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SIERRA LEONE

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STAFF REPORT FOR THE 2013 ARTICLE IV CONSULTATION AND REQUEST FOR A THREE-YEAR ARRANGEMENT UNDER THE EXTENDED CREDIT FACILITY—DEBT SUSTAINABILITY ANALYSIS

Approved By
Michel Lazare and Dhaneshwar Ghura (IMF) and Mark Roland Thomas and Sudarshan Gooptu (IDA)

Prepared by the staff of the International Monetary Fund and the World Bank.

Staff's assessment of Sierra Leone's debt sustainability indicates that the risk of debt distress remains moderate.[1] All debt indicators are below their policy-dependent indicative thresholds under the baseline scenario.[2] However, stress tests point to vulnerability to adverse shocks affecting key macroeconomic variables, particularly exports in view of Sierra Leone's narrow export base. To contain the risk of debt distress emanating from these shocks and support long-term debt sustainability, it is critical to maintain prudent borrowing policies, sustain fiscal consolidation efforts, continue implementation of growth-enhancing structural reforms, and promote economic diversification. The authorities agreed with Staff's assessment and policy recommendations.

[1] This Debt Sustainability Analysis (DSA) is based on the Debt Sustainability Framework (DSF) for low-income countries (LICs), approved by the Executive Boards of the IMF and World Bank. It updates the previous joint DSA dated September 5, 2012; and takes into account the recent decision by the Executive Boards of the IMF and the WB to adopt a unified discount rate of 5 percent for the purpose of calculating the present value of the external debt of LICs and assessing the concessionality of individual loans.

[2] Sierra Leone is a medium performer under the World Bank's Country Policy and Institutional Assessment (CPIA) classification, with an average rating of 3.28 for 2010–12. As a medium performer, the debt and debt service thresholds under the joint IMF-WB DSF for LICs applied for Sierra Leone are: (i) 150 percent for the Present Value (PV) of debt-to-exports ratio; (ii) 40 percent for the PV of debt-to-GDP ratio; and (iii) 250 percent for the PV of debt-to-revenue ratio. The relevant thresholds for debt service are: (i) 20 percent for debt service-to-exports ratio, and (ii) 20 percent for debt service-to-revenue ratio.

INTRODUCTION

1. **This debt sustainability analysis (DSA) updates the joint IMF-World Bank DSA presented to the Boards of both institutions in September 2012 and uses a unified discount rate of 5 percent to calculate the present value of external debt and assess concessionality**.[3] At that time, the DSA results showed that under the baseline scenario, all debt indicators were below their respective policy-dependent indicative thresholds throughout the projection period (2012–32). The analysis also indicated that the medium- to long-term debt outlook was vulnerable to adverse shocks to several macroeconomic variables, notably exports, prices, foreign direct investment (FDI) inflows, government revenue, and borrowing conditions. Although the long term macroeconomic outlook is somewhat better than under the September 2012 DSA, the current analysis reaches the same conclusion.

BACKGROUND AND ASSUMPTIONS

2. **The stock of public and publicly guaranteed external debt[4] amounted to US$0.98 billion at end-2012, and was mostly owed to multilateral creditors**. It declined from 142 percent of GDP at end–2005 to 26 percent of GDP at end–2012, mainly reflecting the impact of debt relief under the Heavily Indebted Poor Countries Initiative (HIPC) and the Multilateral Debt Relief Initiative (MDRI).[5] Multilateral creditors account for the largest share of public and publicly guaranteed debt; and debt to commercial creditors, estimated at US$221 million (23 percent of total external debt), consists of arrears accumulated prior to and during the civil conflict. The authorities have been making goodwill payments to some commercial creditors to avoid litigation, and they are preparing a debt-buy-back operation with support from the World Bank. A road map to fast track the process has been agreed upon and preparatory work could be initiated in 2014.

3. **Domestic debt amounted to 10.8 percent of GDP at end-2012, and 29.4 percent of total public and publicly guaranteed debt**. While there has been a trend decline in domestic debt in relation to GDP, the portfolio has become increasingly concentrated in treasury securities, which have increased from some 55 percent of total domestic debt end–2007 to 71 percent at end–2012. The remaining domestic debt is comprised of the Government's overdraft facility at the Bank of Sierra Leone (BoSL), verified domestic payments arrears, and non-negotiable, non-interest bearing securities held by the BoSL. The issuance of marketable securities rose sharply in 2012 as fiscal slippages boosted borrowing needs. The new issuance was largely absorbed by commercial banks

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[3] The 2012 DSA can be found at: http://www.imf.org/external/pubs/cat/longres.aspx?sk=40051.0

[4] Public sector refers to the Central Government, regional government, all public enterprises, and the Bank of Sierra Leone.

[5] Sierra Leone has received debt relief under the MDRI Initiatives from the IMF, IDA, AfDB, EIB, IFAD, BADEA, IDB, and OPEC Fund. Under the HIPC Initiative, bilateral agreements have been signed with all participating creditors, except China, Kuwait, and Saudi Arabia.

and the non-bank public, which respectively held 69 percent and 20 percent of marketable securities at end–2012. The authorities have actively sought to lengthen maturities by increasing issuance of 364-day treasury bills, which has increased the weighted average maturity from around 6 months at end–2010 to 8.3 months at end–2012. Nonetheless, roughly half of the portfolio has a maturity of a half year or less, highlighting significant rollover and refinancing risks. Domestic interest payments increased from 1.4 percent of GDP in 2010 to 1.6 percent in 2012.

4. **The baseline macroeconomic assumptions underlying this DSA are summarized in Box 1**. The key changes from the previous DSA are as follows (Text Table 1):

- *Better growth prospects*. Real GDP growth is expected to be higher than in the 2012 DSA, reflecting a combination of a smoother iron ore production profile, and the authorities' efforts through their third-generation Poverty Reduction Strategy (PRS) to scale up public investment and create a better business environment.

- *Weaker fiscal position.* The current DSA assumes a higher primary deficit, particularly in the short run, mostly because of the anticipated scaling up of infrastructure investment as the implementation of the new PRS starts in 2014.

- *Higher external borrowing.* The current DSA assumes a higher level of external borrowing, in line with the implementation of the new PRSP. It also provides some room for nonconcessional borrowing for priority projects.

- *Stronger external position.* In the current DSA, the external current account deficit is expected to be stronger in the medium-to-long run, mostly due to better export prospects in extractive industries and agriculture.

Text Table 1. Selected Economic Indicators, 2012–33
(In percent of GDP, unless otherwise indicated)[1]

	2012	2013	2014	2015	2016	2017	2018	Long Term[2]
Real GDP Growth								
Current DSA	15.2	13.3	14.0	12.4	7.7	5.2	5.3	5.4
Previous DSA	21.3	7.5	13.0	4.9	4.9	5.0	5.0	5.3
Primary fiscal deficit (in percent of GDP)								
Current DSA	3.4	1.5	2.6	2.3	2.2	1.8	1.6	1.6
Previous DSA	0.6	1.1	1.4	1.6	1.6	1.6	1.7	1.3
Current account deficit (in percent of GDP)								
Current DSA	36.4	16.5	8.7	6.2	5.8	5.8	5.1	4.1
Previous DSA	12.9	9.1	6.5	6.2	6.5	6.4	5.5	5.9
Foreign direct investment (in percent of GDP)								
Current DSA	32.9	13.4	6.0	3.8	3.5	4.1	3.5	2.4
Previous DSA	10.6	6.5	4.5	4.5	4.4	4.2	4.2	4.1
External debt (in percent of GDP)								
Current DSA	25.8	24.2	23.5	22.8	23.2	23.6	24.1	27.3
Previous DSA	25.2	25.4	23.5	23.4	23.3	23.2	23.2	23.2
Domestic debt (in percent of GDP)								
Current DSA	10.8	11	10.3	9.9	9.9	9.9	9.6	9.6
Previous DSA	9.3	9.0	8.8	9.5	10.3	10.9	11.6	15.4

Sources: The Sierra Leone Authorities and IMF staff projections.
1/ All GDP ratios include iron ore activity
2/ For the current DSA, the long term covers the period 2019-33, and for the previous DSA it covers the period 2018-32.

Box 1. Baseline Macroeconomic Assumptions

- The economy is expected to grow by 13.3 percent in 2013, and by an average rate of about 9 percent for 2014–18, driven by public investment scaling up in the context of the authorities' new PRS, iron ore production and output expansion in agriculture. Over the long-term, growth would moderate to about 5.5 percent.

- Inflation is projected to decline to single-digit levels starting in 2014. Assuming that monetary policy will remain prudent and fiscal consolidation efforts will be sustained, the twelve-month inflation rate would decline from 12 percent in 2012 to 9 percent in 2013; and hover around 5.5 percent over the long-term.

- The overall fiscal deficit is projected to improve over the medium-to-long term, with the domestic primary deficit forecast to decline from 3.4 percent of GDP in 2012 to 1.6 percent in 2018; and to stabilize at that level during 2019–2033. Revenue and grants are projected to remain in the 15–16 percent of GDP range during the projection period, as a modest increase in revenue compensates for the projected decline in grants. Primary (non-interest) expenditure is projected to decline from 18.7 percent of GDP in 2012 to roughly 15.5 percent over the medium term, reflecting a break with past spending patterns as fiscal consolidation takes hold.

- The external current account deficit is forecast to narrow over the medium-to-long-term consistent with the projected increase in iron ore and other exports, as well as favorable terms of trade. Import dynamics broadly reflect the projected overall real GDP growth.

- New external loans are projected to average 2.3 percent of GDP over the medium-term and long term, consistent with the authorities' objectives under the new PRS. The DSA also assumes some nonconcessional borrowing limited at 0.5 percent of GDP (US$30 million) per year, during the projection period to finance key priority projects for which the authorities would not be able to secure concessional funding.

- Domestic debt is projected to decline from 11 percent of GDP in 2013, to 10 percent by the end of the projection period, consistent with the expected improvement in the fiscal position.

- This period of fiscal consolidation does not see the emergence of broader fiscal risks.

EXTERNAL DEBT SUSTAINABILITY

5. **The external DSA indicates that Sierra Leone is at a moderate risk of debt distress, similar to the conclusion of the previous DSA**. Under the baseline scenario, all debt indicators remain well below their respective policy-dependent indicative thresholds (Figure 1 and Table 1) during the projection period. Nonetheless, as in the previous DSA, there is a rising trend in all indicators, during the period 2019–33, consistent with a steady increase in debt accumulation and a conservative assumption on future iron ore production. Debt service ratios are expected to remain significantly below their relevant policy-dependent indicative thresholds, partly reflecting the decline in Sierra Leone's debt burden thanks to past debt relief initiatives, and the favorable impact of iron ore production on exports and government revenue.

6. **Stress tests results highlight Sierra Leone's vulnerability to adverse exogenous shocks affecting exports, exchange rate, and borrowing terms** (Figure 1 and Table 2). The most extreme shock stemming from lower export growth[6] shows a greater impact on debt indicators related to exports and government revenue. The PV of debt-to-exports ratio rises continuously over the medium to long term, but stabilizes at the policy-dependent threshold during 2025–33. This is consistent with the structural break in key macroeconomic variables created by the onset of large-scale iron ore production in 2012. The PV of debt-to-revenue ratio, although elevated, remains below the indicative threshold, and trends downward after an initial increase in 2014–15. Since revenue performance is projected to strengthen in the long run, the increase in vulnerability on revenue compared with the baseline scenario is triggered by the impact of the shock on borrowing. Compared with the 2012 DSA, the improvement in Sierra Leone's ranking to medium performer, and the use of the new discount rate of 5 percent recently adopted by the IMF and World Bank Executive Boards also contributes to a better long-term debt outlook. Under the alternative scenarios involving a one-time 30 percent nominal depreciation in 2014, additional external borrowing on less favorable borrowing terms,[7] or a combination of the abovementioned shocks, all debt indicators increase continuously through 2033 while remaining under their indicative thresholds.

PUBLIC SECTOR DEBT SUSTAINABILITY

7. **DSA results for total public sector debt indicate that there are no significant vulnerabilities linked to domestic debt** (Figure 2 and Table 3). Under the baseline scenario, the PV of public debt-to-GDP and to revenue ratios are both expected to modestly increase in the long run, consistent with results from the external DSA. Stress tests point to vulnerability to shocks affecting economic growth (See Figure 2 and Table 4): under an alternative scenario assuming a real GDP growth shock,[8] both the PV of public debt-to-GDP ratio and the PV of public debt-to-revenue ratio

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[6] The shock is defined as the exports value growth at historical average minus one standard deviation in 2014–15.

[7] This scenario assumes that the interest rate on new borrowing is 200 basis points higher than in the baseline scenario, while the grace period and the maturity are the same as in the baseline scenario.

[8] This scenario assumes that real GDP growth is at baseline minus one standard deviation in 2014–15.

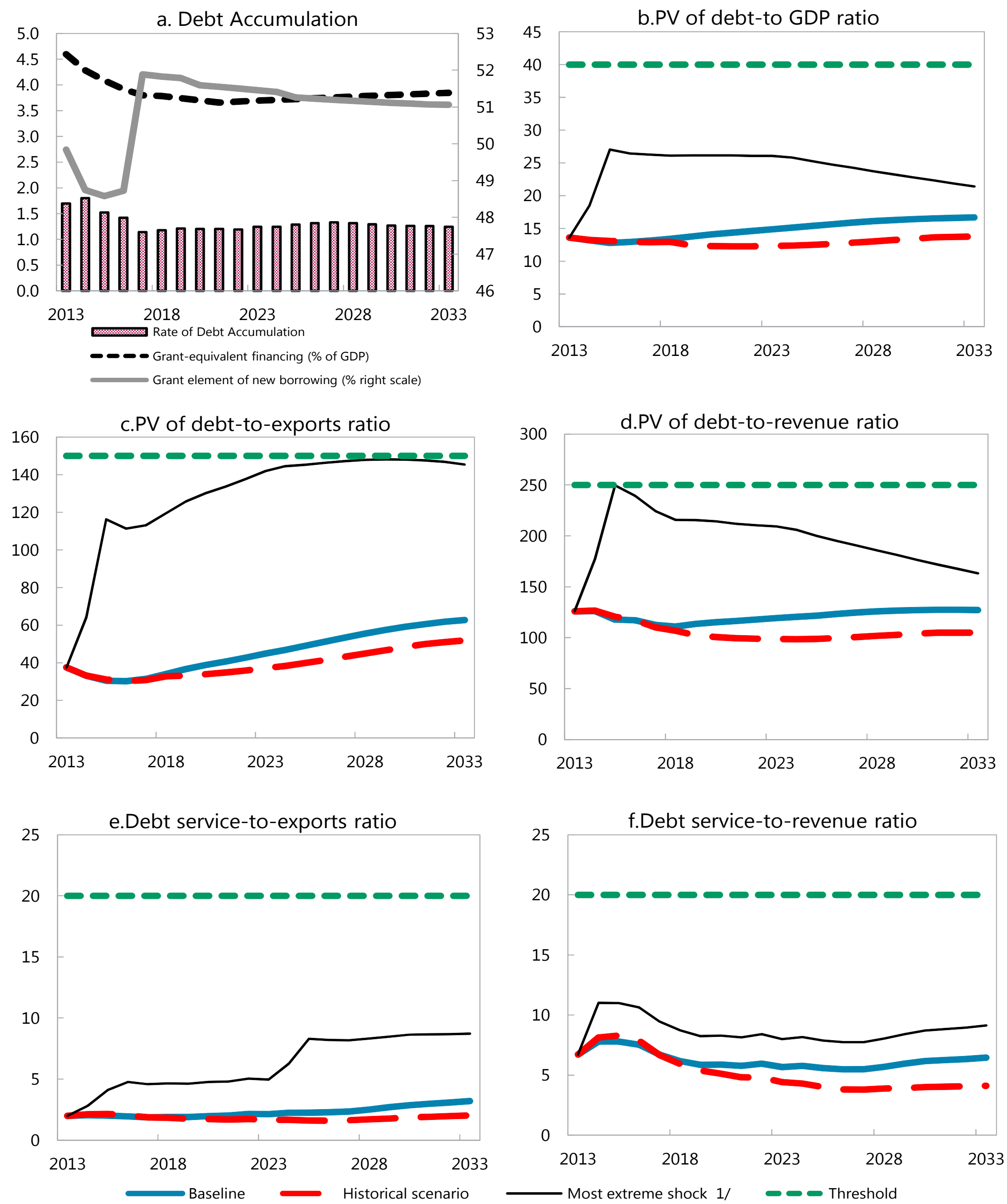
would increase continuously through 2033 with the former reaching 50 percent in 2033 (27 percent under the baseline scenario) and the latter rising to 309 percent (171 percent under the baseline scenario).

CONCLUSIONS

8. **Sierra Leone remains at a moderate risk of debt distress**. This assessment is similar to that reached under the September 2012 DSA. In the baseline scenario, all debt indicators remain below their respective policy-dependent indicative thresholds throughout the projection period. However, results for alternative scenarios show that, although debt indicators remain below their indicative thresholds during the projection period, the long-term debt outlook is vulnerable to various shocks that could conceivably lead to a breach of thresholds, particularly for exports. An additional source of vulnerability is the short-term maturity structure of public domestic debt, which creates roll-over risks. To support long-term debt sustainability it will be important for the authorities to enhance revenue collection, particularly in the non-mineral economy, strengthen expenditure and debt management, implement growth-enhancing policies, promote export diversification, and maintain prudent borrowing policies.

9. **The authorities agreed with staff's assessment, and reiterated the call for more flexibility in borrowing conditions to facilitate access to nonconcessional borrowing for priority projects**.

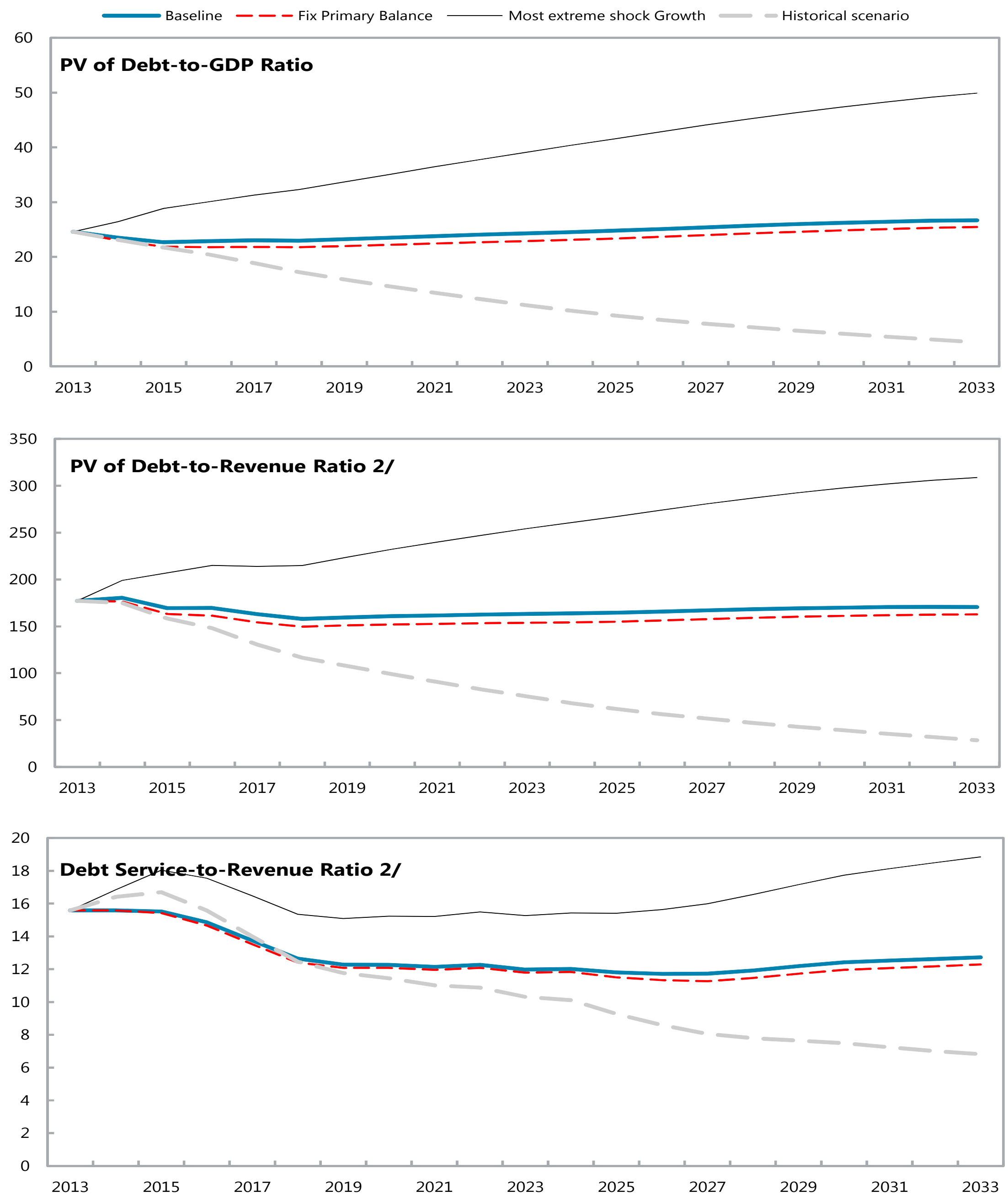
Figure 1. Sierra Leone: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2013–33[1]



Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2023. In figure b. it corresponds to a Exports shock; in c. to a Exports shock; in d. to a Exports shock; in e. to a Exports shock and in figure f. to a One-time depreciation shock

Figure 2. Sierra Leone: Indicators of Public Debt Under Alternative Scenarios, 2013–33[1]



Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2023.
2/ Revenues are defined inclusive of grants.

Table 1. Sierra Leone: External Debt Sustainability Framework, Baseline Scenario, 2010–33[1]

(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/	Projections									
	2010	2011	2012			2013	2014	2015	2016	2017	2018	2013-2018 Average	2023	2033	2019-2033 Average
External debt (nominal) 1/	**32.0**	**32.8**	**25.8**			**24.2**	**23.5**	**22.8**	**23.2**	**23.6**	**24.1**		**26.4**	**28.9**	
of which: public and publicly guaranteed (PPG)	32.0	32.8	25.8			24.2	23.5	22.8	23.2	23.6	24.1		26.4	28.9	
Change in external debt	-0.1	0.7	-6.9			-1.7	-0.7	-0.6	0.3	0.5	0.5		0.4	0.1	
Identified net debt-creating flows	4.4	2.3	-3.7			0.4	-0.1	0.0	0.9	0.7	0.6		0.7	0.3	
Non-interest current account deficit	**19.5**	**44.7**	**36.4**	**13.1**	**15.5**	**16.5**	**8.7**	**6.2**	**5.8**	**5.8**	**5.1**		**4.7**	**3.0**	4.1
Deficit in balance of goods and services	25.9	52.1	38.8			19.8	7.8	1.6	-1.8	-1.9	0.4		5.2	7.8	
Exports	16.4	18.6	29.0			36.3	39.8	42.0	42.8	41.9	39.4		33.1	26.6	
Imports	42.3	70.7	67.8			56.1	47.6	43.6	41.1	40.0	39.8		38.4	34.4	
Net current transfers (negative = inflow)	-8.2	-8.5	-5.8	-7.1	2.3	-5.2	-4.9	-4.8	-4.8	-4.8	-4.8		-4.8	-5.0	-4.8
of which: official	-6.3	-3.8	-1.8			-1.3	-1.1	-1.1	-1.1	-1.2	-1.2		-1.3	-1.7	
Other current account flows (negative = net inflow)	1.8	1.0	3.4			1.8	5.9	9.4	12.4	12.4	9.4		4.2	0.2	
Net FDI (negative = inflow)	**-13.7**	**-38.7**	**-32.9**	**-10.9**	**13.7**	**-13.4**	**-6.0**	**-3.8**	**-3.5**	**-4.1**	**-3.5**		**-2.9**	**-1.5**	-2.4
Endogenous debt dynamics 2/	**-1.4**	**-3.7**	**-7.2**			**-2.7**	**-2.8**	**-2.4**	**-1.4**	**-1.0**	**-1.0**		**-1.1**	**-1.2**	
Contribution from nominal interest rate	0.2	0.2	0.2			0.1	0.1	0.2	0.2	0.2	0.2		0.2	0.3	
Contribution from real GDP growth	-1.6	-1.7	-3.8			-2.8	-2.9	-2.5	-1.6	-1.1	-1.2		-1.3	-1.6	
Contribution from price and exchange rate changes	0.1	-2.2	-3.6			...	...	...	...	...	...		...	...	
Residual (3-4) 3/	**-4.5**	**-1.6**	**-3.2**			**-2.1**	**-0.6**	**-0.6**	**-0.5**	**-0.2**	**-0.1**		**-0.3**	**-0.2**	
of which: exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	...	...	14.5			13.6	13.2	12.8	12.9	13.2	13.4		14.9	16.7	
In percent of exports	...	...	50.0			37.5	33.1	30.4	30.2	31.4	34.0		44.9	62.8	
PV of PPG external debt	**...**	**...**	**14.5**			**13.6**	**13.2**	**12.8**	**12.9**	**13.2**	**13.4**		**14.9**	**16.7**	
In percent of exports	**...**	**...**	**50.0**			**37.5**	**33.1**	**30.4**	**30.2**	**31.4**	**34.0**		**44.9**	**62.8**	
In percent of government revenues	**...**	**...**	**127.3**			**126.0**	**126.2**	**117.9**	**117.1**	**112.5**	**110.8**		**119.3**	**127.1**	
Debt service-to-exports ratio (in percent)	**3.3**	**3.3**	**2.3**			**2.0**	**2.0**	**2.0**	**1.9**	**1.9**	**1.9**		**2.1**	**3.2**	
PPG debt service-to-exports ratio (in percent)	**3.3**	**3.3**	**2.3**			**2.0**	**2.0**	**2.0**	**1.9**	**1.9**	**1.9**		**2.1**	**3.2**	
PPG debt service-to-revenue ratio (in percent)	**5.4**	**5.3**	**6.0**			**6.7**	**7.8**	**7.8**	**7.5**	**6.7**	**6.2**		**5.7**	**6.5**	
Total gross financing need (Billions of U.S. dollars)	0.2	0.2	0.2			0.2	0.2	0.2	0.2	0.2	0.2		0.3	0.5	
Non-interest current account deficit that stabilizes debt ratio	19.6	43.9	43.4			18.1	9.4	6.8	5.5	5.3	4.6		4.3	2.9	
Key macroeconomic assumptions															
Real GDP growth (in percent)	5.3	6.0	15.2	6.8	3.5	13.3	14.0	12.4	7.7	5.2	5.3	9.7	5.3	5.8	5.4
GDP deflator in US dollar terms (change in percent)	-0.3	7.3	12.2	4.9	6.1	7.3	2.6	2.4	1.9	1.8	1.7	3.0	1.3	1.4	1.3
Effective interest rate (percent) 5/	0.5	0.7	0.8	0.9	0.4	0.6	0.7	0.7	0.8	0.7	0.8	0.7	1.0	1.2	1.0
Growth of exports of G&S (US dollar terms, in percent)	30.6	28.9	101.4	23.7	30.7	52.0	28.5	21.4	11.9	4.7	0.9	19.9	3.4	6.0	4.1
Growth of imports of G&S (US dollar terms, in percent)	90.2	90.1	23.8	26.5	35.7	0.6	-0.7	5.5	3.3	4.3	6.8	3.3	5.5	6.7	5.8
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	49.8	48.7	48.6	48.7	51.9	51.8	49.9	51.5	51.1	51.3
Government revenues (excluding grants, in percent of GDP)	9.9	11.5	11.4			10.8	10.4	10.8	11.1	11.7	12.1		12.5	13.1	12.7
Aid flows (in Billions of US dollars) 7/	0.2	0.3	0.3			0.2	0.3	0.3	0.3	0.3	0.4		0.5	1.0	
of which: Grants	0.1	0.2	0.1			0.1	0.1	0.2	0.2	0.2	0.2		0.3	0.5	
of which: Concessional loans	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.2	0.2		0.2	0.4	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			4.6	4.3	4.1	3.9	3.8	3.8		3.7	3.8	3.8
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			75.3	70.6	71.8	71.6	75.2	75.2		75.5	75.5	75.4
Memorandum items:															
Nominal GDP (Billions of US dollars)	2.6	2.9	3.8			4.6	5.4	6.2	6.8	7.3	7.8		10.7	21.1	
Nominal dollar GDP growth	5.1	13.8	29.2			21.6	17.0	15.1	9.7	7.2	7.1	12.9	6.7	7.3	6.8
PV of PPG external debt (in Billions of US dollars)			0.6			0.6	0.7	0.8	0.9	0.9	1.0		1.6	3.5	
(PVt-PVt-1)/GDPt-1 (in percent)						1.7	1.8	1.5	1.4	1.1	1.2	1.5	1.2	1.2	1.3
Gross workers' remittances (Billions of US dollars)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	
PV of PPG external debt (in percent of GDP + remittances)	...	...	14.3			13.5	13.1	12.7	12.9	13.1	13.3		14.8	16.6	
PV of PPG external debt (in percent of exports + remittances)	...	...	48.2			36.6	32.5	29.9	29.8	31.0	33.5		44.2	62.1	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	2.3			1.9	2.0	2.0	1.9	1.8	1.9		2.1	3.2	

Sources: Country authorities; and staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as $[r - g - \rho(1+g)]/(1+g+\rho+g\rho)$ 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/ Assumes that PV of private sector debt is equivalent to its face value.

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

6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

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

8/ 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).

Table 2. Sierra Leone: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2013–33

(In percent)

		Projections						
	2013	2014	2015	2016	2017	2018	**2023**	2033
PV of debt-to GDP ratio								
Baseline	14	13	13	13	13	13	**15**	17
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	14	13	13	13	13	13	**12**	14
A2. New public sector loans on less favorable terms in 2013-2033 2	14	14	14	15	16	17	**21**	27
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	14	14	15	15	16	16	**18**	20
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	14	19	27	26	26	26	**26**	21
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	14	13	14	14	14	14	**16**	18
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	14	17	20	20	20	20	**20**	19
B5. Combination of B1-B4 using one-half standard deviation shocks	14	19	25	25	25	25	**26**	23
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	14	18	18	18	18	19	**21**	23
PV of debt-to-exports ratio								
Baseline	38	33	30	30	31	34	**45**	63
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	38	33	31	30	31	33	**37**	52
A2. New public sector loans on less favorable terms in 2013-2033 2	38	35	34	35	38	43	**64**	102
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	38	33	30	30	31	34	**44**	62
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	38	64	116	111	113	119	**142**	145
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	38	33	30	30	31	34	**44**	62
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	38	44	48	46	47	50	**62**	71
B5. Combination of B1-B4 using one-half standard deviation shocks	38	51	68	66	67	72	**87**	98
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	38	33	30	30	31	34	**44**	62
PV of debt-to-revenue ratio								
Baseline	126	126	118	117	113	111	**119**	127
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	126	127	121	117	110	107	**99**	105
A2. New public sector loans on less favorable terms in 2013-2033 2	126	133	131	136	136	139	**170**	207
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	126	137	139	138	133	131	**141**	150
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	126	177	250	239	224	216	**209**	163
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	126	129	125	124	119	118	**127**	135
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	126	167	185	179	169	164	**164**	144
B5. Combination of B1-B4 using one-half standard deviation shocks	126	178	234	227	214	207	**205**	175
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	126	175	164	163	157	154	**166**	177

Table 2. Sierra Leone: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2013–33 (concluded)

(In percent)

Debt service-to-exports ratio								
Baseline	2	2	2	2	2	2	**2**	3
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	2	2	2	2	2	2	**2**	2
A2. New public sector loans on less favorable terms in 2013-2033 2	2	2	2	2	2	2	**3**	5
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	2	2	2	2	2	2	**2**	3
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	2	3	4	5	5	5	**5**	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	2	2	2	2	2	2	**2**	3
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	2	2	2	2	2	2	**2**	4
B5. Combination of B1-B4 using one-half standard deviation shocks	2	2	3	3	3	3	**3**	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	2	2	2	2	2	2	**2**	3
Debt service-to-revenue ratio								
Baseline	7	8	8	8	7	6	**6**	6
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2013-2033 1/	7	8	8	8	7	6	**4**	4
A2. New public sector loans on less favorable terms in 2013-2033 2	7	8	8	8	8	8	**8**	11
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2014-2015	7	9	9	9	8	7	**7**	8
B2. Export value growth at historical average minus one standard deviation in 2014-2015 3/	7	8	9	10	9	8	**7**	10
B3. US dollar GDP deflator at historical average minus one standard deviation in 2014-2015	7	8	8	8	7	7	**6**	7
B4. Net non-debt creating flows at historical average minus one standard deviation in 2014-2015 4/	7	8	9	9	8	7	**7**	8
B5. Combination of B1-B4 using one-half standard deviation shocks	7	9	10	11	10	9	**8**	10
B6. One-time 30 percent nominal depreciation relative to the baseline in 2014 5/	7	11	11	11	9	9	**8**	9
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	49	49	49	49	49	49	**49**	49

Sources: Country authorities; and staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline, while grace and maturity periods same as in the baseline.
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.
6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 3. Sierra Leone: Public Sector Debt Sustainability Framework, Baseline Scenario, 2010–33

(In percent of GDP, unless otherwise indicated)

	Actual					Estimate	Projections								
	2010	2011	2012	Average 5/	Standard Deviation 5/	2013	2014	2015	2016	2017	2018	2013-18 Average	2023	2033	2019-33 Average
Public sector debt 1/	46.8	44.4	36.7			35.2	33.8	32.8	33.1	33.5	33.7		35.9	39.0	
of which: foreign-currency denominated	32.3	33.0	25.9			24.2	23.5	22.8	23.2	23.6	24.1		26.4	28.9	
Change in public sector debt	-1.2	-2.5	-7.7			-1.5	-1.4	-1.0	0.4	0.4	0.2		0.4	0.1	
Identified debt-creating flows	-2.0	-4.3	-5.9			-3.3	-1.8	-1.2	0.4	0.7	0.4		0.5	0.1	
Primary deficit	3.5	2.6	3.4	-1.3	7.5	1.5	2.6	2.3	2.2	1.8	1.6	2.0	1.7	1.6	1.6
Revenue and grants	15.2	17.0	15.2			13.9	13.0	13.4	13.5	14.1	14.5		14.9	15.7	
of which: grants	5.3	5.6	3.8			3.1	2.6	2.6	2.4	2.4	2.4		2.4	2.5	
Primary (noninterest) expenditure	18.7	19.6	18.7			15.4	15.6	15.7	15.7	16.0	16.1		16.6	17.2	
Automatic debt dynamics	-5.3	-6.1	-8.5			-4.6	-4.1	-3.4	-1.9	-1.2	-1.2		-1.2	-1.4	
Contribution from interest rate/growth differential	-3.5	-3.3	-5.6			-3.9	-3.9	-3.2	-1.9	-1.2	-1.3		-0.8	-0.9	
of which: contribution from average real interest rate	-1.0	-0.7	0.2			0.5	0.4	0.5	0.5	0.4	0.4		0.9	1.2	
of which: contribution from real GDP growth	-2.4	-2.6	-5.8			-4.3	-4.3	-3.7	-2.3	-1.6	-1.7		-1.8	-2.1	
Contribution from real exchange rate depreciation	-1.8	-2.8	-2.9			-0.8	-0.2	-0.1	0.0	0.0	0.1		...	...	
Other identified debt-creating flows	-0.2	-0.7	-0.8			-0.2	-0.3	-0.1	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	0.0	-0.3	-0.1			-0.1	-0.2	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	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)	-0.2	-0.5	-0.8			-0.2	-0.1	-0.1	0.0	0.0	0.0		0.0	0.0	
Other (specify, 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	
Residual, including asset changes	0.8	1.8	-1.8			1.8	0.5	0.2	0.0	-0.3	-0.2		-0.1	0.0	
Other Sustainability Indicators															
PV of public sector debt	...	...	25.3			24.6	23.5	22.7	22.9	23.0	23.0		24.3	26.7	
of which: foreign-currency denominated	...	...	14.5			13.6	13.2	12.8	12.9	13.2	13.4		14.9	16.7	
of which: external	...	...	14.5			13.6	13.2	12.8	12.9	13.2	13.4		14.9	16.7	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	5.4	5.0	5.7			3.7	4.6	4.4	4.3	3.8	3.4		3.5	3.5	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	166.4			177.2	180.4	169.4	169.6	162.9	158.0		163.3	170.6	
PV of public sector debt-to-revenue ratio (in percent)	...	...	222.6			228.0	225.1	209.5	207.1	196.9	189.8		195.0	203.7	
of which: external 3/	...	...	127.3			126.0	126.2	117.9	117.1	112.5	110.8		119.3	127.1	
Debt service-to-revenue and grants ratio (in percent) 4/	12.6	14.0	14.7			15.6	15.6	15.5	14.9	13.8	12.6		12.0	12.7	
Debt service-to-revenue ratio (in percent) 4/	19.4	20.8	19.6			20.1	19.4	19.2	18.1	16.6	15.2		14.3	15.2	
Primary deficit that stabilizes the debt-to-GDP ratio	4.7	5.1	11.1			3.1	4.0	3.3	1.9	1.4	1.4		1.3	1.4	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	5.3	6.0	15.2	6.8	3.5	13.3	14.0	12.4	7.7	5.2	5.3	9.7	5.3	5.8	5.4
Average nominal interest rate on forex debt (in percent)	0.5	0.7	0.8	1.1	0.5	0.6	0.7	0.7	0.8	0.7	0.8	0.7	1.0	1.2	1.0
Average real interest rate on domestic debt (in percent)	-5.3	-1.9	4.9	-1.9	3.5	6.7	6.5	7.8	7.9	7.6	7.1	7.3	7.8	7.9	7.9
Real exchange rate depreciation (in percent, + indicates depreciation)	-5.8	-9.2	-10.1	-2.4	8.9	-3.4	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	17.2	17.3	12.1	12.6	3.7	9.1	6.5	5.9	5.1	4.9	4.7	6.0	4.4	4.5	4.4
Growth of real primary spending (deflated by GDP deflator, in percent)	0.2	0.1	0.1	0.1	0.1	-0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	...	...	49.8	48.7	48.6	48.7	51.9	51.8	49.9	51.5	51.1	...

Sources: Country authorities; and staff estimates and projections.

1/ Public sector comprises central government, regional government, and the BoSL. Debt is calculated on gross terms.

2/ 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.

3/ Revenues excluding grants.

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

5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 4. Sierra Leone: Sensitivity Analysis for Key Indicators of Public Debt, 2013–33

		Projections						
	2013	2014	2015	2016	2017	2018	2023	2033
PV of Debt-to-GDP Ratio								
Baseline	25	24	23	23	23	23	24	27
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	25	23	22	20	19	17	11	4
A2. Primary balance is unchanged from 2013	25	23	22	22	22	22	23	25
A3. Permanently lower GDP growth 1/	25	24	23	24	24	24	28	39
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	25	26	29	30	31	32	39	50
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	25	25	26	26	26	26	27	28
B3. Combination of B1-B2 using one half standard deviation shocks	25	25	26	27	28	29	35	45
B4. One-time 30 percent real depreciation in 2014	25	28	26	25	25	25	24	26
B5. 10 percent of GDP increase in other debt-creating flows in 2014	25	28	27	27	27	27	28	29
PV of Debt-to-Revenue Ratio 2/								
Baseline	177	180	169	170	163	158	163	171
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	177	175	158	148	131	117	75	29
A2. Primary balance is unchanged from 2013	177	176	163	161	154	150	154	163
A3. Permanently lower GDP growth 1/	177	182	172	174	169	166	188	244
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	177	199	207	215	214	215	254	309
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	177	194	195	194	185	179	182	181
B3. Combination of B1-B2 using one half standard deviation shocks	177	191	189	196	194	195	229	278
B4. One-time 30 percent real depreciation in 2014	177	216	195	189	177	168	164	166
B5. 10 percent of GDP increase in other debt-creating flows in 2014	177	218	202	200	191	185	187	184
Debt Service-to-Revenue Ratio 2/								
Baseline	16	16	16	15	14	13	12	13
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	16	16	17	16	14	12	10	7
A2. Primary balance is unchanged from 2013	16	16	15	15	14	12	12	12
A3. Permanently lower GDP growth 1/	16	16	16	15	14	13	13	16
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2014-2015	16	17	18	18	16	15	15	19
B2. Primary balance is at historical average minus one standard deviations in 2014-2015	16	16	16	16	14	13	12	13
B3. Combination of B1-B2 using one half standard deviation shocks	16	17	17	17	16	15	14	17
B4. One-time 30 percent real depreciation in 2014	16	17	18	18	16	15	14	16
B5. 10 percent of GDP increase in other debt-creating flows in 2014	16	16	16	16	14	13	12	14

Sources: Country authorities; and staff estimates and projections.

1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.

2/ Revenues are defined inclusive of grants.