

## Underspending on irrigation in the Dominican Republic

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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 fell short of budgeted allocations in five countries and how this affected outcomes. Here we look at irrigation spending in the **Dominican Republic** over nine years, from 2009 to 2017, but focus our scrutiny on more recent years.

### Extent and nature of deviations of the irrigation budget

The National Institute of Hydraulic Resources, *Instituto Nacional de Recursos Hidráulicos* (INDRHI), which is attached to the Ministry of Environment and Natural Resources, is the main agency responsible for the Dominican Republic's public investments in irrigation.<sup>1</sup> From 2009 to 2013, we can only review the deviations in *transfers* from the central government (i.e., Ministry of Environment and some from the President's Office) to INDRHI. Budget deviations in transfers, however, are not very useful as an indicator in the assessment of potential policy impact. Fortunately, consolidated budget data is available through BOOST beginning in 2014 and allows us to better assess the country's irrigation spending from that time onwards.<sup>2</sup> We find underspending of the allocated irrigation budget in the period 2014-2016 to have been substantial, ranging from 41% to 60%.

**Table 1. Spending on the irrigation budget, 2009 – 2016\*** (in RD\$ million, unless otherwise specified)

Year	Approved	Modified	Accrued	Deviation	
				vs. approved	vs. modified
<i>TRANSFERS FROM CENTRAL GOVERNMENT TO INDRHI</i>					
2009	2,109.4	1,877.3	1,777.7	-15.7%	-5.3%
2010	1,374.5	1,124.9	1,124.9	-18.2%	0.0%
2011	1,047.3	1,833.3	1,827.5	74.5%	-0.3%
2012	3,047.7	5,201.1	5,014.7	64.5%	-3.6%
2013	2,460.9	4,126.1	3,197.1	29.9%	-22.5%
2014*	3,239.7	2,449.2	2,437.8	-24.8%	-0.5%
2015	3,734.9	3,476.2	3,460.1	-7.4%	-0.5%
2016	3,558.8	3,493.1	3,371.0	-5.3%	-3.5%
<i>CONSOLIDATED BUDGET: INDRHI EXPENDITURES ON IRRIGATION</i>					
2014	3,241.7	3,208.0	1,296.7	-60.0%	-59.6%
2015	3,734.9	4,285.4	1,813.3	-51.4%	-57.7%
2016	3,558.8	4,099.1	2,097.2	-41.1%	-48.8%

\* As mentioned in the text, we shift from looking at transfers to INDRHI to looking at actual agency spending starting in 2014.

Source: BOOST

<sup>1</sup> INDRHI was responsible for 100% of the approved budget for irrigation and 99-100% of the accrued or paid amounts over 2009-2017.

<sup>2</sup> BOOST data comes from the Budget Directorate's portal (DIGEPRES); we look at the subfunction "2.3 - RIEGO" under economic services. Comparing BOOST data to the 2016 Budget Execution Report from DIGEPRES, we find that the approved amounts in BOOST equal "presupuesto inicial" and modified amounts "presupuesto reformulado" for INDRHI. Accrued amounts, "devengado aprobado" in DIGEPRES, equal committed and paid amounts in either all or 6 of the 8 years covered by BOOST; in 2009 and 2012, accruals deviated from payments by 0.4% and 1.0% each for irrigation.

Where is the underspending? Over the period 2014-2016, *program 11* “construction and rehabilitation of dams” was consistently and substantially underspent, as was *program 13* “maintenance and rehabilitation of irrigation canals”. *Program 12* “construction of irrigation systems” was also underspent on average, although by a smaller proportion. In contrast, *program 01* “central activities” was overspent on average. The pattern in budget deviations by program, however, was largely inconsistent. The average overspending in *program 01* was largely due to the deviation of +64% in 2014 – the program was even *underspent* by 8% in 2015. *Program 12*, which was underspent on average, was overspent by 33% in 2015. *Programs 11* and *13* were underspent in all years, but by a varying proportion (although consistently substantial, at over 80%).

Data suggests that some of this may be linked to the economic composition of each program and hints at a potential shift of budget items across programs, which may explain some of these fluctuations. From 2014 to 2015, *program 01* doubled in size. In contrast, *program 13* was reduced to one-quarter of its size as its recurrent budget was removed; this was also the case with *program 11*, and both programs consisted entirely of construction budgets in 2015 and 2016. In addition, all the approved budget for goods and services was under central activities, but 80% of accruals were under *program 12* in 2015. Over the period 2014-2016, construction budget was consistently underspent while compensation was consistently overspent over the 3-year period. As seen in Table 2, *program 11* consisted mostly of the former, while *program 01* consisted mostly of the latter.

**Table 2: Spending on the irrigation budget over 2014-2016, by program and economic classification**

Program and econ class	Approved		Executed <sup>1</sup>		Deviation
	RD\$ mil	% of total	RD\$ mil	% of total	
<b>01. Central activities</b>	<b>2,939.6</b>	<b>27.9%</b>	<b>3,216.3</b>	<b>61.8%</b>	<b>9.4%</b>
Compensation	2,445.6	23.2%	3,077.3	59.1%	25.8%
Goods & services	488.8	4.6%	137.7	2.6%	-71.8%
Construction	2.2	0.0%	0.0	0.0%	-100.0%
Machinery and equipment	3.0	0.0%	1.3	0.0%	-55.9%
<b>11. Construction &amp; rehabilitation of dams</b>	<b>3,864.4</b>	<b>36.7%</b>	<b>151.3</b>	<b>2.9%</b>	<b>-96.1%</b>
Compensation	85.7	0.8%	29.5	0.6%	-65.6%
Goods & services	27.1	0.3%	1.1	0.0%	-96.0%
Construction	3,751.6	35.6%	120.7	2.3%	-96.8%
<b>12. Construction of irrigation systems</b>	<b>2,487.1</b>	<b>23.6%</b>	<b>1,701.9</b>	<b>32.7%</b>	<b>-31.6%</b>
Compensation	59.2	0.6%	37.7	0.7%	-36.3%
Goods & services (incl. taxes on products)	256.3	2.4%	529.1	10.2%	106.4%
Construction	1,671.5	15.9%	1,134.3	21.8%	-32.1%
Machinery and equipment	500.0	4.7%	0.8	0.0%	-99.8%
<b>13. Maintenance &amp; rehabilitation of irrigation canals</b>	<b>1,244.3</b>	<b>11.8%</b>	<b>137.8</b>	<b>2.6%</b>	<b>-88.9%</b>
Compensation	232.0	2.2%	135.6	2.6%	-41.5%
Goods & services	293.7	2.8%	2.2	0.0%	-99.3%
Construction	718.7	6.8%	0.0	0.0%	-100.0%

<sup>1</sup>Accrued amounts were used in place of paid amounts, because the latter is not available in BOOST for central government during the period 2014-2016

Source: BOOST

As the BOOST data on accruals is incomplete for 2017, we turned to budget documents to add the latest data. We rely on the INDRHI [Accountability Report](#) because it provides program-level data for both approved and executed budget, but it is worth noting concerns with financial data available for 2017:

- The [Budget Execution Report](#) shows that total execution for INDRHI and “2.3 - RIEGO” was roughly RD\$ 3.1 billion – RD\$ 2.1 billion from the general fund and the rest from internal credit.
- The [Annual Evaluation Report of Physical and Financial Execution](#) also shows RD\$ 3.1 billion for executed budget, but RD \$6.3 billion for approved budget – far greater than RD \$4.9 billion, as suggested in BOOST and the [Budget Law](#).
- Table 28 in the Accountability Report shows a calculated total of around RD\$ 2.1 billion for amount executed, although it is slightly higher than the amount from the general fund in the Budget Execution Report. However, the text summarizes that Table 28 shows “INDRHI executed RD\$ 1.7 billion in current expenditures and RD\$ 2.7 billion in capital expenditures, for a total of RD\$ 4.4 billion executed in 2017” – none of these figures match what is in the table.
- Total accumulated accruals and payments for December 2017, available in the [Detail of the Expenses Incurred](#), are much higher than what is provided in the Budget Execution Report and the Accountability Report. This is most likely because the report double counts intra-budgetary transfers, although it would be helpful to check the data for either 2015 or 2016 (which are not available online).

Although precise figures differ, Table 28 of the Accountability Report agrees with BOOST data suggesting that the main driver of underspending in 2017 involved construction and rehabilitation of irrigation infrastructures.

**Table 3. Spending on the irrigation budget in 2017, by program**

Program and sub program	Approved (Cantidad Asignada or Presupuestado Aprobado)		Executed (Cantidad Ejecutada)		Deviation
	RD\$ mil	% of total	RD\$ mil	% of total	
<b>01. Central activities</b>	<b>1,378.6</b>	<b>28.4%</b>	<b>1,324.2</b>	<b>61.9%</b>	<b>-3.9%</b>
Payroll and social security	1,059.7	21.8%	1,060.1	49.6%	0.0%
Non-cuttable electric energy	258.8	5.3%	204.1	9.5%	-21.1%
Operational expenses	60.0	1.2%	60.0	2.8%	0.0%
<b>11. Construction &amp; rehabilitation of dams</b>	<b>626.3</b>	<b>12.9%</b>	<b>64.9</b>	<b>3.0%</b>	<b>-89.6%</b>
Dam of Monte Grande	491.0	10.1%	0.0	0.0%	-100.0%
Dam of Piña	135.3	2.8%	64.9	3.0%	-52.0%
<b>12. Construction of irrigation systems</b>	<b>2,737.5</b>	<b>56.3%</b>	<b>731.6</b>	<b>34.2%</b>	<b>-73.3%</b>
Construction of irrigation system Azua II	1,774.2	36.5%	554.4	25.9%	-68.8%
Operation, maintenance & rehabilitation of irrigation systems	963.3	19.8%	177.2	8.3%	-81.6%
<b>13. Maintenance &amp; rehabilitation of irrigation canals</b>	<b>120.3</b>	<b>2.5%</b>	<b>17.8</b>	<b>0.8%</b>	<b>-85.2%</b>
<b>TOTAL EXPENDITURES FOR INDRHI</b>	<b>4,862.7</b>	<b>100.0%</b>	<b>2,138.5</b>	<b>100.0%</b>	<b>-56.0%</b>

Source: INDRHI Accountability Report

## Linking budget execution and nonfinancial target performance

### *For the irrigation sector*

We looked at three sets of documents to measure progress in the irrigation sector:

1. [National Pluriannual Plan for the Public Sector](#), *Plan Nacional Plurianual del Sector Público* (PNPSP), which is produced by the Ministry of Economy, Planning and Development. PNPSP establishes the government's "priorities, objectives, goals and resource requirements." The latest version covers the period 2017-2020.
2. INDRHI's 5-year [Strategic Plans](#), released in 2013 and in 2018, which discuss the institution's strategic framework and objectives for the period 2013-2017 and 2018-2022, respectively. We look for changes between the two documents to estimate the extent of overall progress made by the institution during the first period.
3. INDRHI Accountability Report for 2017, used in the previous section for budget deviation analysis, which also provides nonfinancial data. We focus on Chapter 4, which assesses the advances made by the agency in 2017 compared to targets set in the two documents above.

While these documents help us get a sense of the implication of underspending, various inconsistencies make detailed comparison and assessment difficult. Some of these may be due to the timing of each publication. For example, the 2017 target for flow regulation varies considerably depending on the source: (1) 716.76 m<sup>3</sup>/s in the 2013-2017 Strategic Plan for INDRHI, (2) 207.75 m<sup>3</sup>/s in the original version of the PNPSP 2017-2020, (3) 277.25 m<sup>3</sup>/s in the Accountability Report, and (4) 407.75 m<sup>3</sup>/s in the 2018 update of the PNPSP.

Indicators used can vary across the documents, as well. Strategic Plans present 3 expected results of INDRHI: increase of irrigated surface, increase in water supply to aqueducts, and controlled floods. The Accountability Report adds in the number of people trained and served, presenting 5 expected results in total. The updated version of PNPSP presents 10 in total, including results around increased efficiency in the use of water and increased area with technified irrigation. Additionally, units used for controlled flood are different: Strategic Plans use area of controlled basins measured in km<sup>2</sup>, while the PNPSP use percentage of basin areas regulated with respect to the total area of the country.

According to the PNPSP 2017-2020, INDRHI has proposed to build "9 large dams that would double the current storage capacity" in addition to "dozens of lagoons and small reservoirs," and to increase "the irrigable surface by 4 million areas [0.25 million hectares]" which would require "an additional 3,544 km of irrigation canals." The report notes: "Naturally, these are very expensive infrastructure works, which lead us to reflect on the limited capacity of the treasury to face them (p. 224)." INDRHI's performance until 2017 might help indicate whether or not it is on track.

To assess INDRHI's advances in the PNPSP, the Accountability Report compares "generated production" to "planned production" in 2017. Table 18 of the report suggests that the institution was relatively on track, achieving over 90% of targets for 3 products and even exceeding them for water supply for irrigation and flow regulation. However, in its assessment of compliance with Presidential Goals – which "assign due priority to government measures and initiatives" and are aligned with the PNPSP – the report notes that the overall institutional goal was "behind schedule," highlighting that investment in

the Monte Grande and Azua II projects had been zero as of November 2017 and that the Piña dam project was paralyzed most of the year.<sup>3</sup>

*For selected projects*

Table 22 in the Accountability Report, which looks at the advancement in each of the 62 activities to analyze compliance with the strategic and operational plan, also suggests that many projects under INDRHI are lagging and paints a different picture from Table 18 in the same report.

According to Table 22, 13 activities did not advance at all in 2017, although all but one of them lacked an allocation in the national budget. Four activities to adapt riverbeds were either rescinded or “paralyzed” for lack of payment. Fifteen activities are shown as having been “completed” or as having advanced fully (and sometimes exceeded the target), but 10 of them were supposed to be completed by 2014 or 2015. Only 3 other activities, including the Piña project shown in Table 2, showed advances of over 90%. The other flagship projects listed in Table 2, Monte Grande and Azua II, presented advance rates of 36% and 47%, respectively.

**Exhibit 1: Examples of activities presented in Table 22 of the 2017 INDRHI Accountability Report**

No.	ACTIVIDAD	INDICADOR	Metas	
			Meta base PEI 2016	Avance PEI Al 2017
1	Construcción Presa de Monte Grande y Rehabilitación y Complementación de la Presa de Sabana Yegua (Monte grande)	100 % de las obras construidas regulando 250 millones de m <sup>3</sup> a final del 2016	100 %	35.87 %
2.	Construcción Presa de Guaigüí, Aprovechamiento Múltiple del Camú (Guaigüí)	100 % de las obras construidas regulando 50 millones de m <sup>3</sup> a final del 2016	100 %	9.81%
3	Diseño y Construcción de la Presa Chavón en La Javilla	100 % de las obras diseñadas y construidas regulando 80 millones de m <sup>3</sup> a final del 2017	80 %	*0%
4	Diseño y Construcción de la Presa de Amina	100 % de las obras diseñadas y construidas regulando 337 millones de m <sup>3</sup> a final del 2017	80 %	*0%
10	Desarrollar un Programa Lagunas de Almacenamiento Línea Noroeste	21 lagunas de almacenamiento construidas regulando 22.77 millones de m <sup>3</sup> de agua al final del 2017	17 UD	*1Ud
11	Construcción Sistema de Riego Azua II, Pueblo Viejo, Prov. Azua. (azua II)	100% de canales y obras conexas construidos a final del 2016.	100%	47.1%
12	Diseño y Construcción Sistema de Riego Río Caña	23.10 km de la infraestructura diseñada y construida a final del 2017	15 km	*0%
13	Diseño y Construcción Sistema de Riego Aglipo III	53.53 km de la infraestructura diseñada y construida a final del 2017	45 km	*0%

<sup>3</sup> While specific indicators for Presidential Goals are different from those included in the PNPSP, INDRHI is largely expected to contribute to increasing water storage, irrigated areas and aqueduct supply.

36	Adecuación río Payabo y Caños	6 km de cauce adecuados a final del 2013		Paralizado
37	Dragado en el río Yuna y Barracote.	4 km de dragado a final del 2015		Proceso licitación
38	Adecuación y protección Río Panzo	4 km de cauce adecuados y protegidos a final del 2015		Rescindido
39	Construcción Lagunas de Regulación las Yayas de Viajama	1 laguna de regulación construida final 2015		Terminado
55	Aumento de las capacidades productivas en la zona fronteriza, provincias Dajabón y Elías Piña	100 % del componente de Infraestructura y del componente de Apoyo al Desarrollo Agrocomercial ejecutados a final del 2016	100 %	*0%
56	Capacitación de usuarios sobre el uso del agua (Programa Cultura del Agua contra la Pobreza) (cultura del agua)	8,220 usuarios capacitados a final del 2015		*190,000
57	Programa de Electrificación Rural en la República Dominicana basado en fuentes de energía renovable (PER renovables)	13 microcentrales hidroeléctricas construidas a final del 2014		Terminado
58	Construcción del proyecto Presa LA Piña	100% de los trabajos de las obras civiles y obras conexas terminadas en el 2017	100%	96.32%

Note: Of those shown, activities 3, 4, 13 and 55 did not have “allocation of resources in the national budget” according to the note.

The 5-year plans also include a “matrix of activities, indicators, goals, and assumptions of PNPSP.” Looking at the changes between years 2013-2017 and 2018-2022, it becomes clear that several goals set for the first period were not achieved and had to be revised and/or carried over to the second:

- Construction of the Monte Grande dam and rehabilitation of the Sabana Yegua dam, which was to build infrastructures to regulate 250 million m<sup>3</sup> of water by 2016 in the first plan, is now to be finalized in 2020 and aims to reach 54% of the completion stage in 2018 under the second.
- Design and construction of the Joca dam in the Artibonito river basin, which was to design and build infrastructures to regulate 70 million m<sup>3</sup> of water by 2016, showed no progress at the end of 2017 and is now to be finalized in 2022.
- None of the 7 small hydroelectric plants were installed over the period 2013-2017 as planned. Similarly, none of the 22 storage lagoons in Línea Noroeste, which were to regulate 16 million m<sup>3</sup> of water, were built. Both programs are now to be finalized in 2022.
- Infrastructure projects in Aglipo, Constanza, Amina river, Monción dam, San Juan valley and Maguaca dam made no progress over the first 5-year period. As a result, a total of 229.53 km of canals that were to be constructed or rehabilitated by the end of 2017 were carried over to the second 5-year period.
- Some projects included in the 2013-2017 plan – e.g., construction of irrigation system Azua II and rehabilitation of Juan Calvo canal – were to be completed early on, by 2014 or 2015. Still, lack of progress led to their inclusion also in the 2018-2022 plan.
- Research-related activities – i.e., studies of drainage and salinity issues in selected districts, monitoring of water quality in basins/lagoons/etc., quality diagnosis of surface water sources in the Atlantic region, limnological evaluation of closed systems and creation of a competitive fund for research in the Caribbean – were included in both 5-year plans.

- The matrix also notes assumptions that must be met for these goals to be achieved as intended. Some of these assumptions are closely linked to budget execution. For example, it is assumed in the 2013-2017 plan that “the technical and financial assistance of international organizations and the national counterpart flows smoothly” and “there are no extraordinary events that affect the execution of the works.” The lag in progress for the activities mentioned above might be an indication that these assumptions did not hold.

Together, these individual activities contribute to the achievement of broader objectives of INDRHI, presented in the matrices of “institutional production” and “results and impacts.” Both 5-year plans provide reference points for the impact indicators “increase in population with access to potable water supplied by dams” and “increase of communities protected by dams.” For each, the 2013-2017 plan notes that “currently it benefits 5.67 million” and “currently there are 53 communities”; these baseline figures were unchanged in the 2018-2022 plan, although it is unclear if this is due to an error or an actual absence of improvements.

### **Conclusion: A need for greater transparency**

From BOOST data, we find that actual expenditure on irrigation from INDRHI tends to be substantially underspent. Capital budget, mostly for construction and rehabilitation of water infrastructure and irrigation systems, is affected the most on average. We find that transfers from central government to the agency have been overspent or are underspent by a much smaller proportion.

Budget documents that cover INDRHI tend to use different sets of indicators and targets. We rely largely on the Accountability Report for financial and nonfinancial data for 2017, because it provides somewhat detailed data for both approved and executed budget, as well as nonfinancial targets and performance. However, we find not only discrepancies between the report and other public documents but also contradictions *within* the Accountability Report. Such inconsistencies, along with limited availability of financial data at the project level, make it difficult to assess the impact of underspending. Still, we find that many projects were delayed or canceled due to issues with payment or lack of funds.

The support from our partner researcher included making a request for access to public information on our behalf through the Request for Access to Public Information, *Solicitud de Acceso a la Información Pública* (SAIP). Unfortunately, additional information we received from INDRHI was also limited or simply confirmed what we had already found. For example, one of the tables we received was a list of contracts and amounts disbursed for a range of multi-year projects implemented by INDRHI; while this was helpful in that it gave us a better sense of each project, we were unable to compare the data against other documents because it was not broken down by year. We also received project summary documents, which showed that some projects were paralyzed for lack of funds also in 2018. Accordingly, we did not examine the data received through the SAIP.

### **Acknowledgement**

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## Documents consulted

- BOOST database: <https://bit.ly/2ooBIM1>
- Budget execution report: <https://bit.ly/2oZkhMg>
- Annual evaluation report of physical and financial execution: <https://bit.ly/2odhUVO>
- Budget law: <https://bit.ly/2p4enJW>
- National pluriannual plan for the public sector (2018 update): <https://bit.ly/2mFNEm9>
- INDRHI 5-year strategic plans: <https://bit.ly/2obCMNb>
- INDRHI accountability report and detail of expenses incurred: <https://bit.ly/2okq7Y9>
- Request for access to public information: <https://saip.gob.do/>