Table 2. Summary of Oil Revenue

CFAF Million	2017 *Actual*	2017 *Projection*	2018 *Projection*	2019 *Projection*	2020 *Projection*	Unit
Production and Export Overiew						
Production Volume						Barrel
Export Volume						Barrel
Export Value						CFAF
Crude Oil supplied to SRN						Barrel
Crude Oil Received						
By the Government						Barrel
By SHT						Barrel
Total						Barrel
Total Oil Revenue						CFAF
Direct Receipt						CFAF
Net Sales Revenue						CFAF
Direct Receipt						
Profit Tax (in Cash)						CFAF
Statistical Fee						CFAF
Surface Fee						CFAF
Dividend						CFAF
Bonus						CFAF
Other Receipt in cash						CFAF
Total						CFAF
Gross Government Crude Oil Sales Revenue						
Government						CFAF
SHT						CFAF
Net Sales Revenue						CFAF
Average Selling Price						
in FCFA						CFAF
in USD						US Dollar
Doba Discount						US Dollar
Oil sales until March 2017						
Government						
Export Volume						Barrel
Export Value						CFAF
Average Selling Price						CFAF
Transportation Cost						CFAF
SHT						
Export Volume						Barrel
Export Value						CFAF
Average Selling Price						CFAF
Transportation Cost						CFAF
SHT participation cost (Cash-call)						CFAF
Glencore Debt						
Interest Payment						CFAF
Principal Repayment						CFAF
Restructuring Fee						CFAF
Net Sales Revenue						CFAF
Memorandum Item						
Exchange Rate						CFAF/USD

INTERNATIONAL MONETARY FUND

CHAD

December 10, 2018

THIRD REVIEW UNDER THE EXTENDED CREDIT FACILITY, REQUEST FOR A WAIVER OF NONOBSERVANCE OF A PERFORMANCE CRITERION, AND FINANCING ASSURANCES REVIEW—DEBT SUSTAINABILITY ANALYSIS

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Prepared by the staffs of the International Monetary Fund and International Development Association

Chad **Joint Bank-Fund Debt Sustainability Analysis** Prepared by the Staffs of the International Monetary Fund (IMF) and the International Development Association (IDA)	
Risk of external debt distress	*High*
Overall risk of debt distress	*High*
Granularity in the risk rating	*Sustainable*
Application of judgement	*No*

Chad's risks of external and overall debt distress are high.[1] *Furthermore, while most external debt sustainability indicators are below their respective thresholds from 2018 onwards, one indicator – the debt-to-revenue ratio – breaches its threshold under the baseline scenario. Overall, total public debt vulnerabilities are elevated although the present value (PV) of the public debt-to-GDP ratio remains on a downward trajectory. The debt sustainability analysis is based on projected continued fiscal prudence and increase in non-oil revenues. Following the restructuring in 2018, the new Glencore debt contract helps contain the impact of oil price fluctuation on debt sustainability, as it allows for lower debt service when oil prices are lower.*

[1] Chad's debt carrying capacity was rated weak according to the composite indicator (CI) based on the October 2018 WEO and the 2017 CPIA index.

PUBLIC DEBT COVERAGE

1. **The coverage of public debt is in line with the previous DSA.** It includes the central government, as well as state guaranteed external debt owed by the public oil company "Société des Hydrocarbures du Tchad" (SHT) (Text Table 1). This scope encompasses all public external debt; other public sector entities (including regions and other state owned enterprises) do not have access to external financing. Staff will continue to seek information on domestic debt of other public sector enterprises.

2. **The contingent liability stress test accounts for vulnerabilities associated with non-guaranteed state-owned enterprises (SOEs), unaudited domestic arrears, and financial markets (Text Table 1).** Contingent liabilities from financial markets are set at 5 percent of GDP, which represents the average cost to the government of a financial crisis in a low-income country since 1980. The contingent liability stress test is customized to 5 percent of GDP to account for the domestic debt of SOEs (2 percent) and domestic arrears that could potentially be validated by the ongoing audit (3 percent).

Text Table 1. Chad: Coverage of Public-Sector Debt and Design of Contingent Liability Stress Tests

	Subsectors of the public sector	Sub-sectors covered
1	Central government	X
2	State and local government	
3	Other elements in the general government	
4	o/w: Social security fund	
5	o/w: Extra budgetary funds (EBFs)	
6	Guarantees (to other entities in the public and private sector, including to SOEs)	
7	Central bank (borrowed on behalf of the government)	X
8	Non-guaranteed SOE debt	

The country's coverage of public debt	The central government, central bank		
	Default	Used for the analysis	Reasons for deviations from the default settings
Other elements of the general government not captured in 1.	0 percent of GDP	3	Domestic arrears could potentially be validated by an ongoing audit.
SoE's debt (guaranteed and not guaranteed by the government) 1/	2 percent of GDP	2	
PPP	35 percent of PPP stock	0	
Financial market (the default value of 5 percent of GDP is the minimum value)	5 percent of GDP	5	
Total (2+3+4+5) (in percent of GDP)		10	

1/ The default shock of 2% of GDP will be triggered for countries whose government-guaranteed debt is not fully captured under the country's public debt definition (1.). If it is already included in the government debt (1.) and risks associated with SoE's debt not guaranteed by the government is assessed to be

BACKGROUND

A. Evolution and Composition of Debt

3. Chad's external public and publicly guaranteed (PPG) debt burden increased considerably over the past decade mainly on account of external commercial borrowings related to oil. Commercial borrowings (oil sale advances) from Glencore in 2013 to cover revenue shortfalls and in 2014 to purchase a share in the Doba oil Consortium were the main contributors. This debt has since been restructured twice, most recently in early 2018 which has reduced considerably its burden. Falling oil prices over 2014-16 also contributed to the rising debt service burden by reducing revenues available to repay oil sales advances. At end-June 2018, outstanding PPG external debt stood at about$2.9 billion (26 percent of GDP). Chad's CFAF-denominated debt held by the regional central bank (BEAC), the regional development bank (BDEAC), and bilateral creditors in the currency union (Republic of Congo, Equatorial Guinea, and Cameroon) amounts to 11.4 percent of GDP. It is not included in external debt, which is calculated on a currency basis.

4. The composition of external public debt has changed significantly over the past decade. The share of external debt from multilaterals has fallen sharply from about 87 percent in 2008 to 24 percent in 2017, while the share of commercial debt, which was virtually non-existent in 2008, has risen to almost 50 percent, mostly to Glencore. Bilateral debt doubled over the decade but, as a share of total debt, it is still significantly less than commercial debt (Text Table 2). Consistent with the ECF arrangement, external debt is defined on a currency basis.

5. Domestic public debt has increased significantly in recent years (Text Table 3). This reflects in large part an increased reliance on domestic marketable securities. Following a peak in 2015, debt to the BEAC was restructured, and Chad stopped borrowing from the BEAC. In addition to the debt owed to BEAC (33.2 percent of total debt), debt denominated in local currency but held outside Chad includes debt to official bilateral partners and BDEAC (3.4 percent of total debt), and securities in CFAF that could be held by non-resident banks.

6. External payment arrears accumulated in 2016 and in 2017 but have nearly halved so far in 2018. Due to liquidity challenges in 2016 and the first half of 2017, the government accrued external arrears vis-à-vis a number of multilateral, bilateral, and one commercial creditor (Mega bank from Taiwan province of China). At end-2017, about $102 million (1 percent of GDP) remained outstanding, mainly to bilateral creditors. The authorities have since reduced this stock to $56 million by paying the amount owed to the Islamic Development Bank and through a rescheduling agreement with Libya and India. The bulk of remaining arrears are to the Rep. of Congo (about $47 million), with small amounts remaining to Equatorial Guinea (both under negotiations), Mega Bank and the European Investment Bank. The authorities have taken concrete steps to prevent the further accumulation of arrears—including measures to improve coordination and reactivate an escrow account for the payment of external debt at the BEAC—and are making a strong effort to address the remaining arrears.

Text Table 2. Chad: External Debt Stock 2015-2018[1]

		2015	2016	2017	2018p
Total	(Billions of $)	2.7	2.6	2.8	2.9
	(Billions of CFA francs)	1617	1622	1572	1644
	(Percent of GDP)	25	27	27	27
	Billions of CFA francs				
Multilateral		375	390	385	495
	IMF	38	77	96	173
	World Bank/IDA	113	110	101	104
	African Development Fund/Bank	69	56	56	66
	Others	155	147	133	151
Bilateral		366	370	419	428
	Paris Club official debt	2	…	25	50
	Non-Paris Club official debt	364	370	394	378
	of which: China, People's Republic	144	156	132	
	Libya	158	164	150	
	India	27	30	27	
Commercial[2]		875	862	768	721
	Share of Total (percent)				
Multilateral		23	24	24	30
Bilateral		23	23	27	26
Commercial[2]		54	53	49	44

Sources: Chadian authorities, selected creditors, and World Bank and IMF staff estimates.

[1]Includes only debt denominated in foreign currency.

[2]Glencore loan accounts for about 98 percent of commercial debt stock in 2017.

Text Table 3. Chad: Domestic Debt Stock 2014-2017

	2014	2015	2016	2017
Total (Billions of CFA francs)	**708.9**	**1185.0**	**1482.2**	**1445.6**
(Percent of GDP)	**10.3**	**18.3**	**24.8**	**25.2**
Share of Total (in percent)				
Central Bank financing	31.4	38.4	33.3	33.2
Statutory advances[1]	*26.5*	*23.6*	*18.9*	…
Exceptional advance[1]		*11.8*	*11.5*	…
Consolidated debt	*4.9*	*2.9*	*3.0*	…
Commercial banks' loans	19.4	7.3	3.3	3.6
2011 Bond[2]	7.6	2.3	0.0	0.0
2013 Bond[2]	10.2	4.6	3.7	1.2
Treasury Bonds[3]		11.8	21.2	21.8
BDEAC	1.7	1.7	3.2	3.4
Republic of Congo	4.9	3.0	2.4	2.4
Equatorial Guinea	2.1	1.3	1.0	1.0
Cameroon			2.0	2.1
Domestic arrears	7.3	16.9	12.8	13.5
Others[4]	12.4	7.4	5.9	6.1
Memo items:				
Treasury Bills	3.9	7.1	11.2	11.7

Source: Chadian authorities.

[1]Existing balances were converted into long-term securities with grace period of 4 years and maturity of 14 years.

[2]Issued through banks' syndication.

[3]Auctionned in regional securities' market.

[4]Legal commitments, standing payment orders, and accounting arrears.

B. Macroeconomic Forecast

7. **The DSA's baseline scenario reflects policies and financing assumptions underlying the ECF arrangement and the Glencore debt restructuring**. The macroeconomic outlook remains broadly unchanged compared to the previous DSA (July 2017). It assumes that the ongoing revenue-led fiscal consolidation will continue over the program horizon at a gradual pace and that spending control would be maintained. Oil production is expected to continue to increase in the medium term, leading to higher oil revenues, higher exports and overall GDP growth. The baseline scenario assumes full clearance of external arrears in 2018 and gradual repayment of domestic arrears.

8. Financing assumptions have been updated based on most recent information. Externally financed investment has remain unchanged, and the discount rate is kept at 5 percent over the forecast horizon. The grant element of new borrowing is assumed to decline gradually over the forecast horizon. With regards to domestic financing, based on a recent shift towards short term debt, the share of T-bills over the forecast horizon has been revised upward. Reflecting this shift, average interest rate on domestic debt has been revised upward slightly.

9. Realism tools point out some risks around the forecast. The projected 3-year fiscal adjustment is in line with historical data on LIC adjustment programs. Continued fiscal prudence and efforts to raise non-oil revenues are expected to ensure a sustainable adjustment. The realism tool suggests that the growth path could be optimistic given the projected consolidation. However, staff considers projected growth to be realistic given that the rebound this year and next is from a low base, and that confidence is expected to strengthen after the Glencore debt restructuring, the improvement in the fiscal position (including improvement in budget execution), the repayment of domestic arrears which has started, and the authorities ongoing efforts to implement the national development plan. This is consistent with expected private sector driven growth path, led by private investment in the oil sector, as shown in Figure 4. The recent privatization of the cotton public enterprise is likely to help strengthen private sector contribution to growth.

C. Country Classification and Determination of Stress Test Scenarios

10. The newly-introduced composite index (CI) based on October 2018 World Economic Outlook (WEO) projections and update of the CPIA index to 2017 levels indicates weak debt carrying capacity for Chad. In the previous DSA framework, the medium debt-carrying capacity classification was solely informed by the CPIA rating. The new methodology relies instead on a composite indicator (CI) combining the CPIA score, external conditions as captured by world economic growth and country-specific factors. The October 2018 data indicate weak debt carrying capacity, reflecting mainly a low CPIA and a low level of foreign reserves (Text Table 4).

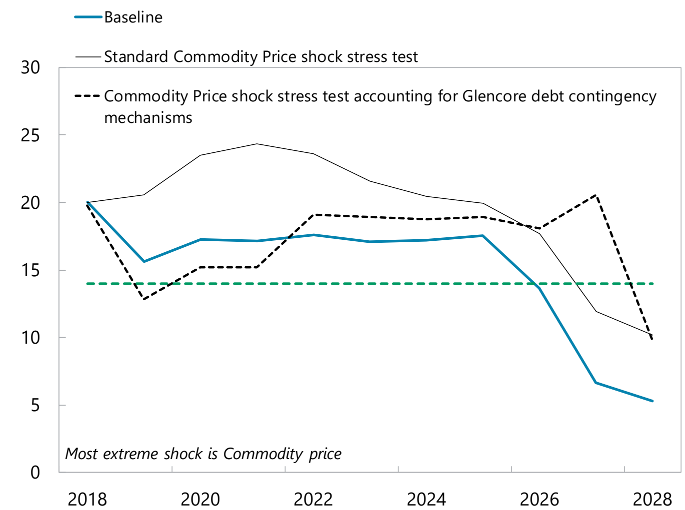
Text Table 4. Chad: CI Score

Components	Coefficients (A)	10-year average values (B)	CI Score components (A*B) = (C)	Contribution of components
CPIA	0.385	2.676	1.03	41%
Real growth rate (in percent)	2.719	2.752	0.07	3%
Import coverage of reserves (in percent)	4.052	34.000	1.38	55%
Import coverage of reserves^2 (in percent)	-3.990	11.560	-0.46	-18%
Remittances (in percent)	2.022	0.000	0.00	0%
World economic growth (in percent)	13.520	3.660	0.49	20%
CI Score			2.52	100%
CI rating			Weak	

Source: IMF and World Bank staff calculations. The CI cutoff for medium debt carrying capacity is 2.69.

11. The debt sustainability analysis relies on six standardized stress tests and a customized oil price shock stress test (Figures 1 and 2 and Tables 3 and 4). The customized oil price shock entails oil prices lower than the baseline by 38 percent between 2019 and 2024 and has been calibrated to account for contingency mechanisms under the Glencore debt contract which limit the negative effect of the shock (Text Figure 1). In particular, low oil proceeds trigger provisions that allow Chad to forgo advanced payment on principal and interest that otherwise would occur when applicable.

Text Figure 1. Debt Service-to-Revenue Ratios



Sources: Chadian authorities; IMF staff calculations.

DEBT SUSTAINABILITY

A. External Debt Sustainability

12. Chad is at high risk of external debt distress. Public external debt is projected to gradually decline over the forecast horizon under the baseline scenario. The present value of PPG external debt to GDP ratio, the present value of PPG external debt to exports ratio and the debt service to exports ratio are well below their thresholds (Figure 1). The debt service to revenue ratio now appears above its threshold of 14 percent under the baseline scenario.

13. Under stress tests, the thresholds are breached for all indicators. The exports shock stress tests appear as the most extreme for all indicators except the debt service to revenue ratio, for which the growth shock stress test is the most extreme. Under the export stress test, the threshold of the present value of PPG external debt-to GDP ratio and the present value of PPG external debt to exports ratio are breached until 2023 and 2025 respectively, while the threshold for debt service to exports is breached throughout almost all the forecast horizon. Under the growth shock stress test, the debt service to revenue ratio breaches its threshold from 2018 to 2027.

B. Public Debt Sustainability

14. The benchmark for public debt is breached under the baseline. The PV of total public debt-to-GDP ratio projected at end-2018 stands at 47 percent, which is about 12 percentage points above the 35 percent benchmark level associated with heightened public debt vulnerabilities with a weak debt carrying capacity. The threshold is breached from 2018 until 2021 under the baseline scenario.

C. Risk Rating and Vulnerabilities

15. Chad's debt sustainability is now less vulnerable to oil price fluctuations. The impact of a commodity price shock on debt sustainability is now limited, as the debt service to revenue ratio remains close to the baseline under a lower oil price scenario (Text Figure 1). This reflects contingency mechanisms under the new Glencore debt contract, which allow lower external debt service to Glencore when oil prices are lower.

16. Chad is at high risk of external debt distress and high overall risk of public debt distress despite a major debt restructuring. The rescheduling of the Glencore debt, along with the projected recovery in the oil sector and prudent fiscal policy, result in debt burden indicators declining significantly over the near and medium terms. However, out of four indicators of external debt sustainability, one is breached under the baseline. While the projected path of this indicator has improved relative to its path in the last DSA, under the new DSA framework, a lower threshold applies to this particular indicator (Text Table 5).[2] As such, Chad's external debt is assessed to be at high risk of debt distress. Additionally, the overall risk of debt distress is high based on the breach of an external debt sustainability indicator threshold and total public debt residing above its benchmark level. Mechanically, the CFAF-denominated debt held by the BEAC, BDEAC, and bilateral creditors would weaken the external debt sustainability indicators, if the external DSA were done on residency basis, but the true risk from this debt is much lower than foreign currency denominated debt due to lack of currency risk, strong institutional ties with the creditors, and the relative ease of rescheduling.

Text Table 5. Chad: Debt Thresholds

EXTERNAL debt burden thresholds		
PV of debt in % of	Current DSA	Previous DSA
Exports	140	100
GDP	30	30
Debt service in % of		
Exports	10	15
Revenue	14	18
TOTAL public debt benchmark		
PV of total public debt in percent of GDP	35	38

Source: IMF and World Bank staff calculations.

[2] Under the old DSA framework, none of the thresholds would have been breached under the baseline scenario over the 2019-2038 projection period.

17. Significant efforts are warranted to ensure debt remains on a downward trajectory. Elevated vulnerabilities reinforce the need to maintain prudent fiscal policy including on external and domestic borrowing. While progress has been made recently to reduce the stock of external and domestic arrears, much more attention is needed going forward to clear all the remaining arrears. Finally, effective inter-agency coordination to strengthen the capacity to record and monitor public debt is very important to better manage public debt.

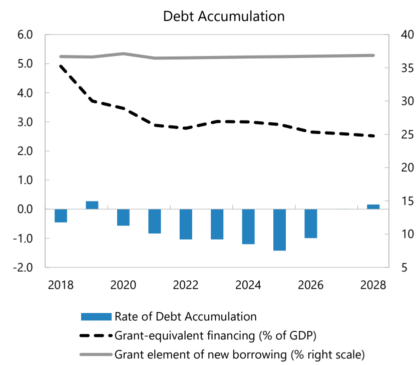
18. While the authorities broadly agreed with staff's assessment, they expressed strong disappointment at the still high risk of external debt distress especially after the conclusion of the Glencore debt restructuring. The aim of the restructuring was to reduce the risk rating to moderate. This would have been achieved under the previous DSA framework and would have paved the way for flexibility in accessing much needed external financing for priority investment project. They however remain committed to further reduce debt vulnerabilities going forward.

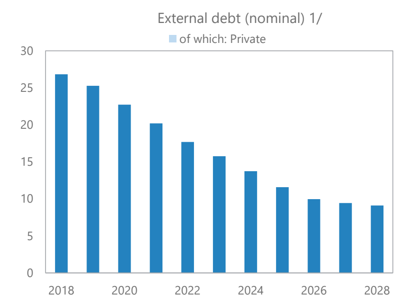
Table 1. Chad: External Debt Sustainability Framework, Baseline Scenario, 2015-2038

(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 8/	
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2028	2038	Historical	Projections
External debt (nominal) 1/	**25.0**	**27.1**	**27.3**	**26.8**	**25.3**	**22.7**	**20.2**	**17.7**	**15.8**	**9.1**	**8.6**	**23.9**	**16.6**
of which: public and publicly guaranteed (PPG)	**25.0**	**27.1**	**27.3**	**26.8**	**25.3**	**22.7**	**20.2**	**17.7**	**15.8**	**9.1**	**8.6**	**23.9**	**16.6**
Change in external debt	-4.2	2.2	0.2	-0.5	-1.6	-2.6	-2.5	-2.5	-1.9	-0.3	-0.2		
Identified net debt-creating flows	**16.6**	**8.9**	**2.5**	**-0.5**	**-1.1**	**-1.5**	**-0.8**	**0.0**	**0.9**	**-1.3**	**1.7**	**2.7**	**-0.6**
Non-interest current account deficit	**12.5**	**7.5**	**4.6**	**3.8**	**4.3**	**3.6**	**4.7**	**5.1**	**5.0**	**0.8**	**2.4**	**6.6**	**3.2**
Deficit in balance of goods and services	16.3	15.0	13.9	10.7	9.8	8.6	8.8	9.6	8.4	-30.5	-19.3	**10.5**	**-9.2**
Exports	26.5	24.4	27.5	33.2	34.4	34.8	33.7	33.5	32.8	30.5	19.3		
Imports	42.9	39.4	41.4	43.9	44.2	43.4	42.5	43.0	41.2	0.0	0.0		
Net current transfers (negative = inflow)	-7.1	-7.7	-9.6	-9.0	-7.7	-7.5	-6.6	-6.4	-6.4	-5.1	-4.0	**-6.4**	**-6.5**
of which: official	-2.5	-2.4	-3.1	-3.3	-2.1	-2.1	-1.6	-1.5	-1.6	-1.2	-1.2		
Other current account flows (negative = net inflow)	3.2	0.1	0.3	2.1	2.2	2.5	2.5	2.0	3.0	36.3	25.8	**2.4**	**18.9**
Net FDI (negative = inflow)	**-5.1**	**-2.4**	**-3.7**	**-4.4**	**-5.1**	**-4.5**	**-5.1**	**-4.6**	**-3.9**	**-1.8**	**-0.6**	**-4.7**	**-3.5**
Endogenous debt dynamics 2/	**9.3**	**3.8**	**1.6**	**0.2**	**-0.3**	**-0.6**	**-0.4**	**-0.4**	**-0.2**	**-0.2**	**-0.2**		
Contribution from nominal interest rate	1.1	1.7	1.1	1.0	0.8	0.8	0.7	0.6	0.5	0.1	0.1		
Contribution from real GDP growth	-0.7	1.7	0.9	-0.8	-1.2	-1.4	-1.0	-1.0	-0.7	-0.3	-0.3		
Contribution from price and exchange rate changes	8.8	0.4	-0.3	...	...	...	...	...	...	...	...		
Residual 3/	**-20.8**	**-6.7**	**-2.3**	**0.0**	**-0.5**	**-1.0**	**-1.7**	**-2.6**	**-2.8**	**0.9**	**-1.9**	**-1.8**	**-1.1**
of which: exceptional financing	-0.8	-1.1	-1.0	-1.8	-1.1	-0.6	-0.3	-0.3	-0.3	-0.2	-0.1		
Sustainability indicators													
PV of PPG external debt-to-GDP ratio	**...**	**...**	**26.3**	**23.3**	**22.2**	**19.6**	**17.3**	**14.8**	**13.0**	**6.7**	**6.2**		
PV of PPG external debt-to-exports ratio	**...**	**...**	**95.5**	**70.0**	**64.5**	**56.2**	**51.2**	**44.3**	**39.5**	**21.9**	**31.9**		
PPG debt service-to-exports ratio	**9.5**	**13.6**	**8.8**	**7.3**	**5.8**	**6.6**	**6.7**	**6.9**	**7.0**	**2.5**	**3.0**		
PPG debt service-to-revenue ratio	**24.0**	**34.5**	**22.5**	**20.0**	**15.6**	**17.2**	**17.1**	**17.6**	**17.1**	**5.3**	**4.0**		
Gross external financing need (Million of U.S. dollars)	1084.2	843.7	331.6	193.6	142.0	172.0	258.3	426.0	548.6	-58.9	955.7		
Key macroeconomic assumptions													
Real GDP growth (in percent)	1.8	-6.4	-3.1	3.1	4.6	6.1	4.9	5.4	4.1	3.9	3.2	**3.5**	**4.3**
GDP deflator in US dollar terms (change in percent)	-23.2	-1.5	1.2	7.5	1.3	4.3	3.6	3.7	2.2	2.9	3.1	**-1.3**	**3.4**
Effective interest rate (percent) 4/	3.1	6.4	3.8	3.9	3.3	3.6	3.2	3.1	2.7	1.2	1.2	**2.8**	**2.5**
Growth of exports of G&S (US dollar terms, in percent)	-34.0	-15.4	10.5	34.0	9.8	11.9	5.0	8.6	4.3	5.4	1.2	**-1.5**	**9.1**
Growth of imports of G&S (US dollar terms, in percent)	-23.7	-15.3	3.0	17.4	6.8	8.5	6.3	10.7	1.9	...	...	**2.3**	**-6.9**
Grant element of new public sector borrowing (in percent)	...	...	...	36.7	36.6	37.1	36.4	36.5	36.6	36.9	36.9	**...**	**36.7**
Government revenues (excluding grants, in percent of GDP)	10.5	9.6	10.8	12.1	12.7	13.2	13.2	13.2	13.4	14.4	14.5	**16.3**	**13.5**
Aid flows (in Million of US dollars) 5/	433.3	326.8	527.5	517.7	400.5	425.0	386.8	407.0	470.2	543.0	792.8		
Grant-equivalent financing (in percent of GDP) 6/	...	...	...	4.9	3.7	3.5	2.9	2.8	3.0	2.5	2.1	**...**	**3.1**
Grant-equivalent financing (in percent of external financing) 6/	...	...	...	73.8	76.5	81.9	82.9	82.7	83.2	81.1	80.6	**...**	**81.0**
Nominal GDP (Million of US dollars)	10,952	10,095	9,892	10,961	11,621	12,853	13,959	15,259	16,231	22,636	39,571		
Nominal dollar GDP growth	-21.8	-7.8	-2.0	10.8	6.0	10.6	8.6	9.3	6.4	6.8	6.4	**2.1**	**7.8**
Memorandum items:													
PV of external debt 7/	...	...	26.3	23.3	22.2	19.6	17.3	14.8	13.0	6.7	6.2		
In percent of exports	...	...	95.5	70.0	64.5	56.2	51.2	44.3	39.5	21.9	31.9		
Total external debt service-to-exports ratio	9.5	13.6	8.8	7.3	5.8	6.6	6.7	6.9	7.0	2.5	3.0		
PV of PPG external debt (in Million of US dollars)			2597.3	2552.4	2582.3	2516.1	2408.3	2263.2	2104.5	1512.7	2442.7		
(PVt-PVt-1)/GDPt-1 (in percent)				-0.5	0.3	-0.6	-0.8	-1.0	-1.0	0.2	0.2		
Non-interest current account deficit that stabilizes debt ratio	16.7	5.3	4.4	4.3	5.9	6.1	7.2	7.6	6.9	1.1	2.7		

Definition of external/domestic debt	**Currency-based**
Is there a material difference between the two criteria?	**Yes**





Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

3/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes.

4/ Current-year interest payments divided by previous period debt stock.

5/ Defined as grants, concessional loans, and debt relief.

6/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

7/ Assumes that PV of private sector debt is equivalent to its face value.

8/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

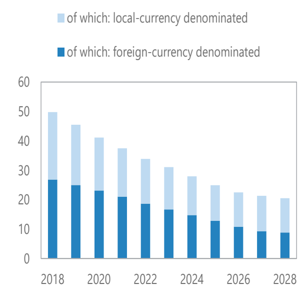
Table 2. Chad: Public Sector Debt Sustainability Framework, Baseline Scenario, 2015-2038

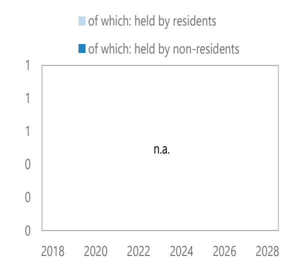
(In percent of GDP, unless otherwise indicated)

	Actual			Projections								Average 6/	
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2028	2038	Historical	Projections
Public sector debt 1/	43.3	51.8	52.4	49.8	45.5	41.2	37.5	33.9	31.1	20.5	18.3	30.7	32.4
of which: external debt	25.0	27.1	27.3	26.8	25.3	22.7	20.2	17.7	15.8	9.1	8.6	23.9	16.6
Change in public sector debt	14.2	8.5	0.6	-2.6	-4.3	-4.3	-3.7	-3.6	-2.8	-0.8	-0.4		
Identified debt-creating flows	9.3	5.8	-2.7	-3.9	-4.5	-5.7	-4.7	-5.1	-4.2	-3.9	-16.9	1.3	-4.6
Primary deficit	2.7	-0.1	-1.4	-2.9	-1.7	-2.9	-2.7	-3.0	-3.3	-3.1	-16.3	1.1	-3.0
Revenue and grants	14.0	12.6	14.9	16.0	15.8	16.2	15.8	15.6	16.0	16.6	16.4	18.7	16.2
of which: grants	3.4	2.9	4.1	3.9	3.1	3.0	2.5	2.4	2.7	2.2	1.8		
Primary (noninterest) expenditure	16.7	12.5	13.6	13.2	14.0	13.4	13.1	12.6	12.8	13.5	0.0	19.8	13.2
Automatic debt dynamics	7.3	6.4	0.5	-0.5	-2.3	-2.5	-1.7	-1.8	-0.7	-0.7	-0.5		
Contribution from interest rate/growth differential	0.1	4.8	2.9	-1.0	-1.8	-2.1	-1.3	-1.5	-0.7	-0.6	-0.4		
of which: contribution from average real interest rate	0.6	1.9	1.2	0.6	0.4	0.5	0.6	0.4	0.7	0.2	0.2		
of which: contribution from real GDP growth	-0.5	3.0	1.7	-1.6	-2.2	-2.6	-1.9	-1.9	-1.3	-0.8	-0.6		
Contribution from real exchange rate depreciation	7.2	1.6	-2.4	...	...	...	...	...	...	...	...		
Other identified debt-creating flows	-0.7	-0.5	-1.8	-0.6	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1	-0.8	-0.3
Privatization receipts (negative)	-0.4	0.0	-1.3	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Recognition of contingent liabilities (e.g., bank recapitalization)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Debt relief (HIPC and other)	-0.3	-0.5	-0.5	-0.4	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1		
Other debt creating or reducing flow (please specify)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residual	4.9	2.7	3.3	1.8	-0.3	1.0	0.6	1.2	1.5	3.0	16.4	2.1	1.5
Sustainability indicators													
PV of public debt-to-GDP ratio 2/	...	...	50.1	46.7	42.3	38.0	34.5	31.0	28.3	18.1	15.9		
PV of public debt-to-revenue and grants ratio	...	...	336.4	291.7	268.4	233.8	218.5	198.4	176.6	108.9	97.0		
Debt service-to-revenue and grants ratio 3/	22.6	39.2	46.6	63.6	56.6	55.6	47.2	49.3	48.2	36.6	33.3		
Gross financing need 4/	4.5	2.9	5.6	7.7	7.2	6.6	5.2	5.8	5.6	3.1	5.2		
Key macroeconomic and fiscal assumptions													
Real GDP growth (in percent)	1.8	-6.4	-3.1	3.1	4.6	6.1	4.9	5.4	4.1	3.9	3.2	3.5	4.3
Average nominal interest rate on external debt (in percent)	3.3	6.5	4.0	3.7	3.4	3.5	3.1	3.0	2.7	1.2	1.2	2.9	2.5
Average real interest rate on domestic debt (in percent)	13.3	2.2	2.4	1.0	0.4	0.7	2.2	1.2	3.7	2.2	2.6	2.4	1.7
Real exchange rate depreciation (in percent, + indicates depreciation)	24.5	5.6	-8.4	...	...	...	...	...	...	...	...	4.1	...
Inflation rate (GDP deflator, in percent)	-8.0	-1.2	-0.9	2.3	2.7	2.9	3.0	2.9	1.7	2.9	3.1	0.2	2.8
Growth of real primary spending (deflated by GDP deflator, in percent)	-20.8	-29.8	5.0	0.0	11.4	1.2	2.9	1.3	5.5	6.0	-99.9	2.8	4.3
Primary deficit that stabilizes the debt-to-GDP ratio 5/	-11.5	-8.6	-2.0	-0.2	2.6	1.4	1.0	0.6	-0.5	-2.2	-15.9	-7.3	-0.1
PV of contingent liabilities (not included in public sector debt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Definition of external/domestic debt	Currency-based
Is there a material difference between the two criteria?	Yes

Public sector debt 1/





Sources: Country authorities; and staff estimates and projections.

1/ Coverage of debt: The central government, central bank. Definition of external debt is Currency-based.

2/ The underlying PV of external debt-to-GDP ratio under the public DSA differs from the external DSA with the size of differences depending on exchange rates projections.

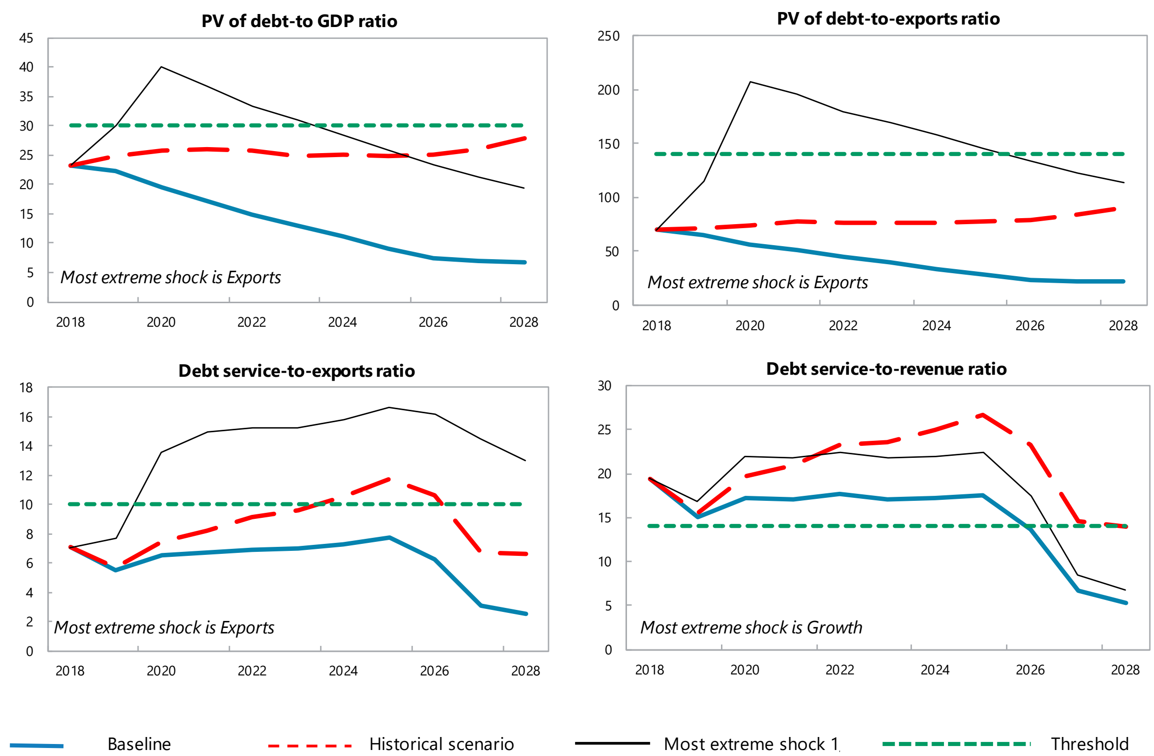
3/ Debt service is defined as the sum of interest and amortization of medium and long-term, and short-term debt.

4/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period and other debt creating/reducing flows.

5/ Defined as a primary deficit minus a change in the public debt-to-GDP ratio ((-): a primary surplus), which would stabilizes the debt ratio only in the year in question.

6/ Historical averages are generally derived over the past 10 years, subject to data availability, whereas projections averages are over the first year of projection and the next 10 years.

Figure 1. Chad: Indicators of Public and Publicly Guaranteed External Debt under Alternative Scenarios, 2018-2028



Customization of Default Settings		
	Size	Interactions
Tailored Tests		
Combined CLs	Yes	
Natural Disasters	n.a.	n.a.
Commodity Prices 2/	n.a.	n.a.
Market Financing	n.a.	n.a.

Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

Borrowing Assumptions for Stress Tests*		
	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	1.1%	1.1%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	20	20
Avg. grace period	6	6

* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

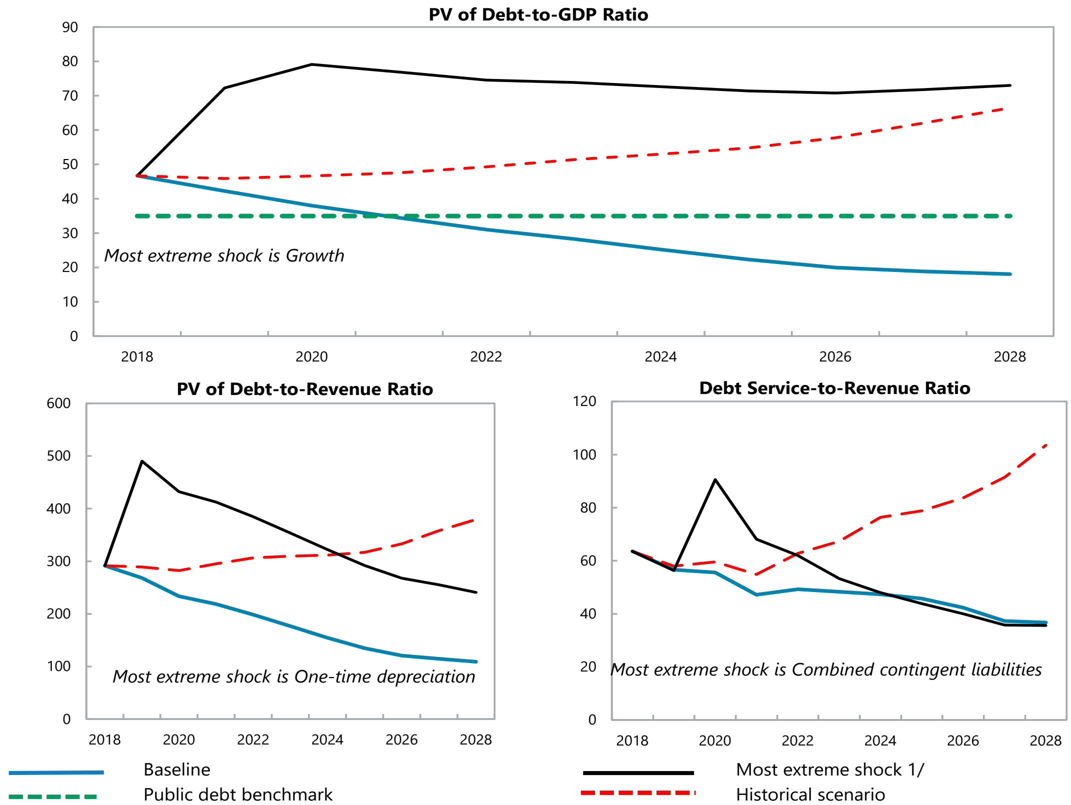
Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2028. Stress tests with one-off breaches are also presented (if any), while these one-off breaches are deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

2/ The magnitude of shocks used for the commodity price shock stress test are based on the commodity prices outlook prepared by the IMF research department.

Note: Although the tailored commodity price stress test is applicable in Chad's case, it has been replaced by a revised scenario that has the same commodity price shock, but accounts for the contingency mechanisms in the Glencore debt. As shown in Text Figure 1, this change does not affect the results shown in this figure.

Figure 2. Chad: Indicators of Public Debt Under Alternative Scenarios, 2018-2028



Borrowing Assumptions for Stress Tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	19%	20%
Domestic medium and long-term	22%	20%
Domestic short-term	57%	60%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	1.1%	1.1%
Avg. maturity (incl. grace period)	20	20
Avg. grace period	6	6
Domestic MLT debt		
Avg. real interest rate on new borrowing	4.1%	6.0%
Avg. maturity (incl. grace period)	8	10
Avg. grace period	1	1
Domestic short-term debt		
Avg. real interest rate	3%	3.0%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2028. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

Table 3. Chad: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2018-2028

	Projections 1/										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
PV of debt-to GDP ratio											
Baseline	23	22	20	17	15	13	11	9	7	7	7
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	23	25	26	26	26	25	25	25	25	26	28
B. Bound Tests											
B1. Real GDP growth	23	25	25	22	19	17	14	11	10	9	9
B2. Primary balance	23	23	22	20	18	16	14	12	10	10	9
B3. Exports	23	**30**	**40**	**37**	**33**	**31**	28	26	23	21	19
B4. Other flows 3/	23	25	25	22	20	18	16	14	12	11	10
B6. One-time 30 percent nominal depreciation	23	28	21	19	16	13	11	9	7	6	6
B6. Combination of B1-B5	23	**32**	**32**	29	26	24	21	18	16	14	13
C. Tailored Tests											
C1. Combined contingent liabilities	23	23	21	19	17	15	13	10	9	8	8
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	30	30	30	30	30	30	30	30	30	30	30
PV of debt-to-exports ratio											
Baseline	70	65	56	51	44	40	34	28	24	23	22
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	70	72	74	77	77	76	77	78	80	84	91
B. Bound Tests											
B1. Real GDP growth	70	65	56	51	44	40	34	28	24	23	22
B2. Primary balance	70	67	62	59	53	49	43	37	33	31	30
B3. Exports	70	115	**207**	**196**	**179**	**170**	**158**	**146**	134	123	114
B4. Other flows 3/	70	73	71	66	59	54	48	42	37	35	33
B6. One-time 30 percent nominal depreciation	70	65	49	44	37	32	27	21	17	16	16
B6. Combination of B1-B5	70	105	77	112	100	93	84	74	65	60	57
C. Tailored Tests											
C1. Combined contingent liabilities	70	68	61	57	50	45	39	33	28	26	25
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	140	140	140	140	140	140	140	140	140	140	140
Debt service-to-exports ratio											
Baseline	7	6	7	7	7	7	7	8	6	3	2
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	7	6	7	8	9	10	**11**	**12**	**11**	7	7
B. Bound Tests											
B1. Real GDP growth	7	6	7	7	7	7	7	8	6	3	2
B2. Primary balance	7	6	7	7	7	7	7	8	6	4	3
B3. Exports	7	8	**14**	**15**	**15**	**15**	**16**	**17**	**16**	**15**	**13**
B4. Other flows 3/	7	6	7	7	7	7	7	8	7	4	4
B6. One-time 30 percent nominal depreciation	7	6	7	7	7	7	7	8	6	2	2
B6. Combination of B1-B5	7	7	**11**	**11**	**11**	**11**	**12**	**13**	**12**	8	7
C. Tailored Tests											
C1. Combined contingent liabilities	7	6	7	7	7	7	7	8	6	3	3
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	10	10	10	10	10	10	10	10	10	10	10
Debt service-to-revenue ratio											
Baseline	**20**	**16**	**17**	**17**	**18**	**17**	**17**	**18**	14	7	5
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	**20**	**16**	**20**	**21**	**23**	**24**	**25**	**27**	**23**	**15**	14
B. Bound Tests											
B1. Real GDP growth	**20**	**17**	**22**	**22**	**22**	**22**	**22**	**22**	**17**	8	7
B2. Primary balance	**20**	**16**	**17**	**17**	**18**	**17**	**18**	**18**	**14**	8	7
B3. Exports	**20**	**16**	**20**	**21**	**22**	**21**	**21**	**21**	**20**	**18**	**15**
B4. Other flows 3/	**20**	**16**	**18**	**18**	**18**	**18**	**18**	**18**	**15**	10	8
B6. One-time 30 percent nominal depreciation	**20**	**20**	**22**	**21**	**22**	**21**	**21**	**22**	**17**	7	5
B6. Combination of B1-B5	**20**	**17**	**22**	**22**	**22**	**22**	**22**	**22**	**21**	13	11
C. Tailored Tests											
C1. Combined contingent liabilities	**20**	**16**	**17**	**17**	**18**	**17**	**17**	**18**	14	7	5
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Threshold	14	14	14	14	14	14	14	14	14	14	14

Sources: Country authorities; and staff estimates and projections.

1/ A bold value indicates a breach of the threshold.
2/ Variables include real GDP growth, GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
3/ Includes official and private transfers and FDI.

Table 4. Chad: Sensitivity Analysis for Key Indicators of Public Debt, 2018-2028

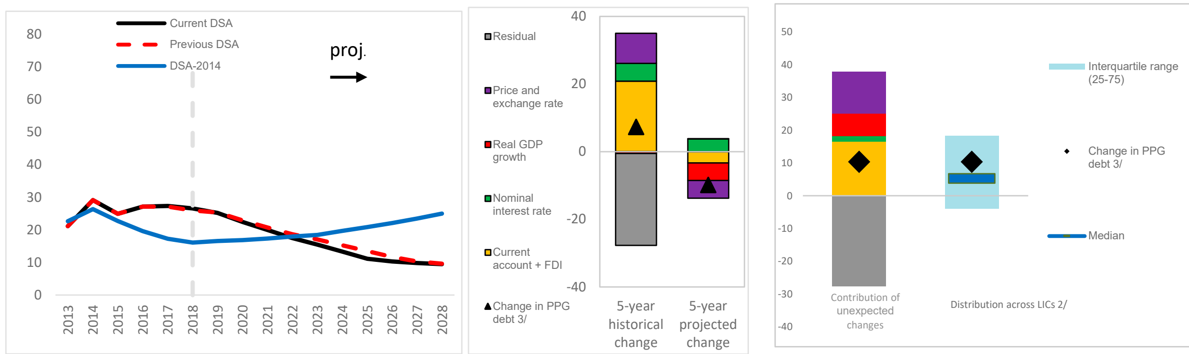
	Projections 1/										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
PV of Debt-to-GDP Ratio											
Baseline	**47**	**42**	**38**	34	31	28	25	22	20	19	18
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	**47**	**46**	**47**	**48**	**49**	**51**	**53**	**55**	**58**	**62**	**66**
B. Bound Tests											
B1. Real GDP growth	**47**	**72**	**79**	**77**	**75**	**74**	**73**	**71**	**71**	**72**	**73**
B2. Primary balance	**47**	**49**	**51**	**47**	**43**	**40**	**37**	34	31	29	28
B3. Exports	**47**	**48**	**55**	**51**	**46**	**43**	**40**	**37**	34	31	29
B4. Other flows 3/	**47**	**45**	**43**	**40**	**36**	33	30	27	24	23	21
B6. One-time 30 percent nominal depreciation	**47**	**76**	**69**	**64**	**59**	**56**	**52**	**48**	**44**	**42**	**40**
B6. Combination of B1-B5	**47**	**47**	**47**	**42**	**38**	**36**	33	31	29	28	27
C. Tailored Tests											
C1. Combined contingent liabilities	**47**	**52**	**47**	**43**	**39**	**36**	33	30	27	26	25
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Public debt benchmark	35	35	35	35	35	35	35	35	35	35	35
PV of Debt-to-Revenue Ratio											
Baseline	292	268	234	219	198	177	155	135	121	115	109
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	292	289	282	295	306	310	312	317	333	358	380
B. Bound Tests											
B1. Real GDP growth	292	449	463	467	457	441	426	414	411	420	425
B2. Primary balance	292	308	314	298	276	251	226	203	187	179	170
B3. Exports	292	307	337	320	297	271	245	222	203	189	174
B4. Other flows 3/	292	287	266	251	229	206	183	162	146	138	129
B6. One-time 30 percent nominal depreciation	292	490	432	412	385	354	322	292	268	255	241
B6. Combination of B1-B5	292	298	284	265	244	222	201	185	171	167	162
C. Tailored Tests											
C1. Combined contingent liabilities	292	328	288	272	250	227	203	181	164	157	148
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Debt Service-to-Revenue Ratio											
Baseline	64	57	56	47	49	48	47	46	42	37	37
A. Alternative Scenarios											
A1. Key variables at their historical averages in 2018-2028 2/	64	58	60	55	63	67	76	79	84	91	103
B. Bound Tests											
B1. Real GDP growth	64	61	71	70	78	78	79	80	81	81	86
B2. Primary balance	64	56	79	91	77	64	56	51	47	43	43
B3. Exports	64	57	56	49	51	50	49	47	46	45	44
B4. Other flows 3/	64	57	56	48	50	49	48	46	44	40	39
B6. One-time 30 percent nominal depreciation	64	55	58	46	52	50	49	48	43	36	34
B6. Combination of B1-B5	64	56	58	68	63	56	51	49	45	42	43
C. Tailored Tests											
C1. Combined contingent liabilities	64	56	91	68	62	53	48	44	40	36	36
C2. Natural disaster	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C3. Commodity price	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
C4. Market Financing	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sources: Country authorities; and staff estimates and projections.
1/ A bold value indicates a breach of the threshold.
2/ Variables include real GDP growth, GDP deflator and primary deficit in percent of GDP.
3/ Includes official and private transfers and FDI.

Figure 3. Chad: Drivers of Debt Dynamics – Baseline Scenario

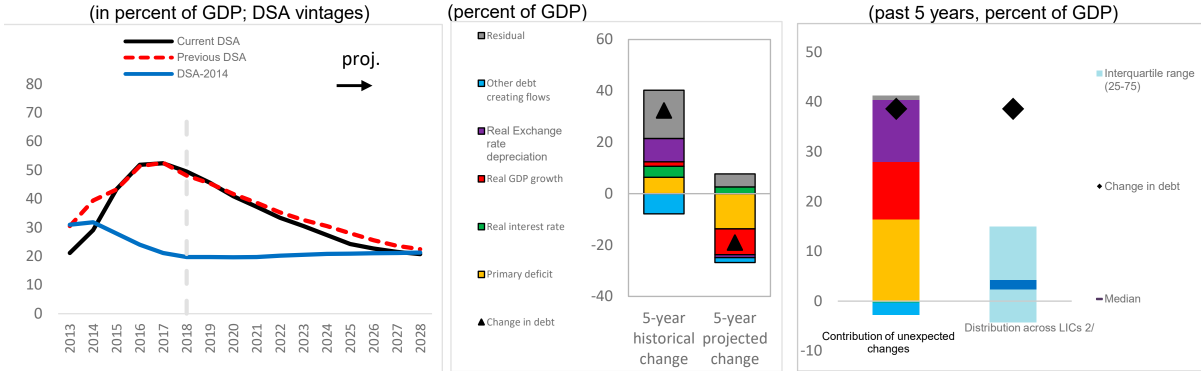
External debt

Gross Nominal PPG External Debt (in percent of GDP; DSA vintages) | Debt-creating flows (percent of GDP) | Unexpected Changes in Debt 1/ (past 5 years, percent of GDP)



Public debt

Gross Nominal Public Debt (in percent of GDP; DSA vintages) | Debt-creating flows (percent of GDP) | Unexpected Changes in Debt 1/ (past 5 years, percent of GDP)



1/ Difference between anticipated and actual contributions on debt ratios.

2/ Distribution across LICs for which LIC DSAs were produced.

3/ Given the relatively low private external debt for average low-income countries, a ppt change in PPG external debt should be largely explained by the drivers of the external debt dynamics equation.