DRC**, increased rainfall intensity could damage crops and deteriorate fertile soils, which could, in turn, increase crop diseases (USAID, 2018). Prolonged periods of drought and rising temperatures could step up pressure on water resources, stress on plants and reduce their yields which could prompt farmers to extend their cultivated land into the forests. The extension of cultivated land into the forests is the main cause of deforestation in the Congo Basin (USAID, 2018). Climate change could also cause scheduling changes in key activities affecting productivity and modifying crop selection as well as farmers' production and processing practices. Rising temperatures could also modify parasite and pathogen dynamics.

In **Chad**, climate change has led to a 75% reduction in the water course flow rates and accelerated the evaporation of Lake Chad water by about 2,500 to 3,000 mm per year. This decrease in the Lake's water level has caused a 60% drop in fishery production and led to land and pasture degradation. This situation has reduced agricultural production capacity in the region, the availability of fodder by about 46.5% in some areas in 2006 and in livestock and biodiversity (FAO, 2009). Moreover, climate change is expected to result in a decline in the amount of land available for agricultural production, an extension of the distribution area for crop pests, a significant decrease in food crop yields and production (10 to 25%) and an increase in seasonal cattle migration.

In **Gabon**, climate change could affect plant and fishery production (about 1.5% of GDP) as a result of an increase in extreme rainfall episodes combined with rising temperatures.

Table 8: Impact of climate change on water resources, agriculture and food systems in central Africa

Exposure	Exposure	Impact
Temperature	Increase in temperature	<ul style="list-style-type: none"> • Decrease in agricultural productivity (plant and animal) • Reduction in, or disappearance of some water sources and scarcity of available water for agricultural activities • Increased evaporation and reduction of soil humidity • Higher harvest losses • Shortening of the growing cycle • Reduction in, or scarcity of pastureland • High cattle mortality and morbidity rate • Increased number of cattle in mountainous areas • Famine and food insecurity • Seasonal cattle migration
	Heatwaves	<ul style="list-style-type: none"> • Disruption to agricultural calendars • Drying up and destruction of crops • Low productivity • Reduction in, and drudgery of human labour • Reduction in the quantity of water for livestock • Reduction in, or scarcity of pastureland
	Dust storms, dry winds	<ul style="list-style-type: none"> • Poor germination and disappointing harvests • Drying up of harvests • Reduction in, suspension of human labour
Precipitation	Precipitation volume	<ul style="list-style-type: none"> • Soil erosion and loss of soil fertility • Development of certain crop disease vectors • Decline in agricultural activity • Decline in wood productivity • Difficulty in accessing farms and produce-marketing outlets • Pollution of aquatic ecosystems • Silting up of water courses and loss of fishery potential • Loss of means of livelihood and impoverishment
	Rainfall variability	<ul style="list-style-type: none"> • Disruption to agricultural calendars and plant growing cycles • Heavier rainfall with land erosion • Loss of soil fertility • Flooding of harvests • Low rate of groundwater recharging • Drop in rainfed crop yields • Lower net incomes from crops
Extreme events	Drought	<ul style="list-style-type: none"> • Drying up and destruction of crops • Drop in productivity • Scarcity of drinking water • Reduction in and drudgery of human labour • Increased slash-and-burn cropping, destruction of pastureland
	Floods	<ul style="list-style-type: none"> • Destruction of crops, pastureland and livestock • Soil leaching
	Land movements	<ul style="list-style-type: none"> • Destruction of crops, houses, assets, infrastructure, pastureland and livestock
	Erosion	<ul style="list-style-type: none"> • Destruction of crops, soils, pastureland and livestock • Destruction of infrastructure
Sea level	Rising sea level	<ul style="list-style-type: none"> • Destruction of infrastructure • Coastal erosion and soil salinization

Source : Portail de connaissances sur le changement climatique, Banque mondiale, 2022.

2.2.2 Transport, urban development would not be spared

The most relevant and major risks/hazards for these sectors are: high temperatures (excessive heat), drought, intense rainfall (floods), rising sea levels and violent winds. Road transport infrastructure vulnerability is observed during periods of extreme heat which melts the asphalt on paved roads. This generally generates costs in terms of renovation with more durable materials (Table 9). Whether there is flooding on paved roads or not, water seeps into the base courses and sub-base layers of asphalted roads.

The vulnerability of air transport infrastructure is linked to a rise in extreme temperatures and an excessive increase in sunshine. This could result in the deterioration of asphalt on runways. In towns and cities, certain structures (administrative buildings, dwellings, urban roads and social

infrastructure) are likely to be severely impacted by extreme rainfall while others will be impacted by excessive temperatures which are, for example, responsible for hot spots in built-up areas.

As regards extreme rainfall and high-water flooding, inadequate drainage (poor calibration of structures) and wastewater runoff structures, as well as the blocking of existing ones by household waste are all elements that impede the natural drainage of surface run-off water. Climate change could cause artificial warming of towns and cities. Coupled with a reduction in the number of green spaces, these changes could contribute to the modification of the thermal and rainfall balance and an increase in maternal, neonatal and infant and child mortality as well as by a high morbidity rate. Climate projections as estimated in Central Africa with poor sanitation capacity and chronic malnutrition could increase morbidity and mortality rates in urban areas.

Box 3. Impact of climate change on the transport sector in Chad

Heat waves and rising temperatures could impact infrastructure and human settlements, for they can cause cracks and more rapid deterioration of roads, bridges and protective structures. Chad is heavily dependent on road transport, but the country's road density varies between 6 and 40.5 km per 1 000 km² and many unpaved roads become impassable during the rainy season when many villages and rural communities become isolated.

Climate change will also have a significant impact on human settlements and economic production sites, especially in urban areas with high population densities like N'Djamena, Moundou or Sarh. Informal structures are particularly vulnerable to extreme weather events: makeshift houses are often built in unstable geographic areas where flooding could destroy dwellings, cause water pollution, injuries or fatalities. Their inhabitants generally have weak adaptation capacity to such events because of their extreme poverty and lack of appropriate infrastructure to mitigate the risk.

Source: First NCCAP of the Republic of Chad, 2021.

Table 9: Impact of climate change on the transport sector, urban development and towns and cities in Central Africa countries

Exposure	Risks/Hazards	Impact
Temperature	Increase in temperature	<ul style="list-style-type: none"> • Increase in the number of hot nights • Decline in air quality in towns and cities
	Heatwaves	<ul style="list-style-type: none"> • Increase in the number of hot nights • Decline in air quality in towns and cities • Increased energy consumption especially in towns (air-conditioning, refrigeration, etc.)
	Dust storms, dry winds	<ul style="list-style-type: none"> • Increase in number of sand dunes and abandonment of houses • Destruction of dwellings and buildings
Rainfall	Rainfall volume and variability	<ul style="list-style-type: none"> • Destruction of dwellings and buildings • Slowdown in infrastructure construction
Extreme events	Drought	<ul style="list-style-type: none"> • Population and community displacements • Social conflicts
	Floods	<ul style="list-style-type: none"> • Increase in deaths and disability in urban and rural areas • Destruction of infrastructure
	Land movements	<ul style="list-style-type: none"> • Increase in deaths and disability in urban and rural areas • Destruction of infrastructure
	Erosion	<ul style="list-style-type: none"> • Destruction of infrastructure
Sea level	Rising sea levels	<ul style="list-style-type: none"> • Destruction of dwellings and other infrastructure • Severe exposure of populations of coastal towns and cities (coastal erosion)

Source: NCCAP and NDCs of the different countries.

2.2.3 Energy: Sector's exposure to climate change should encourage tapping of the region's renewable energy potential in order to achieve the energy transition

The energy sector is exposed to climate risks and hazards, the most relevant and important of which are: high temperatures (excessive heat), drought, heavy rains (flooding) and their distribution as well as violent winds. These climate hazards affect the physical or social environment of the energy sector. The energy system is generally grouped into the following three main segments: generation, transmission and demand (Table 10).

The energy sector is heavily dependent on imports and the dominance of biomass-energy consumption (fuel wood and charcoal). The net energy supply structure reveals the dominance of oil products and biomass energy. Energy production and availability are dependent on climate conditions (rainfall variability and distribution, mean temperature, drought episodes and water availability), while rising temperatures, rainfall variability and distribution, extreme climate events (drought and excessive rainfall), and land degradation and erosion could negatively affect the effectiveness of plant cooling, energy generation and consequently biomass availability. In Central Africa, climate change impacts

could contribute to the depletion of fuel energy resources, increase the distance from wood energy resources and increase their prices.

While the countries of Central Africa have significant oil deposits they import almost all of their petroleum products to meet the population's demand for energy. Oil products are transported to the interior of the country and distributed to service station networks of oil companies established in each area by tankers. Climate projections have predicted an upward trend in precipitation throughout the territory with more frequent temperature extremes which will disrupt the quality of the road network, in particular, sections of the regional corridors as well as rural roads. Increased precipitation in the area with more frequent rainfall extremes will affect transport infrastructure as well as the distribution of oil products.

Hydropower generation is predominant in the region and heavily dependent on inputs of water, mainly rainwater.

The uneven distribution of rainfall and droughts could affect the smooth operation of dams. In DRC, the abundance of surface water resources and likely increase in rainfall will modify surface water flows and could affect the stability of hydropower generation (USAID, 2018).

Moreover, the Hessian type distribution networks are subject to the vagaries of nature.

Rising temperatures and increased precipitation could negatively impact power grids. A rise in temperature could reduce the life span of transformers by about 6 to 9 years and, as a result, increase investments in repairs and infrastructure replacement. Violent winds are a threat to the sector, partly because of the lack and age of transmission infrastructure and power generation, transmission and distribution systems.

Table 10: Impact of climate change on the energy sector in Central Africa countries

Exposure	Risks/Hazards	Impact
Temperature	Increase in temperature	<ul style="list-style-type: none"> • Increased use of electric generators • Increased demand for energy • Low productivity of workers • Increased demand for drinking water • Decline in demand for fuel-wood energy • Difficulty of work on mining sites
	Heatwaves	<ul style="list-style-type: none"> • Increased use of electric generators • Increased demand for energy • Low productivity of workers • Increased demand for drinking water
	Sandstorms, dry and violent winds	<ul style="list-style-type: none"> • Electric power cuts • Damage to industrial facilities
Precipitation	Precipitation volume	<ul style="list-style-type: none"> • Disruption of work on mining sites
	Rainfall variability	<ul style="list-style-type: none"> • Power supply interruptions • Increase in power outages
Extreme events	Drought	<ul style="list-style-type: none"> • Intense evaporation in dam reservoirs, especially in dry and sub-dry environments
	Floods	<ul style="list-style-type: none"> • Silting up of hydro-power dams • Damage to industrial facilities
	Land movements	<ul style="list-style-type: none"> • Destruction of electricity transmission poles and lines • Disease and fatalities in mining sites • Loss of productivity (mines) and destruction of facilities
	Erosion	<ul style="list-style-type: none"> • Destruction of electricity transmission poles and lines • Silting up of hydro-power dams and reservoirs • Damage to industrial facilities
Sea level	Rising sea level	<ul style="list-style-type: none"> • Destruction of energy infrastructure • Destruction of hydro-power plants • Destruction of coastal industrial facilities • Increased management costs • Increased costs of relocation • Increased cost of insurance

Source: NCCAP and NDCs of the different countries.

2.2.4 Health would be affected by increases in vector-borne diseases, morbidity and mortality

The human health sector is one of the most vulnerable to climate change according to the findings of several studies published by the Intergovernmental Group of Experts on Climate Change (IGCC) and the World Health Organisation

(WHO). Variations in temperature, irregularity of, and uneven distribution of rainfall as well as severe floods could have mainly negative impacts on public health, especially on the health of vulnerable communities (Dazé et al., 2010; WHO, 2015). Several climate-sensitive diseases have been identified by WHO, including cardiovascular diseases, respiratory infections and diarrhoeal diseases (WHO, 2015) (Table 11).

Malaria, a vector-transmitted disease has, for several years been foremost among the infections and is the main reason for seeking care in the countries of Central Africa. Studies point to a link between the transmission of certain diseases, including malaria, and climate parameters (relative humidity, temperature and rainfall).

Rising temperatures, changing rainfall patterns, or increased relative humidity could alter the ecology of certain vectors,

thereby increasing the prevalence of vector-borne diseases, including malaria. Malaria is the main cause of morbidity and mortality in Sub-Saharan Africa. Rising temperatures, changing rainfall patterns or increased humidity generate the spread of anopheles, extend their life span, reduce larvae development times (more rapid larvae maturity), vector dynamism and an increase in their trophic activity as well as an increase in the frequency of female mosquito blood meals (Ossé et al., 2019 and 2021; Diouf et al., 2013 and 2017).

Box 4: Climate Change impacts on the health sector in DRC

Analyses suggest that by 2030, 65,000 to 80,000 more people in the Democratic Republic of Congo will be exposed to the risk of endemic malaria (10 to 12 months of opportunities for transmission) in areas previously unsuited for the transmission of malaria, mainly in the South-West (Kwango province) and in certain pockets in the East (Kivu provinces). However, in the Central and North-West Regions of DRC, the malaria transmission season will probably be shorter (7 to 9 months compared to 10 to 12 months at present).

Source: Ministry of Environment and Sustainable Development of DRC, 2021.

In **Chad**, a country situated in the ‘meningitis belt’, climate change could lead to a significant increase in the number of cases of meningitis and bring forward its seasonal emergence date (First National Climate Change Adaptation Plan of the Republic of Chad). Furthermore, rising temperatures could lead to periods of heat and triple the risk of heat-related mortality increasing to 12 deaths per 100,000 people (First National Climate Change Adaptation Plan of the Republic of Chad).

In **Cameroon**, climate change will result in the expansion of pandemic diseases such as meningitis, fluorosis, malaria and measles as well as an increase in skin and respiratory infections and cardiovascular diseases. These hazards will cause an increase in morbidity and mortality rates (Table 11).

In **Equatorial Guinea**, climate change will have a negative impact on drinking water supply, thus undermining the health of the population in general and of women and children in particular (Ministry of Environment, Water and Forests of the Republic of Equatorial Guinea, 2019). In **DRC**, the majority of people who have no access to drinking water and sanitation are exposed to diarrhoeal diseases. Moreover, the increase in temperatures and periodic floods creates conditions that are conducive to the growth and spread of bacteria such as *Vibrio cholerae* (cholera). For example, following heavy rainfall and flooding in January 2018, the number of cholera cases rose from 5 to over 100 reported each week in Kinshasa (Ministry of Environment and Sustainable Development of DRC, 2021).

Table 11: Impact of climate change on health in Central Africa countries

Exposure	Risks/Hazards	Impact
Temperature	Increase in temperature	<ul style="list-style-type: none"> • Spread of pandemic diseases such as meningitis, fluorosis, malaria and measles • Increase in skin and respiratory infections • Increase in cardiovascular diseases • People and assets exposed • Many deaths • High morbidity and mortality
	Heatwaves	<ul style="list-style-type: none"> • Spread of meningitis, malaria and measles • Increase in cardiovascular diseases • Skin and respiratory infections
	Sandstorms, dry and violent winds	<ul style="list-style-type: none"> • Increases in flu, coughs and colds • Acute respiratory infections • Eye infections
Precipitation	Rainfall volume	<ul style="list-style-type: none"> • Increase in breeding places for anopheles and other mosquitoes that cause malaria, yellow fever and dengue.
	Rainfall variability	<ul style="list-style-type: none"> • Malfunctioning of sanitation systems
Extreme events	Drought	<ul style="list-style-type: none"> • Spread of meningitis, malaria and measles • Increase in cardiovascular diseases • Significant evaporation of watercourses, water stress
	Floods	<ul style="list-style-type: none"> • Spread of water-borne diseases (cholera, amoebiasis, typhoid, hepatitis) • Deaths by drowning • Contamination and pollution of ground water and aquifers • Silting up and malfunctioning of sanitation systems
	Land movements	<ul style="list-style-type: none"> • Deaths, injuries and loss of dwellings • Destruction of means of livelihood • Destruction of sanitation infrastructure
	Erosion	<ul style="list-style-type: none"> • Contamination and pollution of ground water and aquifers
Sea level	Rising sea level	<ul style="list-style-type: none"> • Contamination and pollution of ground water and aquifers by industrial water and septic tanks

Source: NCCAP and NDCs of the different countries.

2.2.5 Climate Change, sources of migration and conflicts

Stylised facts reveal that, in 2014, about 17.5 million people in the world were displaced by disasters caused by meteorological risks. Over the past seven years, an average of 22.5 million people have been displaced by climate-related natural disasters, i.e. 62,000 people a day. In Central Africa, population displacement has also been observed attributable to several factors, including climatic factors. For example, in **Cameroon**, the repeated attacks by Boko Haram and climate change have led to large-scale displacement in the Far North with over 321,000 internally displaced people (International Organisation of Migration, 2020). In **DRC**, almost 279,000 people have been displaced in the wake of natural disasters such as climate change (IDMC, 2021). In the **Central African Republic**, the number of refugees has reached over 600,000 and the number of internally displaced people is estimated at

almost 100,000 people (IDMC, 2020; HCR, 2020; NRC, 2020). Lastly, in **Chad**, the number of internally displaced people was estimated at 294,671 in 2020 because of the Lake Chad basin crisis (International Organisation of Migration, IOM, 2020).

2.3 BUILDING CLIMATE RESILIENCE IN CENTRAL AFRICA, A NECESSITY TO PROTECT PEOPLE AND INFRA-STRUCTURE

Climate change is a threat to the population and economic infrastructure. The countries of Central Africa ratified the Paris Agreement in December 2017 and have all prepared their Nationally Determined Contributions (NDC) and their National Climate Change Adaptation Plans (NCCAP) (Tables 12 and 13). Their various mitigation and climate change adaptation policies and strategies are summarised in the NDC and NCCAP.

Table 12: Climate change mitigation and adaptation policies and strategies

Country	Adaptation Strategies and Policies	Mitigation Strategies and Policies
Cameroon	<ol style="list-style-type: none"> 1. Improve climate change knowledge in Cameroon 2. Inform, educate and mobilise the population of Cameroon to adapt to climate change 3. Reduce the population's vulnerability to climate change in the country's main agro-ecological sectors and zones 4. Mainstream climate change adaptation into national sector strategies and policies. 	<ol style="list-style-type: none"> 1. Reforestation, sustainable management and assisted forest regeneration 2. Energy efficiency (households, public administrations and private enterprises), mini dams and off-grid hydro-electric dams, development of biogas and waste recycling 3. Increase in solar energy production.
CAR	<ol style="list-style-type: none"> 1. Adjust the policy framework 2. Improve climate change resilience knowledge 3. Develop sustainable agro-silvo-pastoral systems 4. Ensure regional development 5. Improve and develop basic infrastructure 6. Guarantee energy security 7. Improve public health systems 8. Ensure sustainable water resource management. 	<ol style="list-style-type: none"> 1. Forest development of industrial sites 2. Reforestation and rehabilitation of post-mining areas 3. Gradual abandonment of slash-and-burn farming and the burning of agricultural residues 4. Promotion of energy-saving lamps 5. Promotion of improved stoves 6. Promotion of solar energy and biofuels.
Congo	<ol style="list-style-type: none"> 1. Build agricultural sector resilience (smart to address climate change) 2. Promote the sustainable use of natural resources, restore degraded landscapes and increase forest cover 3. Structure and develop sustainable water services including irrigation 4. Develop and sustainably manage terrestrial and marine biodiversity 5. Reduce the vulnerability of climate change impacts on coastal areas, especially in towns 6. See to health and public security 7. Mitigate risks of disasters and minimise damage 8. Establish a climate risk observation, information management and warning system 9. Sensitize population, professionals, administrations and decision-makers 10. Adapt infrastructure construction technical guidelines to climate change impacts; and 11. Mainstream climate change into the development of tourism and handicraft activities. 	<ol style="list-style-type: none"> 1. Reduction of methane (CH₄) emissions from rice farms 2. Electricity generation from biomass residue 3. Promotion of improved stoves 4. Energy savings (households, businesses and power distribution) 5. Reforestation and assisted forest regeneration 6. Incineration and waste recycling plant 7. Promotion of solar and wind energy.

Country	Adaptation Strategies and Policies	Mitigation Strategies and Policies
DRC	<ol style="list-style-type: none"> 1. Manage forest ecosystems and biodiversity 2. Build agricultural sector resilience 3. Manage climate risks in smallholder farming 4. Mitigate the risks of disasters and protect coastal areas 5. Ensure water resource management and environmental sanitation 6. Build health sector resilience 7. Guarantee population's access to energy 8. Protect energy production infrastructure 9. Improve energy efficiency. 	<ol style="list-style-type: none"> 1. Agroforestry, intensive agriculture and resilient farming practices 2. Rural electrification 3. Electricity generation from biomass residue 4. Promotion of improved stoves 5. Energy efficiency (households, businesses and electricity distribution) 6. Reforestation and assisted forest regeneration 7. Incineration and waste recycling plant 8. Promotion of solar and wind energy 9. Promotion of mass transport.
Chad	<ol style="list-style-type: none"> 1. Develop access to water while improving the efficiency of its use 2. Promote intensive water-saving agriculture 3. Safeguard animal and fisheries production and promoting associations 4. Support the exploitation of fishery resources 5. Develop renewable energy in the agricultural and pastoral environment 6. Build the capacity of the cloud-seeding operation to make up for the rainfall deficit in agriculture 7. Strengthen meteorological and climate net works and weather and climate forecasting tools 8. Communicate on climate risks and adaptation scenarios 9. Support environmental initiatives (Special Environment Fund) 10. Opening up agricultural and livestock production areas. 	<ol style="list-style-type: none"> 1. Interconnection of Chad-Cameroon electric power grids to supply Chad with hydro-electric power 2. Generation of solar energy up to 200 GWh/yr. i.e.140 MW/yr. 3. Generation of wind energy up to 50 GWh /year 4. Construction of national 225 kV transmission line to interconnect all the towns 5. Cross-border electrification (between neighbouring towns) 6. Extension and use of butane gas and promotion of efficient domestic energy 7. Development of agro-silvo-pastoral subsectors 8. Environmental protection and sustainable natural resource management 9. REDD+ Project 10. Great green wall project 11. National green belt development programme around major urban centres 12. Environmental risk management 13. Waste recycling plants for major urban centres.

Table 13: Ratification of the Paris Agreement and the various climate-change-related documents prepared

Countries	First NDC	Updated NDC	NCCAP	REDD+	Glasgow Declaration
Cameroon	✓	✓	✓	X	✓
Chad	✓	✓	✓	✓	✓
CAR	✓	X	✓	✓	✓
DRC	✓	✓	✓	✓	✓
Congo	✓	✓	✓	✓	✓
Gabon	✓	X	X	✓	X
Equatorial Guinea	✓	X	✓	✓	X

Overall, the policies and strategies aim to (i) mainstream climate change adaptation and mitigation into national and sectoral plans and policies; (ii) strengthen climate data collection and analytical systems; (iii) strengthen climate change rapid response systems; and (iv) build the capacities of institutional and technical actors for climate change adaptation.

At sector level, building the resilience of Central Africa countries requires the formulation of strategies by sector.

Forestry-related strategies aim to achieve sustainable forest management, reduce deforestation and encourage reforestation. In the agricultural sector, strategies are geared towards the adoption of improved and low-carbon cropping techniques and technologies as well as water and agroforestry management. In the energy sector, strategies aim to improve energy efficiency (households, public administrations and private enterprises), construct off-grid mini-dams, ensure biogas development and waste recycling, develop renewable energy (solar and wind) and protect energy production facilities.

In **Cameroon**, different measures have been taken by the Government to address these climate change challenges. Cameroon intends to ‘transform the climate constraint into development opportunities’ according to its National Climate Change Adaptation Plan (NCCAP). Cameroon’s Nationally Determined Contribution (NDC), adopted in 2015 and revised

in 2021 and covering the 2020-2030 period aims to reduce greenhouse gas (GHG) emissions by 35 % by 2030. In order to reconcile its legitimate growth ambitions and honour the commitments made with respect to its NDC, the Government of Cameroon has dedicated one of the objectives of its National Development Plan to combating climate change. The aim of this objective is to ‘Strengthen climate change adaptation and mitigation measures to guarantee sustainable and inclusive economic growth and social development’. From a strategic and operational and programming standpoint, it is worth noting the existing and implementation of: (i) of the National Forestry Plan following the Tropical Forest Action Plan; (ii) the National Environmental Management Plan adopted in 1996; (iii) the National Climate Change Adaptation Plan; (iv) the Climate Change Adaptation Programme; (v) the National Desertification Control Plan; (vi) the National Biodiversity Management Plan; (vii) the Climate Change Impact Mitigation Strategy; (viii) the National Waste Strategy; and very recently (ix) the National Strategy for Reducing Emissions from Deforestation and Forest Degradation (REDD+).

In **Congo**, the climate change initiatives are summarised in the revised NDC of the Republic of Congo (2021) which was prepared in a context characterised by the ratification of the Paris Climate Agreement in April 2017 and by the signing of the letter of intent on the establishment of a long term partnership aimed at implementing the National REDD+ Strategy

Investment Plan as part of the Central Africa Forest Initiative (CAFI), signed in September 2019. These two basic acts show the Republic of Congo's high level of political commitment and its firm determination to work towards sustainable development by promoting the green economy and the conservation and sustainable management of forest ecosystems. Congo wishes to be a regional leader in sustainable forest management and combating climate change particularly through the Congo Basin Climate Commission and its financial instrument, the Blue Fund. Implementation of the economic and climate transition, with support from the Congo Basin Blue Fund, is backed by an investment plan aimed at operationalizing the blue economy's 70 sectoral programmes as well as the NDCs of member countries. Congo has also signed a historic agreement with World Bank's Forest Carbon Partnership Fund which will release up to USD 41.8 million to reduce emissions from deforestation and forest degradation and increase carbon sequestration.

In **Gabon**, the authorities have taken measures to protect the country's fauna and flora by creating protected areas covering 11% of the national territory. Moreover, the adoption in 2001, of the Forest Code promoting the sustainable management of logging is helping to build the resilience of forest cover. Gabon has a policy (Nationally Determined Contribution, Climate Plan, and National Climate Change Adaptation Strategy for Gabon's coastal areas), institutional (National Climate Council) and legal (Law on sustainable development and Order No. 019/2021 on climate change) framework that is relatively well developed and fully integrated into the National Development Strategy. In its efforts to mobilise climate financing, Gabon has leveraged USD 17 million, becoming the first African country to receive payments for its commitment to forest protection.

In **DRC**, administrative preparedness for emergency situations is not sufficient. DRC's relief, climate and environment predispose it to the almost certain occurrence of many climate disasters. Preparation of the Policy, Strategy and Action Plan to Combat Climate Change (2020 version) and the National Climate Change Adaptation Plan (2020-2024) are aimed at building the country's resilience. However

climate emergency situations require the establishment of the necessary structures, human resources and tools to address it. Financing depends on the monetisation of carbon credit, a large quantity of which is to be found in the world's largest tropical peatlands managed according to REDD+ mechanisms. The Government has an action plan to reduce greenhouse gas emissions by 21% by 2030. This requires total investments of USD 48.68 billion (86.4% of GDP) while DRC could benefit from other climate financing resources. The expected contribution to the mitigation measures will represent 45.5% of GDP, targeting the agricultural and forestry sectors and the use of land, waste and energy. DRC has also prepared a National REDD+ Framework Strategy and a Low Carbon Development Strategy.

The **Government of Equatorial Guinea** has gradually established an institutional framework and national policy for preserving biodiversity and combatting climate change compatible with economic development. Accordingly, the country has launched its National Investment Plan to reduce emissions from deforestation and forest degradation, aimed at reorienting the country's development model towards a more sustainable pathway in which economic development and natural resource conservation can be reconciled. The country is also signatory to many international conventions on the environment, including the United Nations Framework Convention on Climate Change (UNFCCC). Its National Climate Change Adaptation Plan defines as its priority, ecosystem and community resilience-building.

In **Chad**, climate change adaptation is a major concern of the Government. The country has, therefore, prepared a National Environmental Action Plan, a National Desertification Control Action Plan and a National Climate Change Adaptation Programme. The Government's vision by 2030 is to lay the foundations for a more climate resilient development pathway with fewer greenhouse gas emissions. There is also a National Strategy to Combat Climate Change.

The recent commitments of countries which should be mentioned are the 2021 Glasgow Declaration to reverse deforestation by 2030 (Cameroon, CAR, Gabon, Congo, DRC and

Chad) as well as the Bonn Challenge (Bonn Challenge/AFR100) on landscape restoration (Cameroon, CAR, Congo, DRC, Chad) totalling about 27 million hectares by 2030.

Resilience is also built by implementing construction policies and standards and sanitation strategies as well as by strengthening social protection and the means of livelihood of people who are vulnerable to the effects of climate change and by strengthening endogenous adaptation practices.

2.4 TOWARDS A MORE JUST ENERGY TRANSITION IN CENTRAL AFRICA

2.4.1 Energy sector in the Central African Region

The types of energy contributing to a country's energy supply are highly varied: coal, gas, oil, water, nuclear, wood, sun and others. The aim of the energy balance is to bring them together. For the sake of these comparisons and spatial-temporal analyses, it is first of all necessary to unite all these sources of energy within a harmonised and structured accounting framework which for the moment covers supply to end-consumption. For any geographical zone and given year an energy balance presents the breakdown of total consumption by source of energy and use.

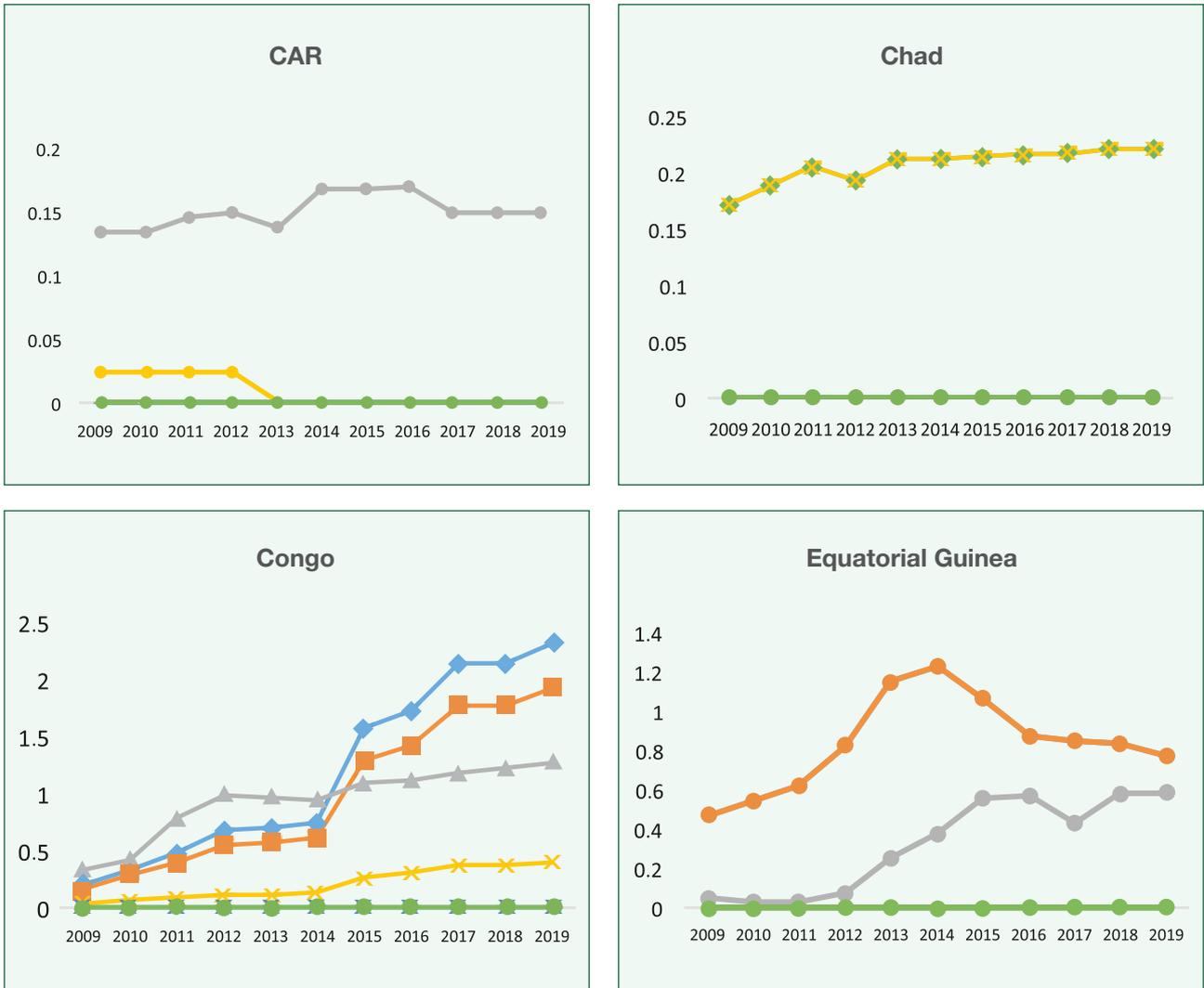
In the region, several sources are responsible for power generation in the countries. The energy mix potential is high but remains weak.

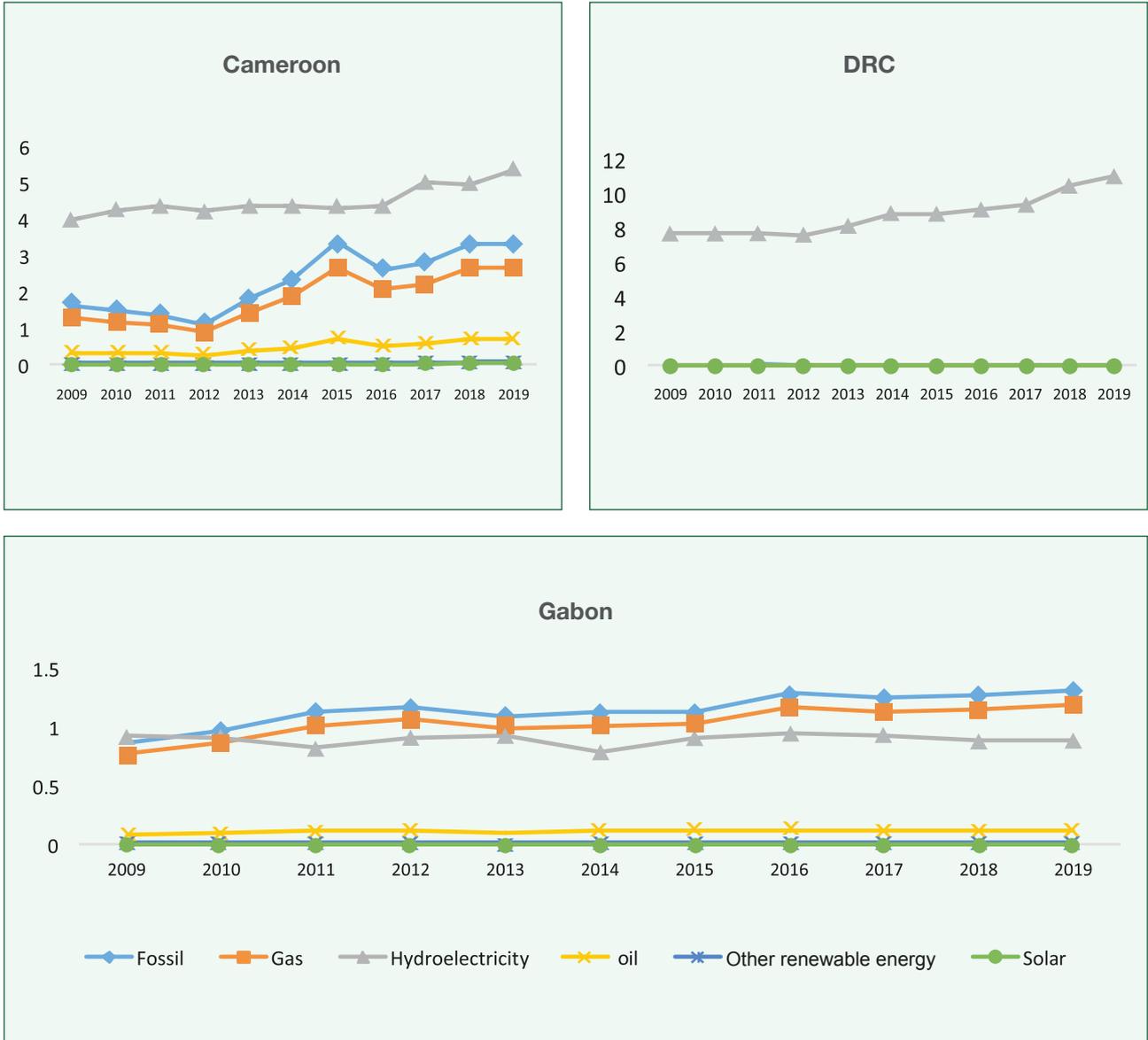
Sources of electricity in Central Africa: Figure 23 illustrates electricity generation by source of energy over the 2009 to

2019 period in Central Africa. Figure 24 indicates that electricity in Cameroon is generated from four (4) main sources: hydro-electricity, other renewable energies, gas and oil. In Cameroon, electricity is generated by hydro-power plants. In CAR, apart from oil, electricity is generated mainly by hydro-power plants. On average, the plants contribute 0.151 TWh to electric power generation. The main source of electricity generation in Chad is oil with an annual average of 0.206 TWh. In Congo, electricity is generated using fossil fuels (an average of 1.18 TWh), hydropower (an average of 0.9370 TWh), gas (0.974 TWh) and oil (0.205 TWh). From 2009 to 2014, electricity was chiefly generated by hydro-power plants while from 2015 à 2019 it was generated by fossil fuels.

In **DRC**, electricity is mainly generated by hydro-electric power plants. On average, hydro-power contributes annually 8.746 Tw to the generation of electricity, which is produced in lower quantities by other forms of energy. In **Equatorial Guinea**, electricity is mostly generated by gas (an average of 0.838 TWh) and fossil energies (0.838 TWh). In **Gabon**, electricity is mostly generated by fossil energies (an average of 1.141 TWh) and gas (an average of 1.031 TWh). In all, the countries in the region have an energy mix that needs to be updated and upgraded. This situation does not facilitate access to electricity by the populations in particular. In fact in the countries, electricity is generated mostly by hydro-electric power plants, a solution that requires the existence of major transmission and distribution infrastructure. Moreover, the low water period (period during which the flow rate of a water course declines) gives rise to load shedding, such that energy remains highly insufficient relative to demand.

Figure 23: Electricity Generation per source in Central Africa



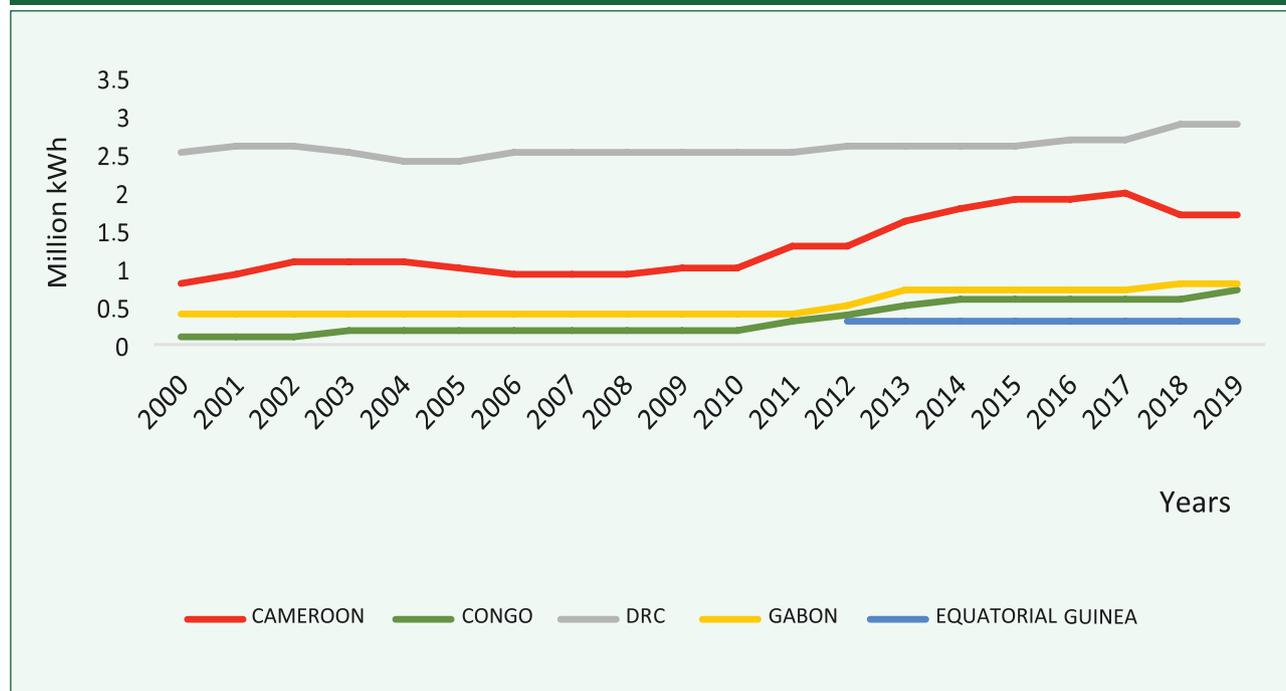


Source : Our World in Data, 2022.

Installed generating capacities: Capacity is a measure of the quantity of electricity generated by a source of energy in relation to its potential (Kashi et al., 2017). Analysis of installed capacity trends is carried out in

each country. Figure 8 shows electric power installed capacity trends in the following five countries of Central Africa: Cameroon, Congo, DRC, Gabon and Equatorial Guinea.

Figure 24: Installed electric power capacity trends



Source: International Energy Agency, 2022.

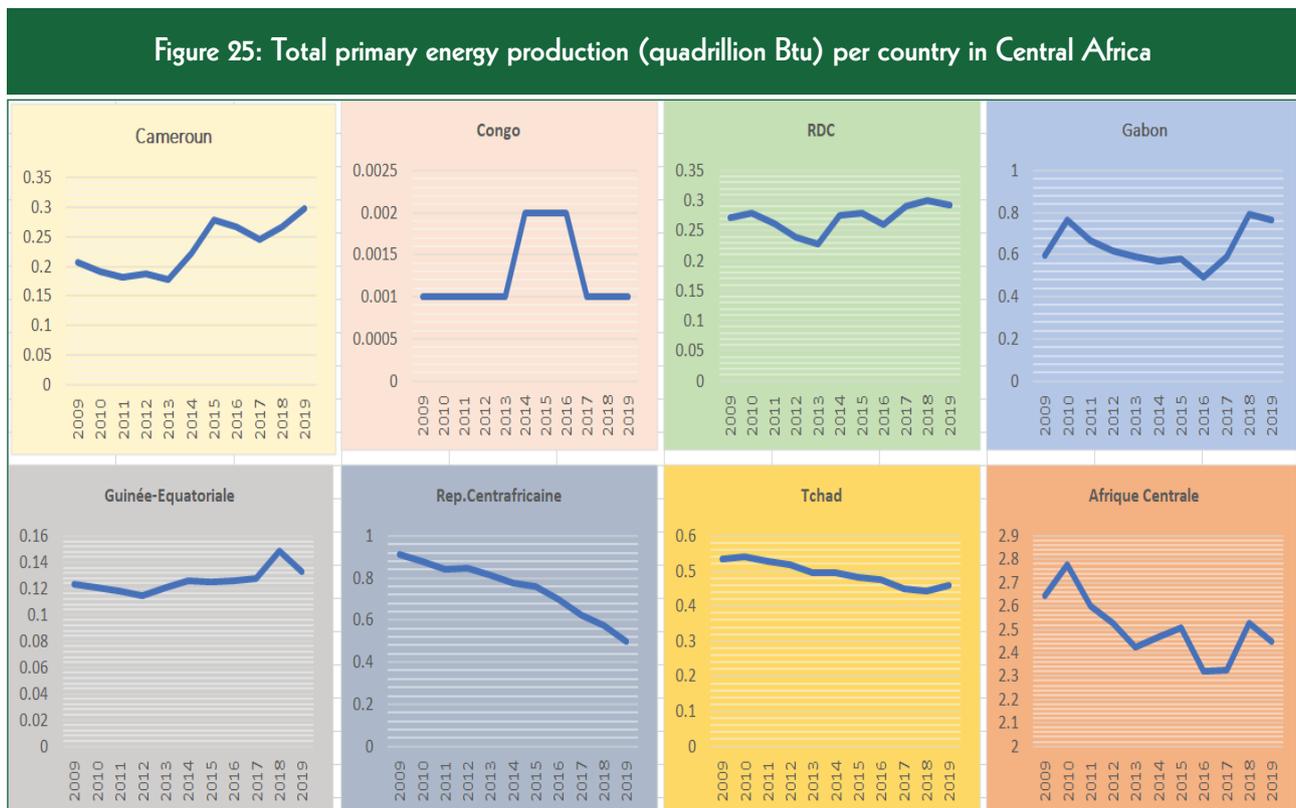
In **Cameroon**, installed power capacity trends have been irregular for about twenty years. Throughout the period, average installed capacity has been 1.295 million kWh. In **Congo**, installed power capacity is stable and very low over the entire 2009 to 2019 period. On average, to meet all its electricity needs, Congo supplied 0.34 million kWh. Of all the five countries, DRC remains the one with very high and stable electric power capacity averaging 2.58 million kWh since 2000. **Gabon** had a low installed power capacity of 0.53 million kWh over the same period. From 2000 to 2012, installed capacity remained stable before rising from 2013 until 2019. The country with the lowest installed power capacity from 2012 to 2019 in the group of five countries was **Equatorial Guinea** with an average of 0.3 million de kWh. According to African Development Bank statistics (AfDB, 2019), total installed electric power in **CAR** was 39 MW (Enerca) including 36 MW on the Boali-Bangui interconnected

grid. In response to insufficient supply, a growing fraction of the population in provincial towns is purchasing individual oil or diesel electric generators. This is especially the case of several private companies (mining companies, agri-businesses, timber industries and planters) and religious missions. Unit power ranges from 2 to 650 kVA and their sum is at least around the same as the installed capacity of the public company responsible for power generation and distribution (Enerca). Equatorial Guinea has three power plants with a capacity of 154 MW that meet current demand in the island and continental regions (AfDB, 2019). **Chad** has installed capacity of 100 MW (AfDB, 2019).

In total, for all the countries in the region, there is low installed power capacity. This situation justifies the dependency of these countries on imports to satisfy their electricity consumption needs.

Primary energy production. The primary production of energy in quadrillion Btu (quad Btu)⁴ by country is presented in Figure 25. Total primary energy produced in the region is 27.574 quad Btu with an annual average of 4.595 quad Btu. The leader in terms of primary energy

production from natural resources is the Central African Republic with an average annual production of 1.37 quad Btu followed respectively by Gabon with an annual average of 0.639 quad Btu and Chad with an annual average of 0.492 quad Btu.



Source: International Energy Agency, 2022.

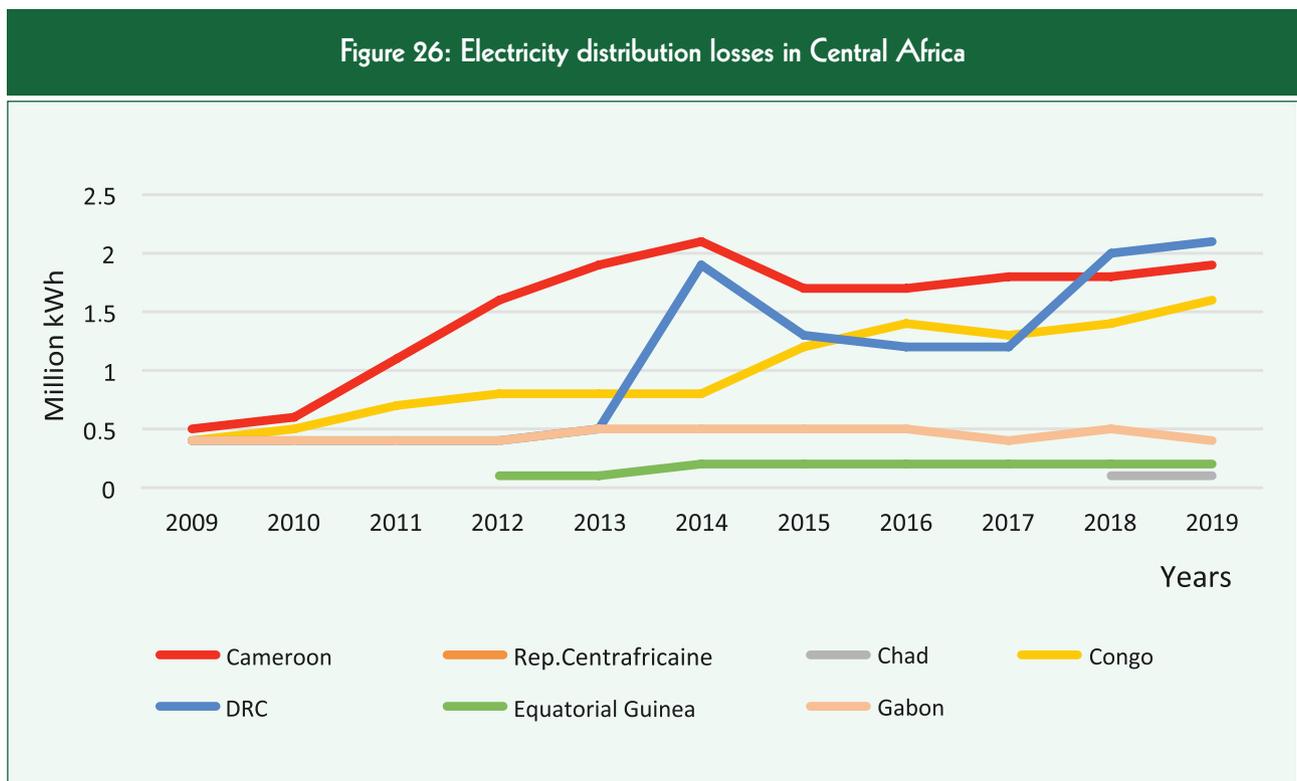
Transmission and Distribution Infrastructure: Electricity generation for Central Africa countries is placed under the responsibility of the public service. Electricity is distributed to consumers through the network. This network is organised into low voltage (LV) and medium voltage (MV). The national grids were constructed in the 1960s and are of the Hessian

type. They are subject to the vagaries of nature. This makes it impossible to ensure reliable supply of electricity. Reliable supply means that electricity should be permanently available on the grid and that there are no power cuts or voltage dip. The age of some grids causes transmission losses and power outages.

⁴ 1 quad Btu = 10¹⁵ Btu = 290.10⁹ kWh

Figure 26 shows trends of electricity losses (in billion kWh) over the 2009-2019 period in Central Africa countries. Cameroon loses an average of 1.518 billion kWh per year and is the country with the greatest power generation losses. Overall, the countries are all experiencing an increase in

power generation losses due to a lack of investment in generating capacity. Chad and Equatorial Guinea are the countries experiencing the least power generation losses for the entire period under consideration.



Source: International Energy Agency, 2022.

2.4.2 Energy situation: low supply and consumption rates in Central Africa

This energy situation analysis is based on the electricity supply and consumption trends in the region.

2.4.2.1 Insufficient and declining electricity supply in the region

Electricity supply is appreciated by the segment of the population that has access to it. Statistically, 'having access to electricity' means a source of electricity that may provide minimal lighting or recharge a telephone or supply an

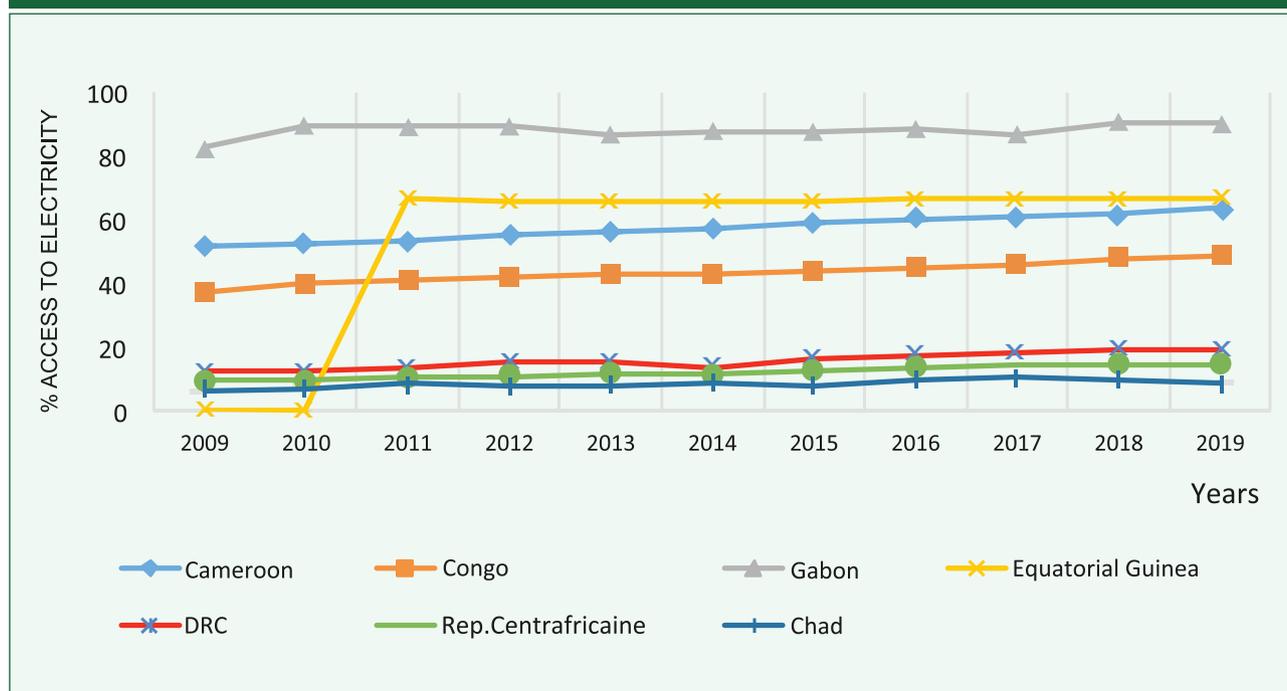
electrical appliance for four hours a day. Electricity is a hybrid asset that is essential for people’s daily lives. Access to electricity is a critical element for poverty reduction, economic growth and improved standards of living. Figure 27 presents the percentages of the populations in each country of Central Africa with access to electricity over the 2009-2019 period.

Gabon remains the region’s top country with a high electricity access rate over the period with an annual average rate of 87.825%. Since 2011, **Equatorial Guinea**, is the second highest country in terms of the population’s access to electricity with an average access rate of 66.094%. The relatively stable access rate has been steadily declining since 2011 due to electricity generation and distribution problems and low rural household incomes, which causes weak demand. On the

other hand, the three countries where the populations have the lowest electricity access rates are **DRC, CAR** and **Chad** with respective average electricity access rates of 15.634%, 12.103% and 8.399%. According to African Development Bank statistics (AfDB, 2019), in 2019, about 32.1% of the urban population had access to electricity thanks to the Boali 1 and Boali 2 hydro-electric power plants constructed respectively in 1954 and 1976. Rural electrification in **CAR** remains embryonic and only about 1.5% of the population in rural areas had access to electricity in 2019.

In short, the countries of the region have failed to manage electricity supply for their populations: In addition, access to electricity remains a major constraint in rural rather than urban areas.

Figure 27: Proportion of the population with access to electricity in Central Africa countries



Source: Our World in Data, 2022.

2.4.2.2 Low energy consumption

Energy consumption per capita is stable and low in countries such as Cameroon, CAR, Chad, Congo and DRC (Figure 28), but relatively stable and not very high in Gabon and very high in Equatorial Guinea. This finding reflects

effective management of the use of energy resources in Gabon and Equatorial Guinea.

Overall, energy consumption per capita has declined in recent years in most countries because of a downturn in economic activity and transport restrictions due to the COVID-19 crisis.

Figure 28: Energy consumption per capita in Central Africa (energy intensity)



Source: international Energy Agency, 2022.

2.4.2.3 Limited electricity which impacts the production sectors

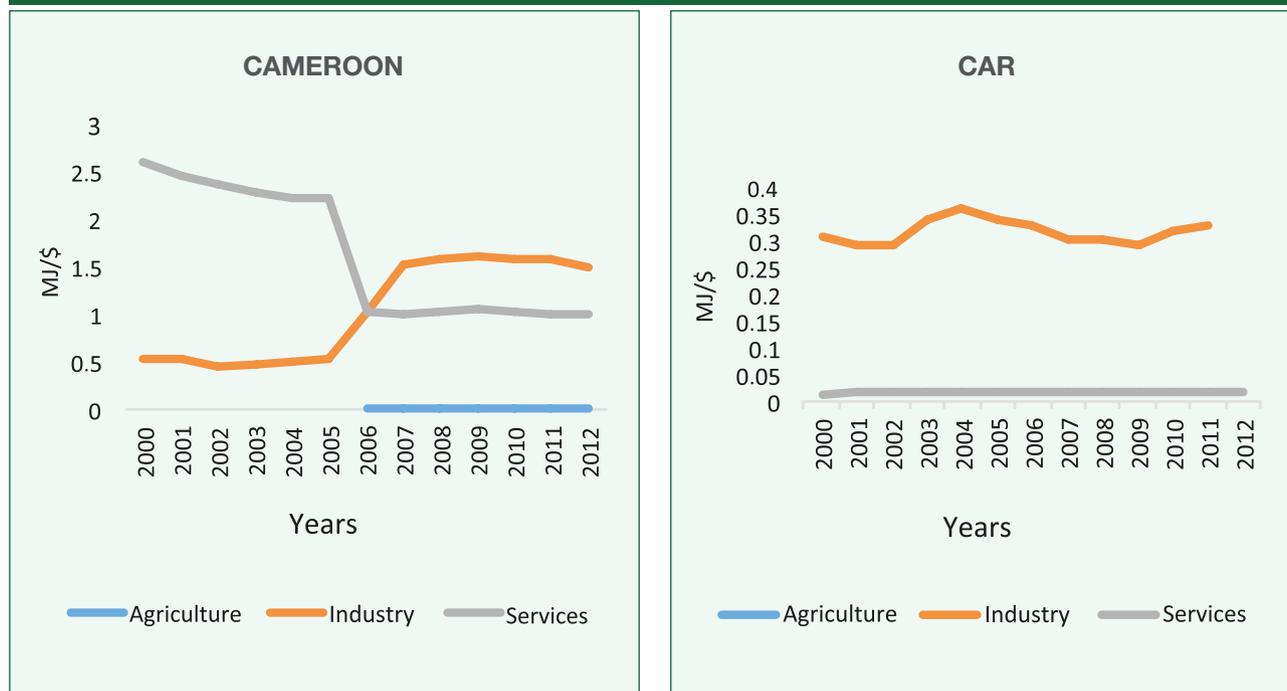
Electricity is essential for the socioeconomic life and development of all countries and, in particular, the countries of the region. The development of economic activities depends on reliable electricity supply. Food, health and all human activities depend on reliable electricity supply.

In Central Africa, electricity is not yet permanently available on the distribution grids. It still remains a scarce resource

since many people have limited or no access to it. Hence, there is need to focus on energy intensity in various sectors like agriculture, industry and services.

Figure 29 presents the contribution of energy to the agricultural, industrial and services sectors in two countries in the region. Energy intensity is measured as the quantity of energy necessary to produce a unit of economic output. This is measured in megajoules (MJ) per 2011 international dollars. It corrects inflation and price differences between countries.

Figure 29: Energy intensity by sector in Cameroon and CAR



Source: Our World in Data, 2022.

Overall, electrical energy contributes little to the promotion of relevant self-employment and employment initiatives in the agricultural, industrial and services sectors in the two countries of the region.

2.4.3 An energy transition still awaited in Central Africa

Energy transition means, first and foremost, a process for very gradually moving away from oil-based on market mechanisms (like the carbon exchange), green technologies and the use of types of renewable energy. This concerns mechanisms that will internalise the negative environmental externalities caused by fossil fuels. The

transition corresponds to a project for the reduction of global net consumption of all types of energy and revamping of the organisation of all energy systems where the substitution of renewable for fossil energy is linked to the decentralisation and devolution of generation and distribution infrastructure. According to the International Renewable Energy Agency (IRENA), the energy transition is a means for transforming the global energy sector from fossil energy to zero carbon energy by the second half of the century. Central to this approach is the need to reduce CO₂ emissions linked to energy in order to limit climate change. Unfortunately, the technologies required to utilise the countries' renewable energy capacities are still not very developed in Central Africa.

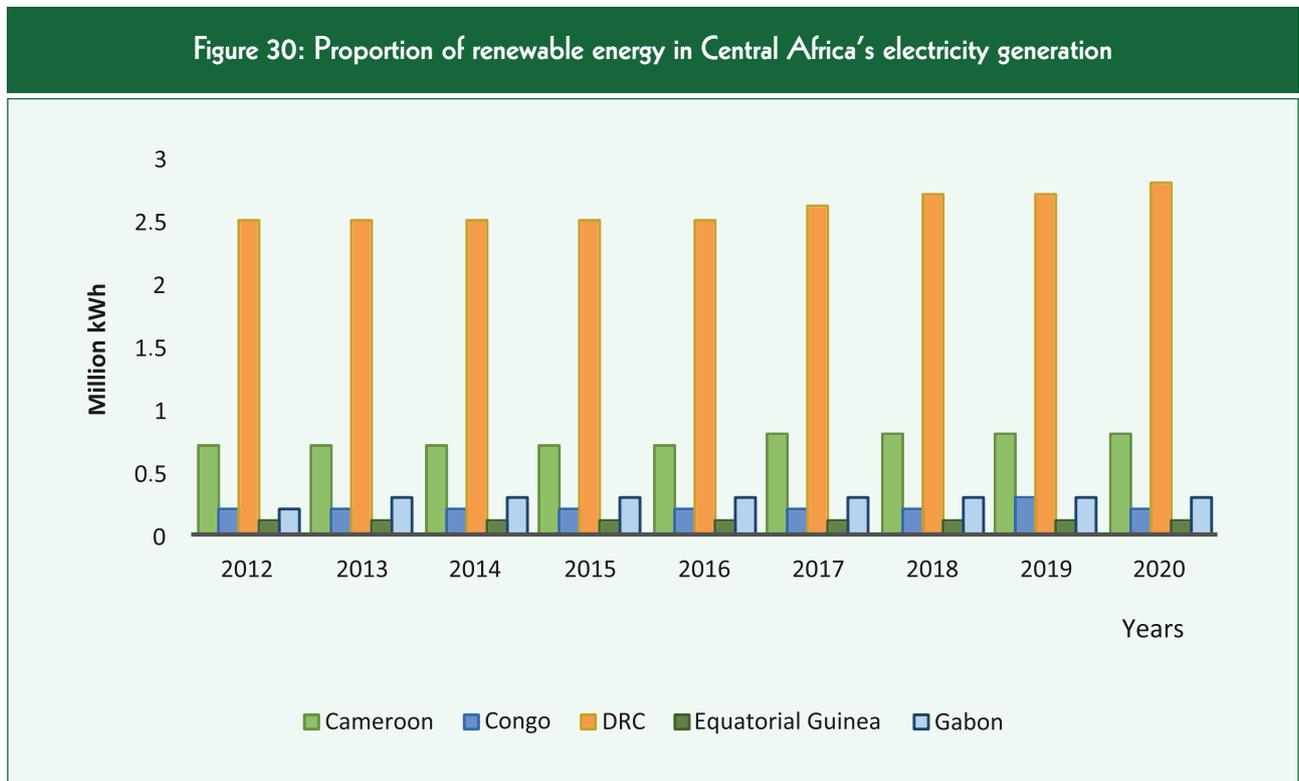
2.4.3.1 Renewable energies: very little developed in the region, pioneered by DRC and Cameroon

La figure 30 illustre la production d'énergie électrique à partir des sources d'énergies renouvelables de 2012 à 2020 pour cinq pays de la région Afrique centrale.

In **Cameroon**, the generation of electricity from renewable energy is stable and averages 0.74 million kWh. In **Congo**, electricity generated from renewable resources is low but stable over the period under consideration and averages 0.21 million kWh. In **DRC**, electricity generated from renewable sources is high and stable with an average of 2.58 million

kWh. Over the period under consideration, electricity generated in **Equatorial Guinea** averaged 0.1 million kWh. The generation of electricity in this country from renewable sources is very low and stable. Gabon generates an average of 0.28 million kWh of electricity from renewable resources. In addition, data on power generation from renewable energy sources excluding hydro-electric power are not yet quantified in **CAR** (AfDB, 2022).

In short, the countries that generate most electricity from renewable resources are DRC and Cameroon. Power generation from environmentally friendly resources is, therefore, barely developed in the region.



Source: International Energy Agency, 2022.

Box 5: Renewable energy potential in Central Africa

Central Africa has abundant renewable energy resources, in particular solar and hydropower. The region has high annual average solar irradiation of 2000 kWh per square metre. Wind speeds are low, averaging 4 metres per second in countries like Angola and Chad, the only possible places for the development of wind energy in Central Africa in the sense of the Economic Community of Central Africa States (ECCAS). IRENA estimated the region's installable capacities at 1.55 GW for solar energy and 31 GW for wind energy. Delft University of Technology estimates hydropower energy potential at 767 GW (Hoes, 2014), with peaks in Angola for solar power and in the Democratic Republic of Congo for hydropower. The region could benefit from a greater shift from hydropower to solar and wind power.

Source: IRENA and AfDB, Analysis of the renewable energy market, 2022.

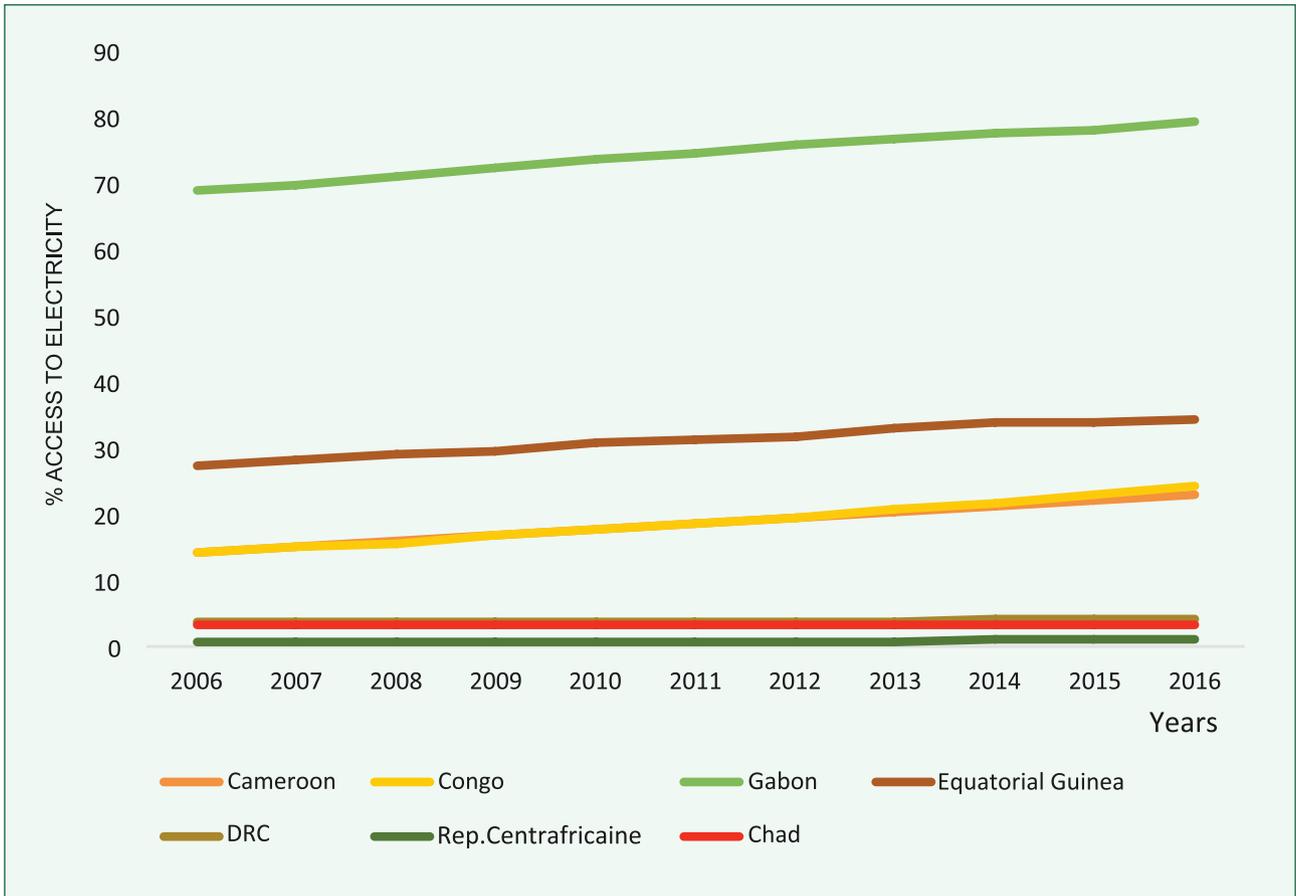
2.4.3.2 Access to clean fuel for cooking

Access to clean energy or to technologies such as clean cookstoves reduces exposure to indoor air pollutants, one of the main causes of death in low-income households.

Figure 31 shows the proportion of the population with access to clean fuel for cooking in the region over the 2006 to 2016

period. **The population's average access rates to clean energy are respectively 74.266% in Gabon and 31.101% in Equatorial Guinea.** Gabon and Equatorial Guinea are the countries in the region where households use most clean energy for cooking. The countries in the region where the populations have low access to clean energy for cooking are DRC, Chad and the Central African Republic with, respectively average access rates of 3.81%, 3.161% and 0.807%.

Figure 31: Percentage of the population with access to clean energy for cooking



Source: Our World in Data, 2022.

CHAPTER 3

FINANCING OF CLIMATE RESILIENCE AND THE ENERGY TRANSITION

Key Messages

- **Climate change will generate global systemic impacts requiring concerted global actions.** Individual actions will not enable populations and central governments to mitigate the impacts of climate change.
- **The low level of financing remains one of the main obstacles in the fight against climate change in Sub-Saharan Africa.**
- **There are insufficient existing strategies, mechanisms and plans for fighting climate change but these are under-financed in most countries.** In order to accelerate climate investments, international mechanisms have been established to support countries with low financing capacities, but further efforts must be made.
- **The region's cumulative financing needs in order to adequately address climate change, are estimated at an average of USD 172.32 billion** over the 2020-2030 period, i.e. USD 15.67 billion per year.
- **Over the 2010-2020 period, climate financing flows received are estimated at USD 10.1 billion**, i.e. an annual average of USD 921.84 million. Over the period 2016-2020, these flows are USD 6.98 billion, or an average of USD 1.40 per year.
- **The region's climate finance gap amounts to USD 14.27 billion per year** over the period 2020-2030, if the average annual flow over the period 2016-2020 is used as a proxy.
- **Estimated carbon credit that the Central Africa Region could mobilise** is USD 365.06 billion, based on the average international price of USD 31 and USD 811.23 billion if the discounted social cost of USD 70 is used. These resources could be used to finance a more just energy transition and climate resilience.
- **To allow actors to take advantage of all these opportunities, it is important to establish a capacity-building programme** whose objective would be to build institutional and technical capacities for climate financing and green investment. This approach will help African countries to transition towards green, resilient and inclusive growth.
- **Several types of incentives exist and** could accelerate the roll-out of renewable energies in the countries of the region. These are: i) fiscal incentive measures; ii) research and development project financing funds; and iii) the development of renewable energy markets, etc.
- **The measures taken by the countries of the region to finance the energy transition are generally defined in their respective country notes** on their Nationally Determined Contributions (NDC).

3.1 FINANCING CLIMATE RESILIENCE AND THE ENERGY TRANSITION

3.1.1 Climate financing plans and mechanisms exist but remain under-financed and insufficient

Climate change will generate global systemic impacts requiring concerted global actions. Individual actions will not enable populations and central governments to mitigate the impacts of climate change. A cohesive and global financing plan for mitigation and adaptation actions is necessary to prepare and implement cohesive and global actions. Climate change mitigation and adaptation has prompted the establishment of institutions and mechanisms for providing vulnerable countries with financial and technical support.

The strategies, plans and policies prepared to combat climate change are slow or struggling to be implemented in most countries due to a lack of financing resources and qualified human resources. All the countries of Central Africa have prepared NCCAPs and NDCs accompanied by financial assessments. For example, the achievement of Cameroon's climate objectives by 2030 requires a total of USD60.29 billion. Of this amount, adaptation-related investments are estimated at USD31.5 billion and mitigation-related investments at USD 25.78 billion. Financing needs for climate change adaptation in Congo over the 2022-2030 are USD 3.795 billion, of which USD 1.016 billion is unconditional and USD 2.779 billion conditional. The government of DRC has an action plan to reduce greenhouse gas emissions by 21% by 2030, assuming overall investment of USD 48.68 billion (86.4% of GDP). Adaptation-related investment represents 23.08% of GDP.

Specific institutions and mechanisms are dedicated to financing climate actions in Africa. The Least Developed Countries Fund and the Clean Technology Fund, administered by the World Bank are two major donor funds dedicated to African countries. The Africa Climate Change Fund (ACCF) of the African Development Bank is also a climate action financing mechanism exclusively dedicated to African countries. The ACCF was established in 2014 to build the resilience of

African countries in addressing the negative impacts of climate change and assist them in transitioning towards sustainable, low-carbon growth. Bilateral climate financing is also intended for Sub-Saharan Africa. This climate financing complements the multilateral flows of climate funds. This includes the bilateral funds of Germany, the United Kingdom and Norway which are active in Africa.

The African Development Bank also has the Africa50 Fund.

This fund is a platform for investment in infrastructure that contributes to investment growth in Africa by investing in bankable projects, by catalysing public sector capital and mobilising private sector financing with financial rates of return and a differential impact.

Financing, therefore, remains one of the main obstacles in combating climate change in Sub-Saharan Africa. In order to accelerate climate investments, international mechanisms have been established to support countries with weak climate financing capacities. These include: i) the Special Climate Change Fund; ii) the Green Climate Fund (GCF); iii) the Adaptation Fund (AF); iv) the Global Environment Facility (GEF), etc. A description of each of these Funds is presented in Annex 2.

3.1.2 Measures taken by Central African countries to finance a more just energy transition are presented in their respective NDCs

The measures taken by the countries in the region to finance their energy transitions are generally defined in their respective country notes on Nationally Determined Contributions (NDCs). Cameroon's NDC adopted in 2015 and revised in 2021, covering the 2020-2030 period, describes the country's aim of reducing greenhouse gas (GHG) emissions by 35% by 2030. To that end, 20 climate change adaptation projects, in particular, in the renewable energy sector have been proposed. The share of this type of energy in the electricity mix is expected to grow and reach 25% by 2035, compared to 1% at present, with an electricity access rate of 90% in urban areas compared to 20% in rural areas (AfDB, 2022). In order to honour the commitments

made and consolidate the actions taken, the country should continue to attract more investors, in order to explore and develop backbone projects, particularly in the hydro-power, gas and other clean energy areas.

Congo's NDC anticipates a reduction in national greenhouse gas (GHG) emissions of 48% and 55% respectively in 2025 and 2035 compared to 2017. In terms of the energy transition, Congo will improve its renewable energy supply, with natural gas and competitive and cleaner energy. To that end, 300 MW of electricity generating capacity has been installed to supplement the hydro-electricity supplied by four hydro-power plants. The drinking water access rate is 66% in urban areas and 47% in rural areas, i.e. 56% of national coverage (AfDB, 2022).

In July 2022, Gabon submitted its updated NDC in which the country undertakes to remain carbon neutral until 2050 and beyond. In this update, the country reaffirms its absorption of 100 million net tonnes of CO₂ equivalent per year and an increase in its sequestration capacity. For its energy transition Gabon intends to tap and monetise flared gas in order to reduce its dependency on imports of finished products and start the cutover to clean energy. Gabon flares about 35 billion cubic feet of gas representing 200 MW of electricity. The fact is that this gas is often disposed of or flared when it could be used instead of diesel (AfDB, 2022). This transition from diesel to gas is intended to significantly reduce greenhouse gas emissions as well as the carbon footprint in order to make Gabon's economy one of the world's cleanest. But, to achieve more ecological and affordable electricity and transport, Gabon must address technological, infrastructural, financial and regulatory challenges.

Implementation of the strategies is slow in CAR in most cases due to a lack of financial resources and qualified human resources. It is worth noting that, to-date, reliable data that can be depended on to determine the energy transition financing needs in CAR is not available (AfDB, 2022).

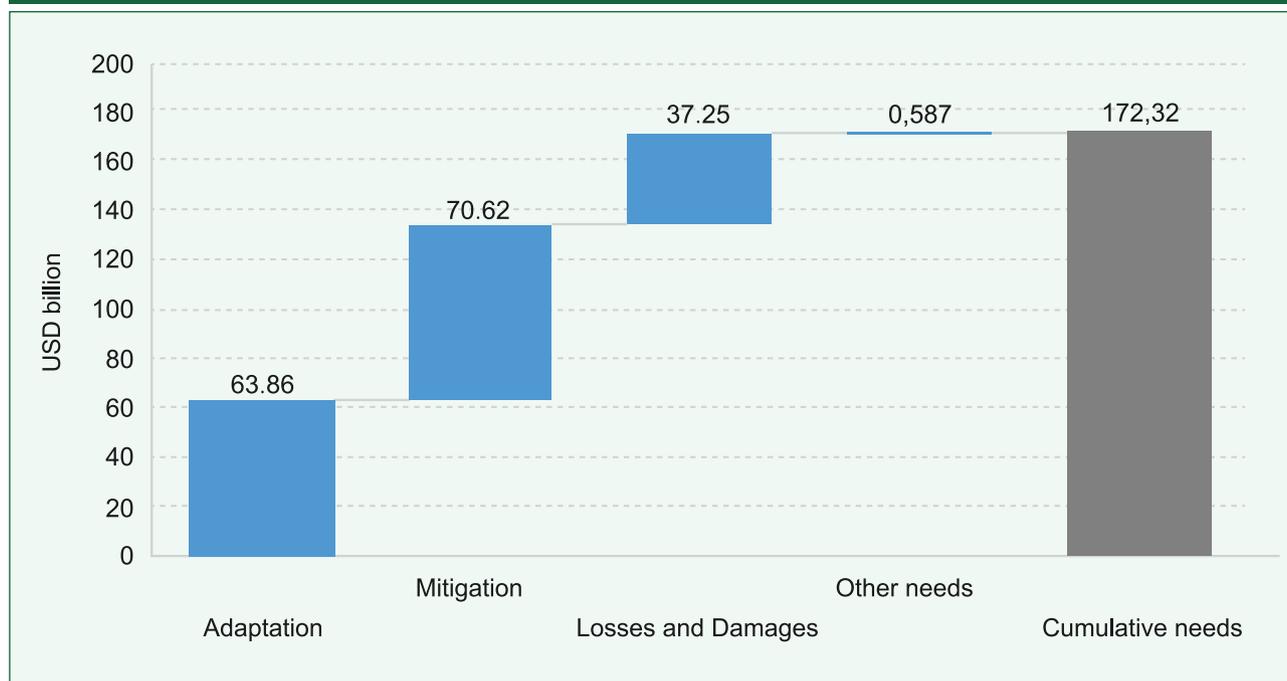
In DRC, with a view to promoting renewable energies, the African Development Bank is supporting efforts to establish green mini-grids (AfDB, 2022). These efforts will be supported by the private sector window and a partnership with GCF as well as the European Union-Africa Investment Platform. For its part, the Government prefers the use of modern and sustainable energy-efficient modules for the energy transition. It will be necessary to continue the governance-related reforms of the energy sector in order to find a compromise for the development of the Inga hydro-power site. For drinking water and sanitation, the focus will be on improving access to drinking water as well as on sanitation infrastructure and strengthening management systems.

3.1.3 Climate financing flows received are outdated given the region's existing needs

The United Nations Environment Programme (2015) estimates that Sub-Saharan Africa will require USD 50 billion by 2050 in the best-case scenario of global warming by two degrees. However, current levels of climate financing for Sub-Saharan Africa fall far short of this amount. Investment by the populations, governments and other stakeholders will continue to play a critical role in combatting climate change.

Cumulative financing needs for the Central Africa region in order to adequately address climate change are estimated on average at about USD 172.32 billion over the 2020-30 period (Figure 32), which represents an annual cost of USD 15.67 billion. Over the 2020-2030 period, average adaptation costs for the region are estimated at USD 63.86 milliards USD, mitigation costs at USD 70.62 billion and losses and damage due to climate change are estimated at USD 37.25 billion, i.e. respectively 37.1%, 41% and 21.6% of the region's climate financing needs. The details for each of the region's countries are available in Table 1 of Annex 7.

Figure 32: Total climate financing needs in Central Africa for 2020-2030 (in billion USD)



Source: AfDB calculations based on the Annual Energy Outlook 2022, the Africa NDC Hub and on the updated NDCs.

Over the 2010-2020 period, very low climate financing contributions were mobilised. The Central Africa Region received a cumulative amount of drop this 10.14 billion for climate financing between 2010 and 2020, mobilised by the developed countries, i.e. an annual average of USD 921.84 million. Details for each of the region’s countries are

provided in Table 2 of Annex 7. These Funds were allocated both to finance adaptation and mitigation measures and to offset losses and damage incurred. Inflows of climate financing have increased by an annual average of 19.1% over the same period from USD 391.88 million in 2010 to USD 2.25 billion in 2020. See Figure 33.

Figure 33: Central Africa – Climate financing flows received between 2010 and 2020 (in USD billion)

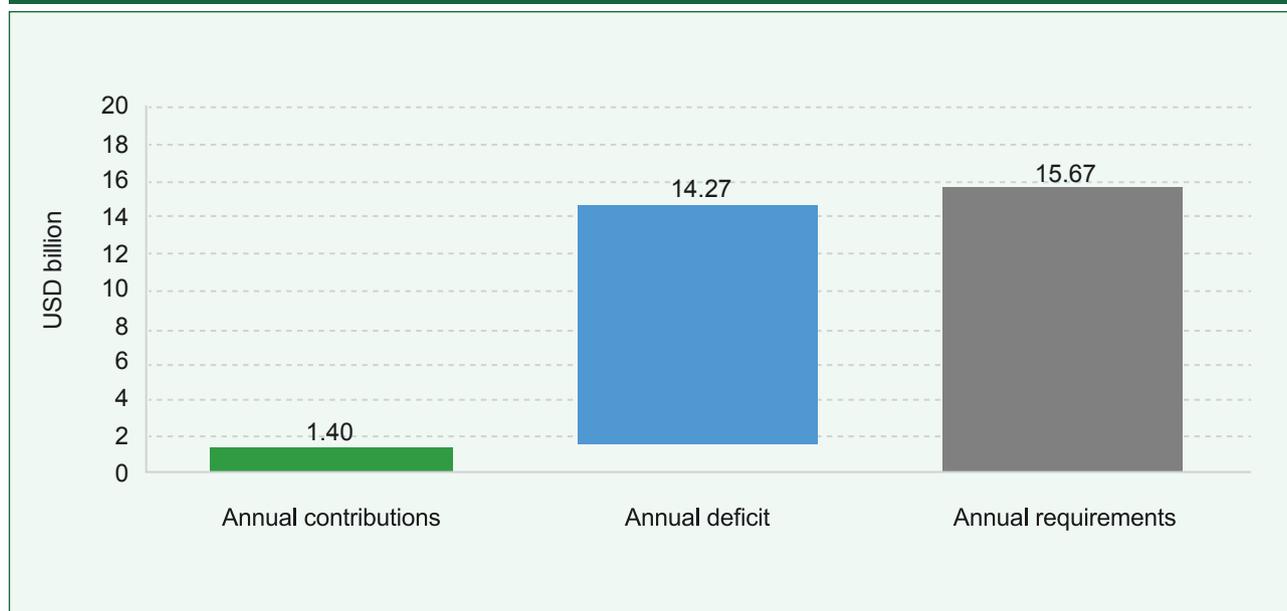


Source: AfDB calculations based on the Annual Energy Outlook 2022, the Africa NDC Hub and on the updated NDCs.

The climate financing gap in the Central Africa region amounts to USD 14.27 billion per year, when the average annual climate financing contribution over the 2016-2020 period is used as a reference. On average, this annual deficit is estimated at 2 billion per year per Central Africa country,

as a simple arithmetic average, or at around 5 billion on a weighted average (by population). Details for each country are provided in Table 3 of Annex 7. Climate financing needs for the Central Africa Region are estimated at USD 15.67 billion per year over the 2020-2030 period. See Figure 34.

Figure 34: Central Africa – Annual climate financing gaps (in USD million)



Source: AfDB calculations based on the Annual Energy Outlook 2022, the Africa NDC Hub and on the updated NDCs.

The region has failed to mobilise significant climate resources and green funds because of a lack of dedicated personnel in the oversight ministries and agencies. The financing received over the 2010-2020 period falls far short of needs and has prevented the countries of the Central Africa region from achieving their climate resilience objectives and ensuring the energy transition towards green economies.

3.1.4 Considerable carbon credits could finance the energy transition in the region

The amount of carbon debt and credit was quantified using the average price of carbon on the international energy

market of USD 31 per tonne and the average social cost of carbon at USD 70 per tonne, suggested by the High-Level Commission on Carbon Pricing, and using the 2% suggested for the annual discounted rate for historical and future emissions. Moreover the share per capita equal to 2 tonnes of CO₂ equivalent per year of real annual emissions was deducted prior to calculating carbon debts and credits per capita.

Estimated carbon credit in Central Africa, based on the average international price of USD 31 was USD 365.06 billion and USD 811.23 billion using the discounted social cost of USD 70 (see Table 14). The countries of Central Africa also have a considerable amount of carbon credit that they could use to begin a more just energy transition.

Table 14: Carbon credit estimates for Central Africa countries

	Estimated at the average international price of USD31		Estimated discounted social cost of USD70	
	Per country (in billion USD)	Per capita (in USD)	Per country (in billion USD)	Per capita (in USD)
Cameroon	60.53	2 075.87	134.51	4 613.05
Congo	11.41	1 786.85	25.36	3 970.78
Gabon	0.89	2 518.66	1.98	5 597.02
CAR	12.23	2 075.87	27.18	5 246.41
DRC	234.21	2 355.33	520.46	5 234.07
Equatorial Guinea	4.29	4 219.61	9.53	9 376.90
Chad	41.5	1 786.85	92.21	5 233.20
Central Africa	365.06	2 402.72	811.23	5 610.20

Source: AfDB calculations, 2022.

3.2 INCENTIVES TO BE GIVEN TO FINANCE CLIMATE RESILIENCE AND THE ENERGY TRANSITION

The advent of climate change raised collective awareness of the need to find other more environmentally-friendly modes of production and consumption. However, these new solutions, aimed at gradually replacing old methods of generation and consumption must be sustainably financed. This underscores the need to invest more in energy resources capable of meeting the demand of populations in the region without harming the environment.

Several types of incentive could help to accelerate the roll-out of renewable energies in the countries of the region. These are: i) fiscal incentive measures; ii) research

and development project financing funds; iii) the development of a renewable energy market; and iv) other innovative measures.

3.2.1 Fiscal incentive measures to finance climate resilience

In this respect, it will be necessary to establish an 'energy transition financing fund' through a specific levy to be deducted from end-consumers' electricity bills. Furthermore, each State may finance imports of power generation and consumption technologies through an attractive fiscal policy. In fact, the importation of renewable energy infrastructure equipment from producer countries is very costly and would require the countries in the region to introduce attractive preferential tax treatment.

3.2.2 A budget cut to fund climate-friendly research and development projects

Each government could pass a law on the energy transition and allocate, for example, 1 % of its budget to develop energy-saving power generation and consumption technologies. These resources will be used to cover research and development linked risks and uncertainties as well as the production of solar and wind panels. Development banks, commercial banks and micro-finance institutions can finance the construction of renewable energy plants for residential use. In return, the central government could grant them tax facilities.

3.2.3 Government initiatives to develop the renewable energy market

Central governments could also envisage introducing incentives aimed at developing the renewable energy market. To that end, it should facilitate procedures for getting prior authorisations in order to obtain contributions from potential investors for the implementation of renewable energy projects.

3.2.4 Other innovative financing could close the wide climate financing gap in the region

Like other African countries, the countries of Central Africa could benefit from available climate financing instruments. These mainly concern green bonds and loans, sustainable or sustainable-linked bonds, and debt-for-climate swaps. Other innovative climate financing instruments such as the realignment of fossil fuel subsidies or the use of other progressive taxes applied to different sectors such as aviation, energy, transport, etc. could be used. The International Monetary Fund's special drawing rights (SDR) allocated to volunteer developed countries could also be reallocated to African countries through the African Development Bank or African Development Fund to further mobilise and finance climate resilience and a more just energy transition. The countries of the region could also mobilise domestic capital through carbon markets, in particular, when carbon emissions are traded (AfDB, 2022). For example, under the Central Africa Forest Initiative (CAFI), the Norwegian Government has undertaken to pay Gabon USD 150 million over ten years for its deforestation reduction actions.

CHAPTER

4

CONCLUSION AND POLICY RECOMMENDATIONS

4.1 MACROECONOMIC POLICY RECOMMENDATIONS

The global and regional economic situations remain dominated by the impacts of the Russo-Ukrainian crisis on the economies of Central Africa which have barely recovered from the COVID-19 health crisis and are still faced with the specific challenges of the region. The consequences of these exogenous and endogenous crises underscore the need to take appropriate measures to build the resilience of the Central Africa economies. The reforms and measures to be adopted should be taken in the short, medium and long terms. They will affect the relevant policy elements to accelerate the post-COVID recovery against a backdrop of rising food product and oil product prices, freight costs, etc. There will also be health and social measures to preserve lives, monetary policies likely to address galloping inflation and consolidate foreign exchange reserves, governance reforms to combat corruption and strengthen debt management and build institutional capacities and, lastly, debt policies for the countries of the region in order to ensure long-term sustainability while improving domestic revenue mobilisation. These measures will also be aimed at making deep adjustments that will begin the structural transformation that will be able to ensure the necessary economic diversification to create wealth, jobs but also to provide the countries of the region with food security. It should also be noted that the poorest countries of Central Africa are often exposed to crises and armed or political conflicts. In such

cases conflict resolution remains a prerequisite for the transfer of growth benefits to the poorest and most vulnerable segments of the population. To that end, it would be appropriate to implement policies and reforms around the following points:

4.1.1 In the short-term

- **Preserve people's lives.** Accelerate the vaccination campaign in order to reduce the risk of new waves of COVID-19 and the emergence of new variants. Facilitate access to vaccines against COVID-19 and the roll-out of mass vaccination to stem the uncertainties linked to the different waves.
- **Protect vulnerable communities.** Initiate or strengthen inclusion measures aimed at protecting the most vulnerable segments of the population from hikes in energy and food prices through targeted and effective transfers or assistance.
- **Continue public finance restructuring.** Pursue public finance reform processes in order to consolidate fiscal stability and enhance the quality, transparency and effectiveness of public spending. It will be particularly important to improve the transparency of public finances and the extractive sector, to scale up revenue mobilisation, support good governance and implement reforms in favour of the private sector.

4.1.2 In the medium to long-term

- **Increase investments in the health and education systems.** Support efforts to preserve people's lives by investing in social and health infrastructure aimed at improving human capital development in the Central Africa region which so needs it. Introduce measures aimed at achieving more equitable income distribution, creating jobs as well as measures to support the disadvantaged segments of the population (women, youth and the disabled).
- **Reduce debt vulnerability.** Take measures to be able to leverage global and regional aid initiatives to address debt and financing requirements through debt restructuring and relief measures as well as measures to remove debt-servicing charges.
- **Strengthen domestic resource mobilisation and financing of the economies in the region.** Against a backdrop of considerable uncertainty regarding the mobilisation of external resources due to budget-related difficulties faced by countries that are the main development partners of the countries of the region, there appears to be a compelling need to seek other sources of financing. Thus, an adequate legal framework could strengthen public-private partnership. Furthermore, central banks could introduce measures to raise the savings rate and channel savings towards investment.
- **Reduce food dependency on the outside world.** Increase agricultural, in particular, food crop production in order to meet the needs of local and regional markets by investing in modern agricultural techniques and using high yield inputs. This is likely to contribute to more effective control of food-related inflationary risks.
- **Diversification of the economy, in particular of export products.** Focus on the development of local industries for staple products by creating regional value chains. In this regard, regional conditions may be granted to industrial enterprises adopting an industrialisation strategy

based on import substitution in order to build economic resilience.

- **Coordination of different supranational policies.** It is important to consolidate consultation frameworks between central banks and officials responsible for crafting fiscal policies in the present context of uncertainties in order to enhance the effectiveness of monetary action. The Central Bank of Congo and the Bank of Central Africa States have to strengthen their roles of economic and financial advisers to central governments. Opportunities for implementing regional policies are noted in this chapter.
- **Strengthening production systems for national and regional statistics.** Equip the countries with the required tools for good analyses and sound forecasting exercises in a rapidly changing world and build capacities to anticipate future shocks based on these analyses.

4.2 POLICY RECOMMENDATIONS WITH REGARD TO CLIMATE RESILIENCE AND THE ENERGY TRANSITION

Climate change poses a threat to the economies and people of central Africa. It requires concerted action and consequently common and global knowledge. To that end, policy recommendations could be focused on the following points:

4.2.1 In the short to medium term

- **Reliable data and studies.** Invest in the production of climate and hydrological data as well as in studies on vulnerability and risks at the local and regional levels in order to fine-tune sector, national and sub-regional strategies.
- **Human, material and financial resources.** Promote advocacy for the allocation of human, material and financial resources with climate change mitigation and adaptation options.
- **Training in climate approaches.** Train populations and decision-makers on climate risks and the assessment

of needs to implement their Nationally Determined Contributions.

- **Sensitisation of households on the energy transition.** Promote the use of efficient cooking equipment in households (e.g. improved stoves) with a view to reducing the consumption of dirty energy.
- **Climate finance training.** Train suitable people in the search for climate funds in order to educate them on the existing funds and encourage them to apply. Develop and disseminate simplified tools for the identification and formulation of proposals for climate projects.

4.2.2 In the long-term

- **Compliance with international commitments.** Encourage compliance with international commitments such as the Glasgow Declaration which aims to end deforestation and land degradation by 2030, the Bonn Challenge whose objective is to restore 350 million hectares by 2030 as well as the African Union Sustainable Forest Management Framework (2020-2030).
- **Sector programmes.** Promote sub-regional sector programmes to combat deforestation, for it could

increase the populations' exposure to climate change and deprive them of the means of adaptation.

- **Investing in the energy transition.** Invest in the electricity sector to improve the level of satisfaction with energy services, to offset the limited substitutability between electricity and alternative, particularly renewable, energies and to foster the development of households.
- **Providing households with transition alternatives.** Develop or facilitate households' access to all alternative energy sources to dirty energies such as liquefied petroleum gas, etc.
- **Financing of climate fund training.** Assess the capacity-building needs and NDC implementation requirements. Design and implement training and capacity-building programmes for national actors (public, private and civil society organisations) on climate financing based on specific needs identified. When these needs have been identified, procure resources for the training.
- **Climate fund financing.** Establish national funds financed from the central government budget, in particular by a budget drawdown, financial incentives, etc.

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ANNEX 1: IMPORT SUBSTITUTION STRATEGY OF THE CEMAC REGIONAL ECONOMIC AND FINANCIAL REFORM PROGRAMME

In accordance with the decisions and recommendations of the Extraordinary Summit of CEMAC Heads of State on 18 August 2021, aimed at bringing about real structural transformation of CEMAC economies towards industrialisation, the Steering Committee of the CEMAC Regional Economic and Financial Reform Programme (PREF-CEMAC), at its fifteenth ordinary session on 23 December 2021, selected four locally produced products (fish, rice, beef and oil and gas) and instructed the PREF-CEMAC Permanent Secretariat to prepare, in collaboration with the Member States, the CEMAC Commission and the Central Bank, a sub-regional import substitution strategy in order to mitigate the impact of importing these products using foreign exchange reserves. The aim of this strategy is to encourage local production of these four locally produced products to meet CEMAC domestic market needs by reducing imports of them.

The CEMAC countries are chiefly specialised in agricultural, silvicultural, pastoral and mining production. Chad, the Central African Republic and Cameroon have a comparative advantage in agriculture and stock breeding, while Cameroon, Gabon, Congo, Equatorial Guinea and Chad enjoy a similar advantage in the exploitation of mining and fishery resources.

However, in CEMAC, not all the animal, agricultural, mining and fishery potential is efficiently tapped. This means that a large amount of locally-produced goods are not intended for the domestic market (fish, cattle, oil and gas) and that local demand for consumer goods is met by imports. These imports create significant outflows of foreign exchange to purchase products that are potentially available at a lower cost in the sub-region. The aim, therefore, of implementing the import-substitution strategy in CEMAC would be to encourage and develop intra-community trade, create conditions for

strengthening the diversification of the sub-region's economies and supporting external stability.

Following this instruction, the PREF-CEMAC Permanent Secretariat launched a study in the first quarter, 2022, with a view to preparing this strategy. Its main recommendations are as follows:

Under the general recommendations:

- Adopt legal and regulatory measures that will grant national preference to local and regional products;
- Harmonise taxation in the sub-region and abolish certain levies and excise taxes applied to the three products (rice, meat and fish) to facilitate their marketing;
- Label locally produced products 'Made in CEMAC';
- Regularly hold meetings of the Committee on Origin and produce studies on the different locally produced products identified by the Committee to increase their production and improve their marketing in the sub-region; and
- Limit the supply of foreign exchange to 60% of the volume of imports of these products. The success of such a mechanism will require close involvement of the Central Bank and strong support from the member States.

Under the specific recommendations:

- Prepare and implement the common agricultural policy of CEMAC countries, which includes the livestock and fisheries sub-sectors and improve the policy, strategic and legal framework by adopting plans and legal texts;
- Establish incentive frameworks to encourage the production, exploitation and marketing of locally produced products by: i) establishing agricultural, pastoral and fish farming

development programmes aimed at providing producers with modern equipment in order to build their production capacity and ii) promoting micro-credit and credits adapted to rice farming, fishing and stockbreeding activities while granting tax benefits to credit establishments operating in these sectors;

- develop research and development by providing the necessary funding;
- accelerate the preparation of the common agricultural and livestock policy; and
- streamline community agricultural and fisheries agencies or institutions.

For the operational implementation of the recommendations made in the context of the import-substitution strategy, it is planned to establish or promote community-based businesses in each of the sub-sectors (meat, fish and rice). The following two stages should be considered when establishing these businesses:

- The first would concern the business start-up phase in each sub-sector that could be supervised by the CEMAC Commission which would organise a roundtable of the main stakeholders (Member States, employers' associations and Chambers of Commerce, etc.). This phase could be supported by technical assistance that will be sought from the United Nations Industrial Development Organisation, the African Development Bank and World Bank. It could be supervised by the CEMAC Commission which would organise the roundtable of the main stakeholders (employer associations, Chambers of Commerce, etc.), would seek technical partnerships with international structures specialized in this type of activity and would recruit a consultant to draft the business model and plan (based on the conclusions of the consultations with the main stakeholders). It is essential that the private sector has the largest shareholdings in these businesses. Furthermore, technical assistance will be sought for the technical design of the different projects and businesses from the United Nations Industrial Development Organisation, the African Development Bank and the World Bank.

- The second phase would be the financial set up which could be supervised by the Development Bank of Central African States (BDEAC) which could envisage a symbolic equity participation by the Community Development Fund as well as a roundtable of potential investors.

The following companies will be established:

- A meat production and trading company. This company will produce meat in Chad, Cameroon and CAR and will be responsible for marketing it in all the CEMAC countries. Its main activities will concern: the construction of refrigerated slaughterhouses in stockbreeding countries and the application of hygiene regulations governing the slaughter of animals, in accordance with previously defined community standards on: the implementation of measures to reduce the environmental nuisances of slaughterhouses and slaughtering areas; improved transportation of cattle by vehicle in river zones (exports of cattle from CAR to Congo for example) and the sale of meat to national wholesalers (butchers' shops).
- A fishing and fish and seafood distribution company. This company will carry out industrial fishing within CEMAC territorial waters and sell the catch to distributors (fishmongers) operating in the sub-region.
- A rice production and trading company. This company could buy and restore production sites which had been abandoned (for example SEMRY in Cameroon) while developing rice fields wherever possible. This company will ensure the sale of rice to distributors and wholesalers in the sub-region.

In particular, regarding the oil and gas sector, it would first be necessary to optimise the production capacities of the four refineries currently operating in Cameroon, Congo, Gabon and Chad (SONARA, CORAF, SOGARA and SRN, respectively) through BDEAC financing or by one or more multilateral donors, while establishing a body that will merge the existing oil product storage and distribution structures. Drawing on the experience of the National Refining Company, fuel storage depots should be linked to the different refineries from pipelines

to be constructed which will ensure the distribution of oil products throughout the zone.

To finance the activities listed above, BDEAC (with the support of external partners such as the African Development Bank and the World Bank) could promote knowledge building among banks and microfinance institutions on the characteristics and constraints of rice farming, fishery and stock-breeding activities, then the development of more suitable financing mechanisms and products. This knowledge should not only encompass the technical aspects (production systems, practices, etc.), but also the economic realities of these sub-sectors and their operation.

Capacity-building would, in particular, transform micro-finance institutions into major financing players for small rural producers by providing micro-credit, advisory and production

control services, the facilitation of marketing by identifying potential outlets with the agricultural cooperative networks.

Development partners could also be highly important actors in financing agricultural products in CEMAC. For example, BDEAC, granted loans for the agricultural and agro-industrial sector estimated at 139 billion over the early 2003 to the mid-2020 period (57.9% disbursed to-date). For their part, the International Fund for Agricultural Development (FIDA), German Cooperation (GIZ), the African Development Bank and French Development Agency (C2D) have provided significant financial support for key agricultural projects throughout the sub-region.

Reference: *PREF-CEMAC (April 2022): Import substitution strategy for locally produced products in CEMAC.*

ANNEX 2: DESCRIPTION OF THE MAIN CLIMATE FUNDS

Financing remains one of the main obstacles to combating climate change in Sub-Saharan Africa. In order to accelerate climate investment, international mechanisms have been established to support countries with low climate action financing capacity. These include the Special Climate Change Fund, the Green Climate Fund (GCF), the Adaptation Fund (AF) and the Global Environment Facility (GEF).

The Special Climate Change Fund

The Special Climate Change Fund (Special Fund) was established in 2001 under the United Nations Framework Convention on Climate Change (UNCCC) to finance activities, programmes and measures linked to climate change and complementing those financed through resources allocated under the Climate Change' focus area of GEF and other bilateral and multilateral donors. The Special Fund was established to support mitigation and adaptation actions in sectors vulnerable to climate change. The Special Fund also aims to transfer technologies mainly focused on environmentally sound technologies. These technologies aim to reduce greenhouse gas emissions and build actors' adaptation capacities.

The Green Climate Fund and Adaptation Fund

The two most important financing mechanisms of the UNCCC are the Green Climate Fund (GCF) and the Adaptation Fund (AF). The GCF aimed at fighting climate Change is dedicated to developing countries in general and least developed countries (LDCs) and Small Island Developing States (SIDS) in particular. The aim of the AF is finance concrete adaptation programmes in developing countries party to the KYOTO Protocol and which are particularly vulnerable to the harmful effects of climate change. The LDCs and SIDS are highly vulnerable to climate change for they are heavily dependent on primary resources for their survival, but also have very limited technical, technological and financial capacities to withstand climate shocks. The GCF aims to create a

paradigm shift towards low-emission, climate-change resilient developing countries. To that end, GCF grants investment, mitigation and adaptation facilities. The GCF has a range of resource mobilisation opportunities in several forms including grants, loans, equity or guaranteed funds to finance activities that will help to build the resilience of communities that are vulnerable to climate change and contribute to low-carbon development. The GCF has earmarked financing equivalent to 50% of the adaptation allocation for SIDS, LDC and African States.

Overview of Financing approved by GCF for LDCs

The African Continent benefits from international and continental mechanisms for fighting climate change. Africa received USD10.99 billion through the GCF mechanisms, coming behind Asia-Pacific countries which received financing of USD14.52 billion (Climate Analytics, 2021). But these amounts fall far short the needs of African countries.

Although the GCF finances three strategic areas of intervention, namely adaptation, mitigation and crosscutting aspects, this funding focuses more on mitigation than adaptation, whereas the priority need of African countries is adaptation financing. Mitigation financing which is rising represents 53 % of financing approved by the GCF for LDCs, (Climate Analytics, 2021). The countries of Central Africa are already experiencing the negative impacts of climate change and investments are necessary to help them, their population and infrastructure to adapt. Adaptation financing is declining, down from 27% in November 2020 to 21% in July 2021 (Climate Analytics, 2021). Climate Analytics also adds that the decline in adaptation financing stems from the fact that most adaptation projects, seek financing in the form of grants or subsidies, more difficult to justify and more complicated to obtain, rarely in the form of loans. The other difficulty often encountered by LDCs in seeking international financing is the justification of incremental costs linked to climate change as well as the

demonstration of climate rationale. Most financing institutions require justification of the distinction between development needs and needs linked to climate change. The capacities of national actors should be strengthened in terms of climate change and, especially regarding key aspects to be taken into account when developing a climate project.

Global Environment Facility (GEF)

The GEF, established on the eve of the Rio Earth Summit in 1992 is a catalyser of action in favour of the environment. Through its strategic investments, GEF works with partners to tackle the planet's most pressing environmental problems. GEF administers several special funds (the Nagoya Protocol Implementation Fund, the Capacity-building Initiative for Transparency, the Least Developed Countries' Fund and the Special Climate Change Fund) and acts as Secretariat for the Adaptation Fund, in a temporary capacity.

The main areas of intervention are biodiversity, climate change, international waters, soil degradation (mainly desertification and deforestation) as well as chemical products and waste. GEF's strategy for mitigating climate change is to support developing countries wishing to make the transition towards low emission development pathways with the following three basic objectives:

- Promote innovation and the transfer of technologies for sustainable energy impacts.
- Show mitigation options with systemic impacts by strengthening interaction and integration between mitigating climate change and GEF's other areas of intervention.
- Mainstream mitigation concerns into sustainable development strategies due to continuing support for favourable conditions in developing countries.

ANNEX 3: THE FIVE OPERATIONAL REGIONS OF THE AFRICAN DEVELOPMENT BANK

The five African regions, according to the African Development Bank's operational breakdown, are as follows:

- **Central Africa:** Cameroon, Congo, Gabon, Central African Republic (CAR), Democratic Republic of Congo (DRC), Equatorial Guinea and Chad
- **North Africa:** Algeria, Egypt, Libya, Morocco, Mauritania and Tunisia.
- **West Africa:** Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Nigeria, Niger, Senegal, Sierra Leone and Togo⁵.
- **East Africa:** Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Seychelles, Sudan, South Sudan, Tanzania, Uganda, Somalia.
- **Southern Africa:** South Africa, Angola, Botswana, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Sao Tome and Principe, Zambia et Zimbabwe.

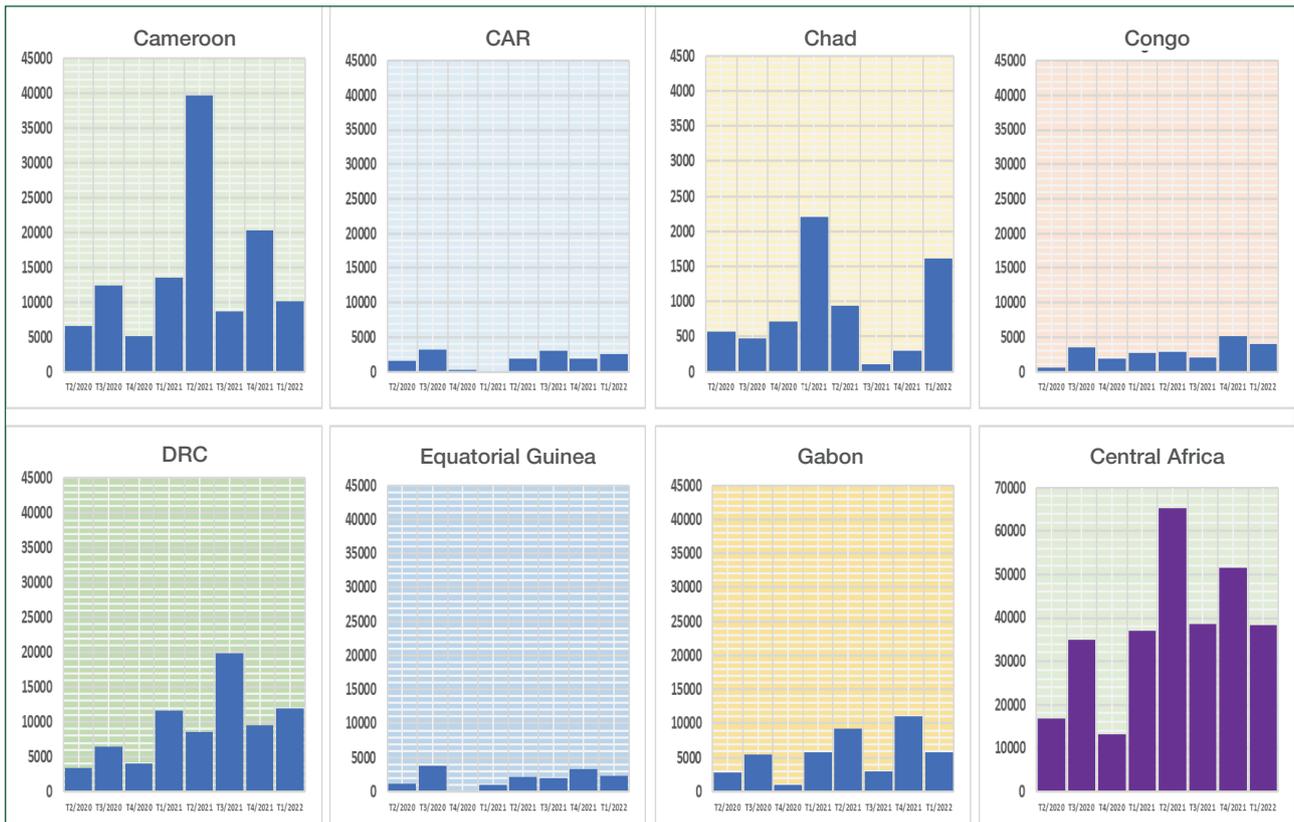
For this reason, the term 'Central Africa', within the context of this Economic Outlook report, concerns the above-mentioned countries for the said region.

Source: The authors.

⁵ Nigeria forms a single operational block in the sense of the Bank (RDNG). However, for the Regional Economic Outlooks, the country is included in the Report for West Africa.

ANNEX 4: TRENDS IN THE NUMBER OF NEW COVID-19 CASES, PER COUNTRY

Figure: Trends in the number of new COVID-19 cases per country



ANNEX 5: SOME COVID-19 RESPONSE MEASURES TAKEN IN CENTRAL AFRICA

Country	Measures taken
Cameroon	<ol style="list-style-type: none"> 1. Preparation of a USD 600 million COVID-19 preparedness and response plan to address the crisis. 2. Establishment of a special allocation account entitled National Special Solidarity Fund to combat coronavirus and its economic and social effects.⁷ With an initial endowment of CFAF one billion, CFAF 180 billion were then leveraged by the Government from development partners, businesses and people of good will to finance four major action programmes concerning 24 Ministerial Departments. Implementation of this COVID-19 Special Allocation Fund was announced by the Minister of Finance in November 2021. 3. Tax relief for private companies including loan guarantees and moratoria on tax obligations. 4. Prioritisation of domestic debt clearance, including the clearance of value added tax (VAT) for businesses particularly affected by the crisis. 5. Increased social expenditure which rose to 1.2 % of GDP to offset revenue and emergency support. 6. Tax exemptions for hotels. 7. Acceleration of value-added tax refunds for authorised businesses. 8. Establishment of consultation frameworks between the Government and the main economic actors in order to mitigate the impacts of the crisis and foster the rapid recovery of economic activity. 9. Revival and strengthening of food crop and livestock agricultural production programmes focused on products that are likely to reduce food dependency (procurement of inputs and support for supply chain actors).
Central African Republic	<ol style="list-style-type: none"> 1. Additional budget linked to the pandemic-related envelope of about CFAF 15 billion (USD 26.1 million), including CFAF 12 billion (USD20.9 million) for COVID-19 management; CFAF 2.6 billion (USD 4.5 million) for the private sector and CFAF 0.5 billion (USD 0.7 million) for vulnerable households. 2. Tax relief for small and medium-sized enterprises. 3. Strengthening of border screening and controls. 4. Partial clearance of domestic debt arrears. 5. Plan to mobilise stakeholders involved in vaccination against COVID-19. 6. Preparation of strategic COVID-19 readiness and response project. 7. Adherence to the COVAX Initiative to accelerate vaccination of the population. 8. Total coverage by central government of COVID-19 patients.
Chad	<ol style="list-style-type: none"> 1. Establishment of a National Solidarity Fund endowed with CFAF 100 billion (USD174 million) to support vulnerable communities. 2. Payment by the central government of electricity bills issued by the National Electricity Company to low-income customers for three months, including pre-payment customers. 3. Renewal of exemptions on food products and their extension to other products in accordance with conditions determined by the Government. 4. Tax measures in favour of small and medium-sized enterprises, in particular a 50% reduction of business registration charges, tax deductions and payment moratorium. 5. 50 % reduction in the business licensing tax for all taxpayers and of the general poll tax country wide for the year 2000.

Country	Measures taken
	<ol style="list-style-type: none"> 6. Establishment of a youth entrepreneurship fund, for an amount equivalent to 0.6 % of non-oil GDP. 7. Clearance of domestic debts.
DRC	<ol style="list-style-type: none"> 1. Multisectoral Plan for USD 2.6 billion to contain the socioeconomic impacts of COVID-19. 2. Temporary tax relief for businesses (exemption from VAT for three months on pharmaceutical products, the suspension of tax controls on businesses, and a grace period for businesses with late tax payments). 3. Free water and electricity for the population for two months and a ban on the eviction of tenants in the event of non-payment of rent between March and June 2020. 4. The BCC announced on 24 March 2020, several measures to ease liquidity conditions, including: (i) the creation of a new guaranteed financing facility for commercial banks for a maximum duration of 24 months to support the granting of new credits for the importation and production of food products and other staples; (ii) the publication of Instruction 44 to credit establishments and microfinance institutions relating to the suspension of the application of certain regulatory provisions in response to the COVID-19 pandemic.
Republic of Congo	<ol style="list-style-type: none"> 1. Allocation of part of the Special Drawing Rights (SDR) to public spending on support to vulnerable communities, in particular, basic services (health, water and electricity), i.e. about CFAF 28.424 billion. 2. Maintenance of the State of Health Emergency, extended by tacit approval per 90-day period. 3. Special COVID-19 drive to boost vaccination rates.
Equatorial Guinea	<ol style="list-style-type: none"> 1. Declaration of a Health Alert as soon as the first case was diagnosed on 13 March 2020. 2. Implementation of time-bound tax benefits for non-oil enterprises. 3. Adoption of a social assistance programme for the most vulnerable segments of the population. 4. Implementation of reforms to control the fiscal deficit despite the increase in public spending essential to mitigate the effects of the pandemic. 5. Financing of balance of payments imbalances in a difficult economic context: Equatorial Guinea had recourse to the IMF's Rapid Financing Instrument in 2021. On 15 September 2021, the IMF Executive Board approved a disbursement of SDR 47.25 million (i.e. about 67.38 million dollars, 30 % of the quota). The aim of this disbursement is to cover emergency financing needs of the budget and balance of payments caused by the COVID-19 pandemic and explosions in Bata in March 2021.
Gabon	<ol style="list-style-type: none"> 1. Payment of water and electricity bills for low-income people as well as free land transport by public companies for all users. 2. Creation of a fund to support rental payments and create a food bank. 3. Establishment of an unemployment fund to assist private sector workers by paying 50% to 70% of their gross monthly salary excluding bonuses. 4. 50% reduction in business licensing tax and the flat rate withholding tax to support small businesses and companies providing services to individuals. 5. Establishment of an emergency financing window of CFAF 225 billion (USD 391.3 million) to immediately meet the urgent cash flow needs of individuals. 6. Adoption of a moratorium on outstanding debts owed to banks with no penalties for any business in cessation of activity or in difficulty. 7. Non-taxation of all special bonuses paid to employees who will carry out their professional activities during the lockdown period. 8. Tax relief and large-scale support with the health care expenses of citizens and employees. 9. Introduction of a curfew from 6 p.m. to 5 a.m., extended to 9 p.m. in May 2021.

ANNEX 6: IMF SUPPORT IN THE FORM OF SPECIAL DRAWING RIGHTS TO CENTRAL AFRICAN COUNTRIES TO BOOST POST COVID-19 RECOVERY

Country	Amount (million SDRs)	Amount (million USD)
Cameroon	264.5	377.5
CAR	83.55	140
Chad	134.4	190
DRC	865.4	1 450
Congo	155.3	197
Equatorial Guinea	150.9	215
Gabon	207	295

Source: IMF (2021). New general allocation of SDRs by IMF in August 2021.

ANNEX 7: CLIMATE FINANCING NEEDS, CONTRIBUTIONS AND DEFICITS PER COUNTRY IN CENTRAL AFRICA

Table 1: Total Climate Financing Needs, 2020-2030 (in million USD)

Country	Adaption	Mitigation	Losses and damages (Aver.)	Other Needs	Cumulative Needs (Aver. 2020-2030)	Annual needs (Aver. 2020-2030)
Cameroon	31,456.00	25,784.66	2,652.36	400.00	60,293.02	5,481.18
Central African Republic	362.42	1,320.00	842.78	84.83	2,610.03	237.28
Chad	5,002.20	6,700.20	4,692.48	0.00	16,394.88	1,490.44
Congo	3,795.00	4,395.15	4,836.38	0.00	13,026.53	1,184.23
Equatorial Guinea	76.33	2,448.87	4,142.34	102.00	6,769.54	615.41
Gabon	0.00	4,372.10	2,864.36	0.00	7,236.46	657.86
Dem. Rep. Congo	23,170.00	25,600.00	17,223.68	0.00	65,993.68	5,999.43
Central Africa	63,861.95	70,620.97	37,254.39	586.83	172,324.14	15,665.83
CEMAC	40,691.95	45,020.97	20,030.70	586.83	106,330.46	9,666.41

Source: Calculations of AfDB's Macroeconomics Policy, Forecasting and Research Department (ECMR) based on the Annual Energy Outlook 2022 Report, the Africa NDC Hub and updated Nationally Determined Contributions.

Table 2: Total Climate Financing Flows and Contributions Received, 2010-2020 and 2016-2020 (in million USD)

Country	Cumulative total 2016-2020	Average 2010-2020	Cumulative total 2016-2020	Average 2016-2020
Cameroon	2,999.87	272.72	2,325.23	465.05
Central African Republic	715.59	65.05	566.26	113.25
Chad	1,445.68	131.43	1,087.66	217.53
Congo	686.35	62.40	452.07	90.41
Equatorial Guinea	446.56	40.60	325.82	65.16
Gabon	895.09	81.37	434.81	86.96
Dem. Rep. Congo	2,951.06	268.28	1,792.91	358.58
Central Africa	10,140.19	921.84	6,984.77	1,396.95
CEMAC	7,189.13	653.56	5,191.87	1,038.37

Source: Calculations of AfDB's Macroeconomics Policy, Forecasting and Research Department (ECMR) based on the Annual Energy Outlook 2022 Report, the Africa NDC Hub and updated Nationally Determined Contributions.

Table 3: Total Annual Climate Finance Gap, 2020-2030 (in million USD)

Country	BESOINS Moy. annuelle 2020-2030	FLUX		DEFICITS	
		Moy. annuelle 2010-2020	Moy. annuelle 2016-2020	Déficit (base 2010-2020)	Déficit (base 2016-2020)
Cameroon	5,481.18	272.72	465.05	5,208.47	5,016.14
Central African Republic	237.28	65.05	113.25	172.22	124.02
Chad	1,490.44	131.43	217.53	1,359.02	1,272.91
Congo	1,184.23	62.40	90.41	1,121.83	1,093.82
Equatorial Guinea	615.41	40.60	65.16	574.82	550.25
Gabon	657.86	81.37	86.96	576.49	570.90
Dem. Rep. Congo	5,999.43	268.28	358.58	5,731.15	5,640.84
Central Africa	15,665.83	921.84	1,396.95	14,744.00	14,268.88
CEMAC	9,666.41	653.56	1,038.37	9,012.85	8,628.03

Source: Calculations of AfDB's Macroeconomics Policy, Forecasting and Research Department (ECMR) based on the Annual Energy Outlook 2022 Report, the Africa NDC Hub and updated Nationally Determined Contributions.



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