Estimating debt which could be taken on by African governments if there is no grant funding for loss and damage, and no additional grant funding for adaptation.

October 2022

Markandya and Gonzalez-Eguino have calculated residual loss and damage from climate change and the finance needed to address it for different world regions.[1] These residual damages calculations assume that an optimal level of adaptation spending also takes place.

Under their high-damages / low discount rate scenario they estimate that annual loss and damage in sub-Saharan Africa (SSA) requiring loss and damage finance will be $88 billion in 2023 rising to $118 billion by 2032. These estimates are in 2005 prices. In 2022 prices, this is $131 billion in 2023 rising to $171 billion by 2032.

For the same scenario, they also have figures for the adaptation spending which goes along with this model. They say to keep residual damages to this level will require annual adaptation spending of $22 billion in sub-Saharan Africa in 2023 (in 2005 prices) rising to $46 billion in 2032. In 2022 prices this is $32 billion in 2023, rising to $69 billion in 2032.[2]

If this adaptation spending does not happen, then the logic of the residual damages approach is that loss and damage will cost more than the adaptation spending required to stop it would have done.

African governments do not need to borrow to cover adaptation costs which are being paid for by grants. The OECD does not report on how many grants for adaptation are going to African countries. It does say:[3]

- $29 billion is being provided globally for adaptation finance
- 26% of public climate finance is grants
- 26% of climate finance goes to Africa[4]

Using these figures we can estimate that $7.5 billion of global adaptation finance is grants and $2 billion of this goes to African countries. However, it could be that more adaptation finance goes to African countries, and more adaptation finance is grants. So for our calculations we have increased this by 150% to $5 billion of adaptation grants going to African countries every year.

For our calculations we assume this continues to be the case, as we are calculating how much debt will need to be taken on if there are no grants for loss and damage, and adaptation grants do not increase. We want and hope that grant finance for adaptation will increase, but to estimate what will

---

[1] https://link.springer.com/chapter/10.1007/978-3-319-72026-5_14

[2] This is similar to other estimates for adaptation spending needs. For example, the IMF has said adaptation spending in SSA needs to be $30-$50 billion a year over the next decade https://www.imf.org/-/media/Files/Publications/REO/AFR/2020/April/English/ch2.ashx#:~:text=For%20sub%2DSaharan%20Africa%2C%20adaptation,costly%20than%20frequent%20disaster%20relief.

[3] https://www.oecd.org/climate-change/finance-usd-100-billion-goal/aggregate-trends-of-climate-finance-provided-and-mobilised-by-developed-countries-in-2013-2020.pdf

[4] This is a figure for the African continent rather than sub-Saharan Africa, so the actual proportion for sub-Saharan African will be less

happen to debt levels if it does not, our calculations are based on grant financing not increasing from current levels, in 2022 prices.

If we assumed that all adaptation costs not covered by grants will need to be paid for by national governments, this means $27 billion of additional debt in 2023, rising to $64 billion in 2032. However, in reality a lot of 'unfunded adaptation' is could be realised by households, farmers and businesses who end up having no choice but to do some adapting themselves. We therefore assume that 50% of adaptation costs not covered by the current level of grants is met through additional government borrowing. This is $14 billion of additional debt in 2023, rising to $32 billion by 2032. Over the ten year period 2023 to 2032 this is $226 billion of additional borrowing.

It is also possible that in the absence of increased grant funding, some adaptation does not happen. In this case, the loss and damage finance needs will be even higher, as the estimates of loss and damage are if optimal adaptation takes place.

For calculating how much debt will increase if loss and damage is not paid for with grants, one overly simplistic approach would be to assume that governments will take on debt in proportion to their share of the economy. In SSA, government expenditure is 22% of GDP. If governments borrow to cover 22% of the costs of loss and damage, based on the Markandya and Gonzalez-Equino figures, sub-Saharan Africa governments will need to borrow $29 billion in 2023 (in 2022 prices) rising to $39 billion in 2032, $340 billion cumulatively over the ten years.

However, just borrowing to cover costs in proportion to the government's share of GDP seems unrealistic, as governments across the world help cover private sector and household losses in response to shocks and disasters.

If we assume governments would have to borrow to cover all of the costs of loss and damage, this would be $131 billion in 2023, rising to $175 billion in 2032, $1.5 trillion cumulatively across the ten years. However, covering 100% of the costs is also unrealistic as government's are unlikely to take on all the costs of loss and damage across all of the economy.

If instead we assume governments would have to borrow to cover 50% of the financial costs of loss and damage, this is $66 billion in 2023 (in 2022 prices) rising to $88 billion in 2032, and $770 billion cumulatively.

Summary of debt taken on between 2023 and 2032 under different scenarios

Adaptation
High damage, low discount rate, 50% of non-grant funded adaptation costs paid for by government borrowing:
$226 billion

Residual loss and damage after adaptation

High damage, low discount rate, 50% of damages paid for through government borrowing:
$770 billion

Central case
If we take the high damages, low discount rate scenario, and assume governments borrow 50% of the financial cost of residual loss and damages, and 50% of unfunded adaptation costs, then total additional borrowing between 2023 and 2032 is $996 billion, in 2022 prices.

Sub-Saharan Africa GDP is estimated by the IMF to be $2,063 billion in 2022, in 2022 prices.[5] The IMF

[5] IMF World Economic Outlook database.

estimates it will grow to $3,099 billion by 2027, in 2027 prices ($2,777 billion in 2022 prices), when their estimates stop. To produce an estimate of SSA GDP in 2032 we have continued the IMF estimated growth rate of nominal GDP (which is 8% a year from 2023-2027), and applied this same annual rate to 2028 to 2032. We have then corrected for inflation to put these figures into 2022 prices. Doing this estimates that SSA GDP in 2032 will be $3,696 billion, in 2022 prices.

If SSA governments have to borrow an additional total of $996 billion between 2022 and 2032, this cumulative debt burden would reach 27% of projected GDP by 2032. **This means unless grant funding is made available for the financial costs of loss and damage and adaptation, SSA government debt could increase by 27 percentage points of GDP compared to what would otherwise have been the case.**

According to the IMF, SSA government debt is currently 55% of GDP. While we do not know what SSA government debt as a percentage of GDP will be by 2032, a 27 percentage point increase on current levels would be a 50% increase on current debt levels.

This estimate does not include any debt taken on to pay the interest on the new debt arising from the impacts of climate change. Doing so would increase the figure further. Neither does it include any of the debt being paid off over the ten years. While some of the new debt may have a lower maturity than 10 years, the main way debt principal is paid is by borrowing more money. For this not to be the case would mean government's having larger primary budget surplus, and thus putting more of the costs of climate change back onto the people of that country. While in the absence of debt cancellation or default this is what would ultimately happen over the medium term, over a ten year period it is reasonable to assume that it would be a cumulative increase in debt.

With thanks to Christian Holz (Climate Equity Reference Project) for their inputs and comments into the methodology.