

Underspending on irrigation in Mozambique

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From the World Bank’s BOOST data, we have identified significant underspending in the agriculture sector as a concern across the globe, particularly in irrigation. In a series of briefs we explore why spending on irrigation fell short of budgeted allocations in five countries and how this affected outcomes. Here we examine irrigation spending in **Mozambique** over nine years, from 2009 to 2017, and review detailed financial and nonfinancial data for more recent years.

Extent and nature of deviations in the irrigation budget

In eight of the nine years over the period 2009-2017, BOOST data on Mozambique show large negative deviations between the approved budget allocations for irrigation and actual spending. Only in 2017, the most recent year for which we have data, do we find an exception to this pattern.

Table 1: Percent deviation in the irrigation budget over 2009-2017

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Deviation	- 80.4%	- 85.4%	- 84.3%	- 73.3%	- 39.1%	- 41.9%	- 62.9%	- 88.9%	+ 23.8%

Source: BOOST

Sources of data: As we did not find one single fully comprehensive and publicly available source of budget data on irrigation, we considered several different parts of the government’s budget that relate to irrigation. **First**, we looked at budget deviations in BOOST for the period 2009-2017, as shown above.¹ We added to this more detailed data from the General State Accounts, *Conta Geral do Estado* (CGE), [available online](#). **Second**, we reviewed information from one of the main agencies responsible for implementing programs in the sector – the National Irrigation Institute, or *Instituto Nacional de Irrigação* (INIR), which manages public irrigation services at national level under the supervision of the Ministry of Agriculture (MOA). **Third**, we looked at external investment expenditure for individual projects under the INIR.

Contrary to global standards for measuring budget credibility, the government’s own reports (from the CGEs) generally compare actual expenditure to the revised budget, *Orçamento Atualizado*, rather than the approved budget, *Orçamento Inicial*. This practice tends to underestimate the severity of credibility challenges. However, even these reports suggest that irrigation was substantially underspent over the period 2014-2018.

Where is the underspending? CGEs break down the irrigation function by expenditure type and source. In most years, underspending was the largest in external investment. In 2016, the external investment budget was not executed at all – this likely reflects the suspension of support from development partners following the hidden debt scandal.²

¹ We used BOOST data referring to the function “04251 - Irrigation”.

² For more information, see Box 1 in <https://bit.ly/2vEvh2h> and <https://bit.ly/2n39wYS>.

Table 2: Irrigation budget by expenditure type, 2015 - 2018, from CGE

Year and type	Revised		Executed (<i>Realização</i>)		Deviation
	MT millions	as % of total	MT millions	as % of total	
2014	638.2	100.0%	456.7	100.0%	-28.4%
Operating expenses	6.0	0.9%	5.9	1.3%	-1.8%
Internal investment	299.1	46.9%	298.5	65.4%	-0.2%
External investment	333.2	52.2%	152.4	33.4%	-54.3%
2015	453.7	100.0%	396.8	100.0%	-12.6%
Operating expenses	8.9	2.0%	8.7	2.2%	-2.4%
Internal investment	198.8	43.8%	195.7	49.3%	-1.5%
External investment	246.0	54.2%	192.4	48.5%	-21.8%
2016	617.0	100.0%	91.8	100.0%	-85.1%
Operating expenses	7.7	1.2%	7.7	8.3%	0.0%
Internal investment	85.7	13.9%	84.2	91.7%	-1.9%
External investment	523.6	84.9%	0.0	0.0%	-100.0%
2017	918.3	100.0%	870.1	100.0%	-5.2%
Operating expenses	11.4	1.2%	10.6	1.2%	-7.0%
Internal investment	171.2	18.6%	140.8	16.2%	-17.7%
External investment	735.7	80.1%	718.7	82.6%	-2.3%
2018	340.8	100.0%	306.2	100.0%	-10.2%
Operating expenses	7.7	2.3%	7.3	2.4%	-4.4%
Internal investment	77.2	22.7%	76.3	24.9%	-1.3%
External investment	255.9	75.1%	222.6	72.7%	-13.0%

The wide divergences between BOOST and CGE figures present some confusion. For example, in 2017, budget deviation for the irrigation function was -5% in CGE, compared to +24% in BOOST. As the CGEs compare actual spending to the *revised* budget and BOOST to the *original* budget, this suggests that the irrigation budget was revised upwards in 2017. In contrast, both BOOST and CGE show underspending for the period 2014-2016, but the deviations are larger in BOOST – this suggests that the budget was revised downwards in those years. While the CGEs generally report revised data, they do provide data on the initial budget for at least the INIR, the biggest player in the sector, and these figures show that the patterns we speculate about above do hold at least for this agency.

Table 3: Total expenditure for the INIR over 2014-2018, from CGE

Year	Approved	Revised		Executed		Deviation	
	MT millions	MT millions	as % of irrigation	MT millions	as % of irrigation	vs. approved	vs. revised
2014	104.6	45.4	7.1%	44.8	9.8%	-57.2%	-1.5%
2015	865.0	271.4	59.8%	256.6	64.7%	-70.3%	-5.5%
2016	700.2	540.1	87.5%	16.4	17.8%	-97.7%	-97.0%
2017	624.7	762.9	83.1%	736.9	84.7%	18.0%	-3.4%
2018	311.2	280.1	82.2%	246.5	80.5%	-20.8%	-12.0%

Data for the INIR also suggest that the agency was responsible for 100% of the revised external investment budget on irrigation over the period 2016-2018. CGEs offer project-level data, but again not the initial amounts – fortunately, these can be supplemented from the State Budget Execution Reports, *Relatório de Execução do Orçamento do Estado* (REO). Table 4 compares actual spending to both original and revised budgets and shows large fluctuations in budget deviations from year to year.

Table 4. External investment expenditure for projects under the INIR, 2016-2018, from CGE and REO
(in MT millions, unless otherwise specified)

Year	Project	Approved	Revised	Executed	Deviation	
					vs. approved	vs. revised
2016	INIR	597.8	523.6	0.0	-100.0%	-100.0%
	BLICRP	300.7	226.5	0.0	-100.0%	-100.0%
	PROIRRI	207.1	207.1	0.0	-100.0%	-100.0%
	Chokwe project	90.0	90.0	0.0	-100.0%	-100.0%
2017	INIR	572.2	735.7	718.7	25.6%	-2.3%
	BLICRP	365.2	190.0	190.0	-48.0%	0.0%
	PROIRRI	207.0	545.7	528.7	155.4%	-3.1%
2018	INIR	255.9	255.9	222.6	-13.0%	-13.0%
	BLICRP	152.3	223.8	213.1	39.9%	-4.8%
	PROIRRI	103.6	32.1	9.4	-90.9%	-70.6%

Note: PROIRRI = Sustainable Irrigation Development Project, BLICRP = Baixo Limpopo Irrigation and Climate Resilience Project.

Linking budget execution and nonfinancial target performance

For the irrigation sector overall

The government's 5-year plan, *Plano Quinquenal do Governo* (PQG), mentions irrigation explicitly in two of the five priorities set by the current [PQG for 2015-2019](#):

- **Priority 3** – to promote employment and improve productivity and competitiveness including a strategic objective to “increase production and productivity in all sectors with emphasis on agriculture, animal production and fisheries.” One of the indicators in this goal is the “area of irrigated land built and/or rehabilitated,” measured in hectares. The accompanying matrix notes that, at the central level, MOA is responsible for this PQG indicator.
- **Priority 4** – to develop economic and social infrastructures including a strategic objective to “build and expand the capacity of water storage and irrigation infrastructures.” Water storage capacity (in m³) is presented as the sole indicator and the Ministry of Public Works, *Ministério das Obras Públicas, Habitação e Recursos Hídricos* (MOPHRH) in full, is listed as the responsible institution. These infrastructure projects are technically *not* part of the agriculture and rural development sector, where the irrigation function (used by BOOST) is located. We include them in our analysis considering their importance to the irrigation sector, but the program under MOA remains our main focus.

The economic and social plan, *Plano Económico e Social* (PES), presents annual goals and aims to “operationalize” the PQG. There are some differences across the documents. For example, indicators related to the expansion of irrigated land are found under Priority 4 in the latest [PES for 2019](#) (instead of Priority 3 as in the PQG) as a part of the strategic objective to “expand and modernize iron-port, fishing, communications and logistics infrastructure.” In addition, the indicator for water storage capacity is not found under the objective to build and expand water storage and irrigation infrastructures. Instead, the PES targets deal with specific actions proposed: 2 dams built or rehabilitated, 50 excavated dikes and reservoirs built or rehabilitated, and 15 kilometers of dams rehabilitated. The PES also specifies the

administrative unit responsible for each indicator: again, MOA and MOPHRH, respectively. To assess their performance, we turned to documents produced by each ministry.

1. [Performance Assessment of PNISA 2013-2017 from MOA](#)

MOA produces the National Agricultural Investment Plan, i.e., *Plano Nacional de Investimento no Sector Agrário* (PNISA), to operationalize the 10-year plan for the agriculture sector. PNISA is “inspired by and aligned with” PQG but covers a different 5-year period. The plan for 2013-2017 was most recently completed and extended through 2019, based on the recommendations from its assessment report. The assessment provides information about both financial and nonfinancial performance of PNISA programs administered by units under MOA, including the “Agricultural Irrigation Program” under INIR, but does not provide much detail – if any – at the project level.

Regarding the objective to expand the irrigated area, INIR “rehabilitated 21 irrigation systems” and expanded the irrigated area from about 13,800 ha in 2013 to 20,856 ha in 2016. Despite this increase of about 50%, “there is still a significant shortfall towards achieving the PNISA targets” to expand the irrigated area by 50,000 ha at the end of the period.

- It may be worth noting that in the PQG, the 2014 baseline for the indicator “area of irrigated land built and/or rehabilitated” is given as 9,158 ha – below the 2013 baseline of 13,800 ha in the PNISA. In addition, the PQG goal for 2017 is 18,600 ha, and the cumulative goal for 2015-2017 is 26,009 ha. It is possible that the definition is different across documents: PQG indicator seems to focus on the area built and rehabilitated, while the PNISA indicator might look at the area used for agricultural production.

The shortfall in achievement is largely attributed to “significant underfunding.” The report highlights that “almost no funds were disbursed” and “the gap between budgeted and disbursed funds [was] over 90% in all years” for the irrigation program. This, together with “delays arising from procurement processes” and other capacity gaps, hindered implementation of planned activities. Following these findings, the report recommends that MOA “formulate realistic action plan,” including setting realistic targets and making realistic assumptions, to close the gap between the target and the actual value of irrigated area. MOA should also “re-assess the unit costs of irrigation works” to explore high-efficiency investment options.

Large gaps between approved budget and disbursements are a challenge found in many other agricultural programs, including extension and mechanization. The report observes that these reflect “a common underlying constraint of inadequate and delayed releases by the Ministry of Finance of the approved budgetary resources” and provides additional details in the chapter on PNISA’s budgetary and financing aspects (p. 72-76):

- Over the period 2013-2016, PNISA’s budget totaled MT 92.1 billion but actual spending totaled merely MT 18.6 billion, representing a gap of 80%. The report notes that this was “about the same magnitude from the outset of PNISA (85%)” and that “it would be challenging to achieve PNISA’s ambitious physical targets without closing this gap.”
- The gap between the approved budget and the actual disbursement of funds was also high, with an overall average of 57%. This gap is attributed first to “delays in the disbursement of funding committed by Development Partners,” which hinder the Ministry of Finance from releasing the full amount of approved budget, and second to “discrepancies between revenues collected by

budgets are approved,” which delay the release of funds to MOA and other spending units to the last quarter of each year. The link between collection of revenues and disbursement of funds is not explained, however.

- Despite additional constraints, e.g., “cumbersome procurement procedures of goods and services, budget accounting, reporting and auditing procedures,” the deviation between disbursements and actual expenditures was only 2% for MOA.

In terms of PNISA result areas, budget deviation was the highest for Increased Production and Productivity, under which irrigation falls. The report also discusses large fluctuations from year to year, not only at the aggregate level but also in some result areas like Enhanced Food and Nutrition Security.³ It notes that these large execution gaps and fluctuations may reflect high unpredictability of external investment, “given the relatively low level of disbursement of donor-sourced funds and cumbersome procurement procedures followed by donors.” Budgetary data presented in the previous section suggests that the share of external funds is high for the irrigation sector and that the fluctuations in budget deviations for donor projects under INIR may be explained by this challenge (refer to Tables 2-4).

Overall, the report finds significant gaps not only in the adequacy of allocations – with agriculture investment representing 2-3% of total government expenditure over the period 2013-2016 – but also in the execution of agricultural programs. It is also noted that high unpredictability of donor funds “makes it difficult to implement activities as planned, leading to ad-hoc decision making.” The report warns that these challenges, which comprise “one of the major explanatory factors for the significant shortfall in targets,” will continue to prevent PNISA targets from being met, and recommends MOA to work with development partners as well as the Ministry of Finance to “close PNISA’s financing/budgetary gaps,” “reduce the identified gaps between the budgetary approvals, releases and expenditures” and “expedite disbursements.” It also recommends MOA update the costs and targets of PNISA under three financing scenarios – with the “low” scenario reflecting the current trends – implying that nonfinancial targets were misaligned with or overly ambitious compared to the financial situation.

2. [Annual Performance Evaluation Report on Water Resource Management from MOPHRH](#)

The implementation status of irrigation-related budgets in MOPHRH is similar, according to the executive summary of draft evaluation report for 2016 and the full, final report for 2017. The reports provide both financial and nonfinancial data for various water-related functions including irrigation infrastructure development. Information about physical progress is offered at the project level, but the section on “budget and financial execution” is limited to the overall sector.

Both documents observe that despite an increase in the budget from the previous year, the amount of funds released was “still low” for the water sector. From 2015 to 2016, for example, the revised budget increased by 64% but less than half of the budget was executed and, as a result, actual spending fell by 26%. As with the agriculture sector as a whole, budget deviation was higher for external funds. The 2017 report suggests that only one of the 5 PQG indicators in the sector – water storage capacity – will not be met. This is due to the fact that infrastructure projects that must be completed to achieve the 5-year target have been paralyzed or have only partially advanced. In fact, none of the 3 dams were built as planned in 2017.

³ Food and Nutrition Security was *underspent* by 19% in 2015 but *overspent* by 579% in 2016, and 88% of its investment expenditure came from external sources over the period 2013-2016.

Some projects did show relatively high rates of achievement – e.g., in 2016, Moamba Major dam construction (overall or cumulative execution of 8%, which represent 100% of the annual target) and Massingir dam rehabilitation (cumulative 38%, annual 93%). However, overall PES targets were not achieved due to lack of progress in other projects, some of which are attributed to financing challenges. For example, construction of Gorongosa and Metuchira dams saw no progress in 2016, due to financial constraints or “lack of disbursements,” and Metuchira and Moamba Major dams saw no progress in 2017, again due to “lack of release of funds.” Other issues noted in the evaluation report include those specific to contracting and construction. For example, the bidding process for the Nharichonga dike project was “deserted due to disqualification of competitors” and the difficulties with access to the site of construction is expected to halt the Chimuarillo dike project during the first quarter of 2018.

Data seem to suggest that challenges with disbursement and execution of external investment budget can also impede irrigation infrastructure projects managed by MOPHRH. Turning to the CGE and REO for data on external investment expenditure for selected projects under the Southern Regional Water Administration, we find that:

- While the initial budget for external investment on the Mapai dam was revised downwards by more than 60%, the revised budget was fully executed. The project showed substantial physical advance of 98% in 2017.
- Massingir dam project also showed substantial progress in 2017, completing 95% of the planned rehabilitation. Its external budget was substantially overspent compared to the approved amounts and executed at a rate of 98% compared to the revised amounts.
- The external budget for Moamba Major dam construction was not executed at all, and its construction showed no progress in 2017.

World Bank’s Sustainable Irrigation Development Project

Data presented in previous sections indicate that donor financing plays a significant role in Mozambique’s irrigation sector and budget credibility. To investigate this further we looked at the World Bank’s [Implementation Completion and Results Report](#) on the Sustainable Irrigation Development Project, called PROIRRI, for more information.

According to the report, the total disbursement of US\$ 55 million over the period 2011-2018 was roughly US\$ 15 million below the original designated amount and US\$ 5 million below the revised amount. The revision was in response to the Mozambican government’s request to reallocate US\$ 10 million to the Emergency Resilient Recovery Project in 2016. The remaining US\$ 5 million was “lost because of the depreciation of the SDR (Special Drawing Right).”

The report notes the closing date was extended twice due to “implementation and other delays, as well as safeguards compliance.” It suggests that some delays were caused by floods, which made the sites inaccessible, and others by various challenges with operational efficiency including procurement issues:

- Planned activities for three schemes covering a total area of 574 ha were not completed due to “cost overrun and time constraints” and were carried over to the follow-on project.

- Key activities were delayed due to frequent staff turnover, processing time for the approval of large contracts above US\$ 1 million and contract management issues. In some instances, the procurement and recruitment process had to be repeated as “the initial tender suffered low competition” and “the contractor totally abandoned sites.”
- Other challenges noted in the report include the lack of technical capacity within the project coordination team, which led to cost escalation and lower achievement, as well as low performance of private service providers.

These factors contributed to “delayed completion of irrigation schemes, low utilization of available irrigable land, and late accrual of benefit” and affected “the pace of project implementation and the magnitude of results achieved.” Because of the issues with contract management and late procurement, the implementing agency was rated “moderately satisfactory” in procurement. The project received the same rating for financial management, because “the gap between commitment and available funds ... indicated some problems with budget monitoring and implementation.”

The report illustrates various challenges that may lead to lack of budget credibility and failure to meet nonfinancial targets. Some are outside both the government’s and the donor’s control (e.g., the impact of natural disasters), but they could collaborate to identify and address other issues that impede the implementation of external investment projects in the sector (e.g., increasing technical capacity of the implementing agency and addressing procurement challenges).

Conclusion: A need for increased transparency

BOOST suggests heavy underspending of irrigation projects in all years assessed except 2017. Looking at the data from documents made available by the Ministry of Finance, we find that external financing and in-year modifications to the budget play a significant role in budget credibility in the irrigation function.

The government’s primary planning documents covering the agriculture sector use different time periods and indicators. Focusing on the report produced by MOA, we find a gap in the sector’s nonfinancial target achievement and evidence that this is partly due to disbursement delays and other budgetary challenges. One of the main donor projects, PROIRRI, illustrates how procurement issues can cause delays and undermine efficiency of investments. Unfortunately, we can only rely on the narratives provided in assessment reports as we did not find detailed data for INIR.

We did find some project-level data for MOPHRH, responsible for much of the infrastructure development related to irrigation, which suggests that budget execution of externally-financed investment and physical performance may be correlated. Administratively, MOPHRH projects are in the water infrastructure sector, however, and not classified as irrigation-related in the budget.

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Documents consulted

- BOOST data lab cross-country analysis: <https://bit.ly/2I16wc5>
- General state accounts and state budget execution reports: <https://bit.ly/2oXomAz>
- 5-year plan of the government: <https://bit.ly/2nxjjGN>
- Economic and social plan of the government: <https://bit.ly/2nBpwI5>
- Performance assessment of the 2013-2017 national agricultural investment plan from MOA: <https://bit.ly/2odU78k>
- Annual performance evaluation report on the water resource management area from MOPHRH: <https://bit.ly/2mKry1S>
- World Bank implementation completion report on PROIRRI: <https://bit.ly/2mEXBA8>