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Financing Africa's Climate Goals: The Role of Fossil Fuel Subsidies and Environmental Taxes

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Abstract

This paper examines the prospects for African countries to finance climate mitigation and adaptation using domestic resources, focusing on redirecting explicit fossil fuel subsidies and increasing environmental taxes. The analysis shows that, while these fiscal tools could contribute the equivalent of 1.7% and 1.1% of Africa's GDP, respectively, their current use in stabilising fuel and electricity prices significantly limits the resources available for climate funding, especially given Africa's overall climate finance gap of 5–10% of GDP. The paper recommends that African governments establish independent, self-financing fuel and energy reserve authorities to reallocate portions of subsidies to climate objectives. It also urges a gradual, well-managed withdrawal from fuel subsidies and a strategic increase in environmental taxes to support national climate adaptation funds. While these domestic measures will not fully close Africa's climate finance gap, they offer credible avenues to leverage additional domestic finance – especially in leading economies such as South Africa, Nigeria and Egypt – and strengthen private sector investment in climate transition.

Introduction

This occasional paper explores the potential of African countries to meet their climate change mitigation and adaptation demands through domestic sources of finance. Specifically, it examines how redirecting fossil fuel subsidies and raising environmental taxes can generate the resources needed to gear up private sector involvement in climate investments. To do this, it analyses the demand for and supply of climate finance in Africa's three largest economies (South Africa, Nigeria and Egypt). In addition, it examines the magnitude of and trends in the supply of potential climate funds from fossil fuel subsidies and environmental taxes, and estimates the extent to which climate finance gaps can be diminished.

The paper also explores the challenges to achieving this domestic climate financing potential due to the fungibility of these two fiscal resources. Their use is usually limited, with explicit fossil fuel subsidies (EFFS) primarily intended for fuel price stabilisation and environmental taxes for a wide range of uses beyond climate change mitigation. However, there is potential for rechannelling the fiscal resources that can be liberated from EFFS and environmental taxes to incentivise and gear up private sector financing of climate mitigation and adaptation.

Estimating the climate financing gap

Demand for climate finance: NDC submissions

Following the Paris Agreement in 2015, states parties prepared their first round of strategic plans to mitigate further growth in carbon emissions from fossil fuel consumption, with targets to limit global warming to below 2°C by 2030 and to net zero by 2050. These 15-year strategic plans or Nationally Determined Contributions (NDCs) initially identified industries and projects that would decarbonise electricity generation and provided the relevant basic costings and benefit estimates. NDCs are to be updated at five-yearly intervals and the 2020-due versions illustrated mutual learning with a more standardised format that:[1]

- estimated decelerations of fossil fuel growth against past trendlines (or business-as-usual scenarios);
- included adaptation to climate change; and
- defined the institutional capacity requirements to implement the agreement.

1 UN Framework Convention on Climate Change, *2024 NDC Synthesis Report* (UNFCCC, October 28, 2024).

The budget bids attached to these strategic plans are based on country-specific costings, usually aggregated by industry and project. States parties are expected to identify own and external resources and the mode of financing, including grants, concessional loans, commercial loans, guarantees and equity. Most NDCs expect private sector investment to provide the bulk of funding and, in lower-income countries, the expectation is for NDCs to be funded primarily externally rather than domestically.[2]

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There remains much work to be done in standardising NDC financial reporting requirements. Degrees of transparency; levels of aggregation between projects, sectors and sources; the dating of implementation schedules; and the extent of domestic resource mobilisation are highly variable between countries. In 2022, the Climate Policy Initiative (CPI) endeavoured to categorise African NDCs by their data coverage and methodologies for estimating the demand for climate finance and determining the domestic contributions. By integrating macroeconomic projections of fossil fuel consumption and mitigation costs with aggregations of project costs by industrial sector, the CPI was able to standardise a comparison between African countries' NDCs financing needs. The results are indicated in Table 1 as proportions of GDP in 2020.[3]

With mutual learning and incremental standardisation of methodologies, later versions of NDC submissions demonstrate less between-country variation in their results. Also indicated in Table 1 is the annualised cost of NDCs for Africa's three largest economies (Egypt, Nigeria and South Africa) based on updated (2023–2030) submissions to the UN Framework Convention on Climate Change (UNFCCC). These indicate earlier under-estimations of costs for Egypt and Nigeria and over-estimations by South Africa in compiling their NDCs.

Demand for climate finance: IMF implicit fossil fuel subsidies

The International Monetary Fund's Climate Change Indicators Dashboard (IMF-CCID) provides country-level data on fossil fuel subsidies between 2015 and 2022 with projections to 2030. This database makes a distinction between explicit and implicit fossil fuel

2 UNFCCC, *2024 NDC Synthesis Report*.

3 Sandra Guzman, Anna Balm and Chavi Meattle, *The State of Climate Finance in Africa: Climate Finance Needs of African Countries*, Report (Climate Policy Initiative, June 2022).

subsidies. EFFS are primarily consumer fuel or electricity price stabilisation measures that suppress domestic market prices below supply cost. Implicit fossil fuel subsidies (IFFS) are modelled estimations of:

- the mitigation costs of decarbonisation required to meet the Paris Agreement's 2030 targets;
- the costs of combatting traffic congestion; and
- foregone tax revenue from lower carbon fuel sales.

TABLE 1 ALTERNATIVE ESTIMATES OF THE DEMAND FOR CLIMATE FINANCE (2020) AND THEIR AFFILIATIONS

% of GDP	Annualised costs of NDCs: CPI (2020–30) vs UNFCCC (2023–30)			IMF: Implicit fossil fuel subsidies	
	Total	Domestic	Foreign	2020	2025
	CPI (2020–30)				
World	0.86%	*	*	4.98%	5.83%
Africa	11.14%	1.32%	9.82%	6.17%	7.68%
• Central Africa	10.33%	0.39%	9.94%	1.23%	1.88%
• East Africa	18.96%	3.91%	15.05%	2.66%	3.06%
• North Africa	2.93%	0.27%	2.66%	10.66%	13.03%
• Southern Africa	28.03%	2.79%	25.24%	8.31%	10.66%
• West Africa	4.05%	0.36%	3.69%	2.85%	3.83%
	CPI (2020–30)				
Egypt	2.00%	0.00%	2.00%	12.20%	15.45%
Nigeria	3.00%	0.00%	3.00%	3.55%	4.63%
South Africa	32.12%	0.12%	32.00%	11.65%	15.38%
	UNFCCC (2023–30)				
Egypt	6.43%	*	*	*	*
Nigeria	17.91%	*	*	*	*
South Africa	8.58%	*	*	*	*

Sources: GDP figures drawn from International Monetary Fund, "World Economic Outlook Database", April 2025; author's calculations from Sandra Guzman, Anna Balm and Chavi Meattle, *The State of Climate Finance in Africa: Climate Finance Needs of African Countries*, Report (Climate Policy Initiative, June 2022), 34; IMF, "Climate Change Indicators Dashboard (IMF-CCID): Fossil Fuel Subsidies", November 28, 2024; UN Framework Convention on Climate Change, *Egypt's Second Updated Nationally Determined Contributions* (UNFCCC, June 26, 2023), 30; National Climate Change Council, *Nigeria's Long-Term Low-Emission Development Strategy – 2060* (UNFCCC, 2023), 3, 108; UNFCCC, "South Africa's Intended Nationally Determined Contribution (INDC)" (UNFCCC, 2022), 3–14

Unlike EFFS, they are not explicitly budgeted for by governments but constitute a societal cost that will be borne by future generations in respect of pollution and the loss and damage resulting from the increased frequency and magnitude of climatic disasters. This can be considered an alternative method for estimating the demand for climate finance.[4] A comparison of the CPI and UNFCCC estimates is provided in Table 1 and sets out an alternative basis against which to calculate the current financing gap.

As modelled, IFFS will correlate positively with the consumption of fossil fuels, driven in turn by GDP growth. This was evidenced globally and across all African regions during the post-COVID recovery period of 2020–2025. Fossil fuel consumption and hence its implicit environmental costs also rise as a proportion of GDP as countries transition from lower- to upper-middle-income status. This levels off as countries approach high-income status and can afford to transition from fossil fuel to renewable energy sources. Fossil fuel-producing countries, notably those in North Africa, also tend to both implicitly and explicitly subsidise domestic consumption more than their income status and growth performance would suggest.

The self-declared demand for climate finance as elucidated in NDC strategic plans bears little resemblance to the IFFS as modelled by the IMF. Globally, budget bids and offers considerably understate the estimated environmental costs, particularly in higher-income countries that are expected to cross-subsidise poorer ones. With the notable exception of North African countries, low- and lower-middle-income African nations considerably overstate their financing need relative to IFFS. Possible reasons for this include an expectation of a rapid increase in GDP, fuel consumption and pollution to 2030; the inclusion of climate adaptation in addition to mitigation costs; and an expectation that foreign sources can fund their energy transitions.

The self-declared demand for climate finance as elucidated in NDC strategic plans bears little resemblance to the IFFS as modelled by the IMF

Supply of climate finance

The CPI also provides regularly updated country-level data on the global and African supply of climate finance, with the latest figures applicable to 2022.[5] This data is disaggregated by domestic versus foreign sources, public versus private sector investments and financing instrument (grants, concessional loans, equity and commercial loans).

4 Simon Black, Ian Parry and Nate Vernon-Lin, "Fossil Fuel Subsidies Surged to Record $7 Trillion", IMF Blog, August 24, 2023..

5 CPI, "Landscape of Climate Finance in Africa 2024: Interactive Data Tools", accessed October 15, 2025, https://www.climatepolicyinitiative.org/dataviz/landscape-of-climate-finance-in-africa-2024-interactive-data-tools/.

TABLE 2 SUPPLY AND COMPOSITION OF CLIMATE FINANCE						
	Total – 2020	Total – 2022	Domestic: Foreign – 2020	Mitigation: Adaptation – 2020	Public: Private – 2020	Grant + equity: Loan – 2020
	% of GDP	% of GDP	Ratio	Ratio	Ratio	Ratio
Globe	0.70%	1.29%	85:15	93:7	51:49	39:61
Africa	1.11%	1.39%	13:87	56:44	88:12	42:58
• Central Africa	1.28%	2.25%	6:94	50:50	92:80	47:53
• East Africa	3.10%	3.49%	4:96	46:54	89:11	56:44
• North Africa	0.86%	0.89%	21:79	72:28	89:11	20:80
• Southern Africa	0.37%	0.53%	35:65	75:25	68:32	44:56
• West Africa	1.07%	1.62%	13:87	52:48	90:10	38:62
Egypt	0.95%	1.10%	28:72	83:17	93:70	15:85
Nigeria	0.48%	0.63%	19:81	62:38	87:13	20:80
South Africa	0.46%	0.85%	38:62	82:18	63:37	39:61

Source: Author's calculations from Chavi Meattle et al., *Landscape of Climate Finance in Africa 2024* (CPI, October 22, 2024); Baysa Naran et al., *Global Landscape of Climate Finance 2024* (CPI, October 31, 2024)

The composition of climate finance in Africa differs significantly from the global average in three respects:

- heavy dependence on foreign sources (87%+ vs 15% globally);
- greater reliance on public than private sector financing (88%+ vs 51%); and
- a bigger proportion devoted to adaptation than mitigation (44% vs 7%).

Foreign government aid and investment flows to Africa have enabled climate finance to constitute a greater proportion of the continent's GDP than the global average (1.1% vs 0.7%) in 2020. However, the post-COVID recovery of climate finance in Africa has been slower than that globally and more in line with general GDP growth.

Estimating the existing climate financing gap

The existing climate financing gap is the difference between the demand for and supply of climate funding. Since we have two alternative methods of estimating demand – from NDC budget bids collated by CPI and IFFS modelled by the IMF – two estimates of the climate finance gap are presented in Table 3.

TABLE 3 ALTERNATIVE ESTIMATES OF THE EXISTING CLIMATE FINANCING GAP (BASED ON 2020 FIGURES)				
% of GDP	**Gap, assuming demand is total cost of NDCs**			**Gap, assuming demand is IFFS**
	Total	**Domestic**	**Foreign**	**Total**
Globe	0.16%	*	*	4.28%
Africa	10.03%	1.18%	8.85%	5.06%
• Central Africa	9.06%	0.32%	8.73%	-0.05%
• East Africa	15.86%	3.78%	12.08%	-0.44%
• North Africa	2.07%	0.10%	1.98%	9.80%
• Southern Africa	27.66%	2.66%	25.00%	7.94%
• West Africa	2.97%	0.22%	2.75%	1.78%
Egypt[a]	5.48%	-0.27%	5.74%	11.25%
Nigeria	17.44%	-0.09%	17.53%	3.08%
South Africa	8.13%	-0.14%	8.27%	11.19%

a The more recently collated data from country NDCs and listed by the UNFCCC is used to estimate the total financing gap for the three countries. These three NDCs from 2023 do not specify domestic commitments. The composition between domestic and foreign sources is italicised to indicate that the proportions used were those from the earlier collation by CPI.

Source: Author's calculations from IMF, "World Economic Outlook Database", April 2025; Sandra Guzman, Anna Balm and Chavi Meattle, *The State of Climate Finance in Africa: Climate Finance Needs of African Countries*, Report (CPI, June 2022); IMF, "Climate Change Indicators Dashboard (IMF-CCID): Fossil Fuel Subsidies", November 28, 2024; UNFCCC, *Egypt's Second Updated Nationally Determined Contributions* (UNFCCC, June 26, 2023); National Climate Change Council, *Nigeria's Long-Term Low-Emission Development Strategy – 2060* (UNFCCC, 2023); UNFCCC, "South Africa's Intended Nationally Determined Contribution (INDC)" (UNFCCC, 2022); Chavi Meattle et al., *Landscape of Climate Finance in Africa 2024* (CPI, October 22, 2024); Baysa Naran et al., *Global Landscape of Climate Finance 2024* (CPI, October 31, 2024)

Globally, the financing gap ranges between 0.16% and 4.28% of GDP, with the implication that the aggregate of NDC budget bids is under-estimated relative to the negative externalities generated by actual fossil fuel consumption. The opposite is true for most of Africa, where the articulated demand from NDCs is generally much higher than fuel consumption would suggest (leading to gaps of 10% vs 5% of GDP). As indicated earlier, this may be due to the inclusion of adaptation requirements in NDCs and/or expectations that fossil fuel consumption will rise rapidly with economic growth. The exceptions to this observation include North Africa and South Africa, which follow the global pattern of limiting NDC budget bids to mitigation and planning for an energy transition to renewable sources. A synthetic compromise between these alternative methods of calculating demand for climate finance will be necessary to narrow the range of estimates of the gap.

Additional potential fiscal sources of climate finance

The basis of the climate finance system is grant funding generated by either redirecting state spending or raising tax revenue. Grants are used to:

- subsidise the interest component of concessional loans, primarily through the development banking system;
- provide equity with which to gear up commercial loan financing;
- guarantee payment of concessional and market-based loans; and
- cover the costs of institutional capacity building or foundational and catalytic fixed investments.

The main sources of the additional grant funding needed to address climate change are redirecting EFFS and raising environmental taxes.[6]

As with IFFS, the IMF-CCID also measures explicitly budgeted grants to consumers or producers. Almost all African EFFS are consumer fuel or electricity price stabilisation measures, which suppress domestic market prices below supply cost. Outside Africa, some countries also directly subsidise (coal, petroleum and natural gas) producers or electricity generators using these carbon fuels. Environmental taxes are those levied specifically on energy, transport, resources and pollution.[7] The relative contributions that these two additional domestic sources can make in filling climate funding gaps are indicated in Table 4 as proportions of GDP.

Globally, in 2020 EFFS constituted 0.56% of GDP while environmental taxes made up 1.13%. By contrast, subsidies comprise more than three times the global average in Africa while taxes raise an equivalent proportion

Globally, in 2020 EFFS constituted 0.56% of GDP while environmental taxes made up 1.13%. By contrast, subsidies comprise more than three times the global average in Africa while taxes raise an equivalent proportion. This reflects a heavy reliance on natural gas and petroleum subsidies in North African countries and, to a lesser extent, on coal-fired

6 Eyo Eyo, "Nigeria Must Act with Caution as It Removes Fossil Fuel Subsidies", London School of Economics Blog, July 6, 2023.

7 Favourate Mpofu, "Green Taxes in Africa: Opportunities and Challenges for Environmental Protection, Sustainability, and the Attainment of Sustainable Development Goals", *Sustainability* 14, no. 16 (2022): 10239.

electricity subsidies in South Africa. These mainly upper-middle-income African nations are considerably more fuel subsidy dependent than their peers elsewhere in the world, whereas low- and lower-middle-income countries in Africa devote a similar proportion of their resources to fuel subsidies as their peers globally.

TABLE 4 CONTRIBUTIONS OF EXPLICIT FOSSIL FUEL SUBSIDIES AND ENVIRONMENTAL TAXES TO GDP

% of GDP	Explicit fossil fuel subsidies			Environmental taxes	
	2015	2020	2025	2015	2020
Globe	0.49%	0.56%	0.63%	1.34%	1.13%
Africa	1.72%	1.70%	2.06%	0.96%	1.10%
• Central Africa	0.35%	0.19%	0.19%	0.38%	0.33%
• East Africa	0.69%	1.29%	1.15%	1.80%	1.86%
• North Africa	5.08%	3.58%	5.21%	0.58%	0.58%
• Southern Africa	0.19%	1.18%	0.95%	2.55%	2.73%
• West Africa	0.16%	0.85%	0.75%	0.26%	0.39%
Egypt	4.45%	3.03%	4.67%	0.61%	0.57%
Nigeria	0.03%	0.80%	0.79%	0.02%	0.02%
South Africa	0.12%	1.21%	1.06%	2.75%	2.92%

Sources: Author's calculations from IMF-CCID, "Fossil Fuel Subsidies", November 28, 2024; IMF-CCID, "Environmental Taxes Database", November 28, 2024

The ability to raise environmental taxes across Africa is roughly equivalent to the global average for low- and lower-middle-income nations; however, South Africa's high propensity to tax raises the Southern African averages higher than their income peers worldwide. East African countries have also generated higher-than-average uptakes from transport and resource taxes.

Globally, between 2015 and 2020 EFFS thus grew by 4% (compared to GDP growth of 1.6%) while environmental taxes declined by nearly 13% per year. In Africa, over the same period, EFFS declined 0.69% per year in coincidence with a GDP recession of 0.48% per year and a decline in global fuel commodity prices. Environmental taxes fell 8% per year during this period. Post-COVID, between 2020 and 2025, African GDP grew by 4% per year compared to 3.24% globally and, correspondingly, EFFS accelerated to an average 8.03% annually compared to 5.9% worldwide. Whereas EFFS data can be updated timeously based on the difference between global and domestic market prices, environmental tax values are only consolidated two to three years after collection.[8]

8 Black, Parry and Vernon-Lin, "Fossil Fuel Subsidies Surged".

Determining the limits of climate financing gap reduction

Table 5 indicates the estimated impact on the climate financing gap of redirecting domestic spending on EFFS and environmental tax revenue into decarbonisation (ie, mitigation) and/or other climate change-responsive investment (ie, including adaptation). It does so by making two assumptions, namely (a) that the most realistic estimate of the demand for and existing shortfall in climate finance is an equally weighted combination of the NDC and IFFS approaches and (b) that all EFFS and ET (environmental taxes) can be directed into the energy transition and/or adaptation to climate change. This potentially reduced climate financing gap is therefore

$$CFG^* = \frac{DCF_n + DCF_i}{2} - SCF - (EFFS + ET)$$

Where ***CFG**** is the potential (reduced) climate finance gap, DCF_n and DCF_i are the demand for climate finance based on NDCs and IFFS, respectively, and SFC denotes the current supply of climate finance.

TABLE 5 CONTRIBUTIONS OF EXPLICIT FOSSIL FUEL SUBSIDIES AND ENVIRONMENTAL TAXES TO GDP

% of GDP	Existing financing gap[a]		EFFS + ET	Potential financing gap	
	Total	Mitigation[b]		Total	Mitigation
Globe	2.22%	2.06%	1.69%	0.53%	0.37%
Africa	7.54%	4.24%	2.80%	4.74%	1.44%
• Central Africa	4.50%	2.27%	0.53%	3.98%	1.74%
• East Africa	7.71%	3.58%	3.14%	4.57%	0.43%
• North Africa	5.94%	4.27%	4.16%	1.78%	0.11%
• Southern Africa	17.80%	13.35%	3.92%	13.88%	9.43%
• West Africa	2.37%	1.24%	1.24%	1.13%	0.00%
Egypt	8.36%	6.90%	3.60%	4.76%	3.30%
Nigeria	10.26%	6.40%	0.82%	9.44%	5.58%
South Africa	9.66%	7.88%	4.13%	5.53%	3.75%

a The existing finance gap is calculated as the equally weighted average of the NDC and IFFS approaches.

b It is assumed that the mitigation component of demand (data unavailable) is of equivalent proportion to that of supply (for which data is available).

Source: Author's calculations from IMF, "World Economic Outlook Database", April 2025; Sandra Guzman, Anna Balm and Chavi Meattle, *The State of Climate Finance in Africa: Climate Finance Needs of African Countries*, Report (CPI, June 2022); IMF, "Climate Change Indicators Dashboard (IMF-CCID): Fossil Fuel Subsidies", November 28, 2024; UNFCCC, *Egypt's Second Updated Nationally Determined Contributions* (UNFCCC, June 26, 2023); National Climate Change Council, *Nigeria's Long-Term Low-Emission Development Strategy – 2060* (UNFCCC, 2023); UNFCCC, "South Africa's Intended Nationally Determined Contribution (INDC)" (UNFCCC, 2022); Chavi Meattle et al., Landscape of Climate Finance in Africa 2024 (CPI, October 22, 2024); Baysa Naran et al., *Global Landscape of Climate Finance 2024* (CPI, October 31, 2024)

Even under the (heroic) assumption that the two domestic fiscal sources of potential climate finance can be entirely redirected for that purpose, the mitigation and total financing gaps persist – both globally and across Africa. However, in West and, to a lesser degree, North Africa, the mitigation gap could almost be eliminated with their relatively higher degree of EFFS. At the opposite end of the spectrum, Southern Africa's estimates of the demand for climate finance, and hence the funding gap, are unusually large by global and African standards, reflecting possible over-budgeting of their NDCs or an under-supply of climate funds.

Even under the (heroic) assumption that the two domestic fiscal sources of potential climate finance can be entirely redirected for that purpose, the mitigation and total financing gaps persist

Current implementation challenges

Fiscal capacity to counter energy price fluctuations is limited

EFFS are primarily intended to stabilise energy prices through the management of fuel reserves. Thus (an unknown) portion of this spending will not be available for redirection from its original purpose. However, there may be scope for improved efficiencies in fuel reserve management that could release funds for decarbonisation purposes.

Inasmuch as EFFS regimes are designed to moderate energy commodity price movements, one would expect

- fuel reserves to be supplemented and subsidy growth to decelerate or reverse as global commodity prices decline (as between 2015 and 2020); and
- net withdrawal from storage and subsidy growth to accelerate as they rise (as between 2020 and 2025).

Table 6 compares the annual real growth rates of fossil fuel subsidisation globally and continentally against (components of) the energy commodity price index. There is both concurrent and contradictory evidence of counter-cyclical management of domestic fuel prices through subsidy fund management.

TABLE 6 COMPARISON OF ENERGY AND FOSSIL FUEL PRICE AND SUBSIDY MOVEMENTS						
Annual growth	**Global commodity price movements**		**Explicit fossil fuel subsidy growth, global**		**Explicit fossil fuel subsidy growth, Africa**	
	2015–2020	**2020–2025**	**2015–2020**	**2020–2025**	**2015–2020**	**2020–2025**
GDP	*	*	1.60%	3.24%	-0.48%	4.00%
All energy	-5.07%	15.17%	4.03%	5.92%	-0.69%	8.03%
• Petrol	-3.81%	14.33%	-10.53%	12.53%	-8.68%	20.48%
• Gas	-12.45%	26.10%	-7.33%	28.38%	-8.40%	9.68%
• Coal	1.27%	11.01%	9.51%	-2.36%	n/a	n/a
• Electricity	*	*	14.37%	-1.09%	7.86%	-0.33%

Sources: Author's calculations from IMF, "Primary Commodity Prices Database", accessed March 2025, https://www.imf.org/en/Research/commodity-prices; IMF-CCID, "Fossil Fuel Subsidies Database", accessed March 2025, https://climatedata.imf.org/pages/mitigation#mi3

The five-year period prior to the COVID crisis was characterised by low global GDP growth and declining commodity prices. For the petroleum and natural gas components of the energy supply, explicit subsidies declined both globally and across the AU between 2015 and 2020. For the five-year period of recovery from COVID (2020–2025), GDP growth accelerated, stimulating demand for energy and its price inflation. In concordance with counter-cyclical price management, energy subsidy growth accelerated as reserves were depleted, both globally and continentally. Concurrence between global commodity price movements and energy subsidisation is more marked in Africa than globally. This can be attributed to Africa's relative dependence on primary commodity extraction (rather than beneficiation or manufacturing), which ties GDP growth cycles closer to those of global commodity prices.

However, when observing the global average growth, which is recorded in overall energy subsidisation during the pre-COVID commodity price deflation, some procyclicality in price management is evident. In large measure, this was due to a shift from subsidising carbon fuels to subsidising electricity (regardless of fuel source) and, in China and India, to the subvention of coal. These pre-COVID trends subsequently reversed, thereby reflecting pro-cyclical management of coal and electricity price stabilisation.

The volatility of petroleum and natural gas prices and subsidies is greater than that of coal and the residual component of electricity in the composite energy indicators. Fossil fuel subsidy flows fluctuate as much as prices, implying that untimely delays or over-corrections can destabilise domestic energy price cycles. Open-ended and highly variable fiscal spending flows also play havoc with strategic, budgetary and operational planning and scheduling for all government departments and for public debt management.

Subsidy withdrawal programmes are often chaotic and unsustainable

Pressured by rising fiscal deficits and following generic macroeconomic stabilisation advice on liberalising foreign exchange, phasing out EFFS and raising environmental tax revenue, many developing (African) countries have felt compelled to follow through with big-bang approaches accompanying changes in leadership. Kenya in 2022 and Nigeria in 2023 are the most prominent recent examples where petroleum subsidies were removed, leading to wild inflationary surges and social unrest. This induced governments to 'temporarily' reinstate the subsidies (albeit at a lower level than previously).[9]

Environmental taxes and fossil fuel subsidies are income-regressive because the costs can be passed down to final consumers, whose demand for energy and transportation is inelastic, and the benefits of subsidies can be captured by suppliers. To limit the fallout from sudden liberalisation, ramping up social protection or raising the minimum wage is often recommended. In Africa, this benefits the formal rather than the majority informal sector workforce.[10]

Domestic fiscal resources are inadequate to meet NDC targets, but there is leeway for higher contributions

Table 5 indicates the most optimistic estimates of the extent to which the redirection of EFFS and revenue from environmental taxes can fill in the existing climate finance gap. It shows that the fiscal resources needed to sustain a countercyclical fuel reserve management system are likely to constitute the major component of EFFS and will be drawn upon as EFFS are phased out, necessitating replenishment of reserves at a later stage.

The benefit principle of taxation suggests that environmental taxes be used entirely to counter the externalities of pollution, congestion and climate change. The IMF-CCID includes a global database of public spending on environmental protection.[11] However, the coverage and duration of country reporting are insufficient to aggregate global, continental, regional and most national government spending data. Hence, it is not possible to ascertain what proportion of environmental tax revenue the relevant fiscal and operational authorities redirect and spend on environmental protection. It should also be borne in mind that only increases in revenues can be used to fill the current climate financing gap. The available evidence presented in Table 4 shows that, at the global level, revenue from environmental taxes declined as a proportion of GDP between 2015 and 2020.

In Table 7, to estimate a realistic annual flow of redirected EFFS and raised environmental tax revenue towards plugging the climate finance gap, it is assumed that average annual

9 Marie de Vergès, "In Africa, Governments Cut Back on Fuel Subsidies", *Le Monde*, October 18, 2023.
10 Mpofu, "Green Taxes in Africa".
11 IMF-CCID, "Environmental Protection Spending Database", accessed September 2025, https://climatedata.imf.org/datasets/d22a6decd9b147fd9040f793082b219b/explore.

changes in the value of these resources (between 2015 and 2020) are available for that purpose. Furthermore, it is assumed that the proportion of climate finance supply instrumentalised as grants or equity, and their gearing into concessional and commercial loans respectively, is maintained on an annual basis. The additional loan finance that can be geared up from redirected spending or revenue into climate finance grants or equity can be regarded as the incentivised private sector contribution to filling the climate finance gap.[12]

TABLE 7 CONTRIBUTIONS OF EXPLICIT FOSSIL FUEL SUBSIDIES AND ENVIRONMENTAL TAXES TO GDP

	Redirectable grant and equity resources from the fiscus	Additional loan resources able to be geared in from private sector	Total	Proportion of existing climate finance gap that can be filled
	% of GDP	% of GDP	% of GDP	
Globe	-0.02%	-0.01%	-0.04%	1.73%
Africa	0.03%	0.02%	0.04%	0.57%
• Central Africa	-0.03%	-0.02%	-0.05%	1.00%
• East Africa	0.18%	0.08%	0.26%	3.38%
• North Africa	-0.24%	-0.19%	-0.44%	7.37%
• Southern Africa	0.56%	0.32%	0.88%	4.95%
• West Africa	0.38%	0.23%	0.61%	25.78%
Egypt	-0.23%	-0.20%	-0.43%	5.12%
Nigeria	0.76%	0.61%	1.37%	13.39%
South Africa	0.75%	0.46%	1.20%	12.45%

Source: Author's calculations from IMF, "World Economic Outlook Database", April 2025; Sandra Guzman, Anna Balm and Chavi Meattle, *The State of Climate Finance in Africa: Climate Finance Needs of African Countries*, Report (CPI, June 2022); IMF, "Climate Change Indicators Dashboard (IMF-CCID): Fossil Fuel Subsidies", November 28, 2024; UNFCCC, *Egypt's Second Updated Nationally Determined Contributions* (UNFCCC, June 26, 2023); National Climate Change Council, *Nigeria's Long-Term Low-Emission Development Strategy – 2060* (UNFCCC, 2023); UNFCCC, "South Africa's Intended Nationally Determined Contribution (INDC)" (UNFCCC, 2022); Chavi Meattle et al., *Landscape of Climate Finance in Africa 2024* (CPI, October 22, 2024); Baysa Naran et al., *Global Landscape of Climate Finance 2024* (CPI, October 31, 2024)

At a global level, the available data suggests that 0.04% of GDP can be redirected annually towards meeting climate mitigation and adaptation targets. This amounts to 1.7% of the existing climate finance gap. For the African continent, an equivalent proportion of GDP yields only 0.6% of the shortfall. In part, this is due to the extra adaptation component of climate funding demand.

12 Marcus Fedder, "Development Finance: More Bang for Each ODA Buck", Finance for Development Lab, April 19, 2023.

Global and continental averages mask significant variation in performance trends between regions and nations. The results shown are also time dependent on the 2015–2020 period, for which comparable data is available as at the time of writing. Thus, for example, EFFS growth accelerated rapidly in Nigeria and South Africa during this pre-COVID cycle, thereby exaggerating the sustainable leeway that these nations (as the dominant economies of Southern and West Africa) possess to redirect fiscal and financial resources. By contrast, Egypt and North African countries decelerated their fossil fuel subsidisation programmes during this period. Between 2020 and 2025, these trends of acceleration or deceleration generally reversed themselves. The volatility of these pro- or counter-cyclical spending and revenue trends implies wide deviations from the average, and this may provide an over-estimation of the portion of funding (and GDP) that can be sustainably redirected to closing the climate financing shortfall.

While governments do not have the fiscal capacity to re-channel spending, raise revenue or gear up finance to fill the climate funding gap, the results do indicate the fiscal capacity of African nations to contribute additional domestic resources to fulfilling their NDC commitments

While governments, collectively and individually, do not have the fiscal capacity to re-channel spending, raise revenue or gear up finance to fill the climate funding gap, the results do indicate the fiscal capacity of African nations to contribute additional domestic resources to fulfilling their NDC commitments. Comparing from tables 2 and 6, and by way of example, 38% of South Africa's supply of climate finance in 2020 was domestically generated – this could have been increased by 12.5% to 50.5%. For Nigeria, the ratio of domestic funding was 19% but could have been 32.4%, and for Egypt it could have been 33.1%, up from 28%.

Policy recommendations

Replace EFFS with off-budget, independent fuel/energy reserve authority

Rather than divert scarce fiscal resources to an open-ended, explicit subsidisation of fossil fuels or electricity below global market prices, national governments in Africa should establish self-financing fuel reserve authorities with the mandate to smooth energy prices over the course of the commodity price cycle/s. This will involve accumulating reserves in storage while fuel prices are falling and withdrawing from them when prices rise, restricting supply and accommodating demand respectively.

These independent price-stabilisation authorities can be associated with or subordinated under the authority of central banks with a similar range of prudential regulations as those that govern the private banking sector and foreign exchange transactions. Such regulations include reserve requirements, capital adequacy and liquidity ratios on fuel or energy distributors. While the establishment or restructuring of these authorities may require initial resource inputs by redirecting fossil fuel subsidies, the objective should be self-financing.

Moderate the pace of fossil fuel subsidy withdrawal

African countries should avoid sudden, big-bang approaches to reducing fossil fuel subsidies and/or redirecting them to other fiscal expenditures. This is due to the high risk of generating inflationary spikes in fuel prices that feed through the entire supply chain. These spikes exert devaluation pressures on the local currency and deepen poverty by raising the cost of essential consumables (such as transport and food).

African countries should avoid sudden, big-bang approaches to reducing fossil fuel subsidies and/or redirecting them to other fiscal expenditures

The proportions of the climate finance gap that can be filled by redirecting spending (and raising tax revenue) are presented in Table 6. For South Africa, Nigeria and Egypt, a realistic stretch target of 10–20 years will be needed to develop self-financing, off-budget fuel reserve authorities and convert any excess EFFS into climate mitigation funding while moderating inflationary surges. For lower-income African countries, a 50 year-plus withdrawal phase may need to be considered.

Raise environmental taxes to cover adaptation costs

Similar timeframes can be anticipated for gradually raising the environmental tax burden with which to meet the adaptation demands of climate change. The definition of adaptation is loose and fungible, with implications for the open-endedness of budgetary bids and allocations. Whereas mitigation is more clearly delimited to decarbonising the energy supply and reducing greenhouse gas emissions, adaptation to climate change (from droughts, floods, heatwaves, coastal erosion) is difficult to distinguish from other aspects of environmental protection. The latter includes disaster management, infrastructure construction or rehabilitation, biodiversity conservation and restoration.

Delineation of an additional environmental tax for climate adaptation purposes establishes the fiscal constraint boundaries within which strategic ambitions can be pursued. This might incentivise a closer definition of adaptation, perhaps limited to investments that improve carbon absorption capacity, such as water, land and biodiversity restoration projects. In this way, funding streams for pre-existing (and necessary) environmental protection purposes or infrastructure are retained. This should also ensure greater security, stability and predictability of such dedicated funding flows.

Pay more attention to financial planning in the forthcoming 2025 NDCs

The first step should be identification of climate projects, sectors, industries and ministries and the establishment of legal and institutional bases for effectuating climate change strategic plans. Second, every project should be properly costed, scheduled and realistically apportioned between funding sources (grants, concessional loans, guarantees, equity and commercial loans).

Especial attention should be paid to domestic financial commitments for mitigation and adaptation. Government treasuries should delineate proportions of EFFS between fuel price stabilisation and climate mitigation funds, and either allocate portions of revenue or introduce a new instrument of environmental tax focussed on building climate adaptation funds. Countries will also need to specify how the additional climate funds can be used to improve current gearing ratios. Beyond institutional capacity building of the relevant departments or agencies, these fiscal resources can be used to guarantee and/or subsidise the capital or interest of concessional loans through the development finance system. Mitigation and adaptation funds can take equity or subordinated debt positions when establishing public–private partnerships with financial, insurance and delivery companies. Monetary values by instrument, the identity of project participants and their share of funding and risk should be specified in the NDC submission.

Conclusion

The potential for redirecting EFFS and raising environmental taxes to eliminate the existing climate finance gap is clearly insufficient in the short, medium or even long term (10–20 years) for most African countries, and globally. Nevertheless, they do provide a source of domestic grant funding from the fiscus with which to establish or consolidate the institutional arrangements required of climate mitigation and adaptation funding. Lengthening the duration of transitional arrangements and pushing out net-zero target dates to within fiscal capacity limits may be necessary. This necessitates more careful exploration of the relative efficiencies and effectiveness of technologies for carbon reduction and absorption.

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