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STRATEGIC INVESTMENT PLAN FOR THE WATER AND ENVIRONMENT SECTOR, UGANDA (2018-2030)

FINAL REPORT

VOLUME 1. FUNDING REQUIREMENTS TO MEET NATIONAL 2030 TARGETS FOR THE WATER AND ENVIRONMENT SECTOR

VOLUME 2. CONSOLIDATED STRATEGIC SECTOR INVESTMENT PLAN

VOLUME 3. SUBSECTOR STRATEGIC INVESTMENT PLANS

VOLUME 4. SECTOR INVESTMENT MODEL

INDUSTRIAL ECONOMICS, INCORPORATED

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ACKNOWLEDGEMENTS

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The consulting team includes experts from IEc, the Massachusetts Institute of Technology (MIT), and organizations within Uganda. Study authors include team leader Prof. Kenneth Strzepek, project manager Dr. Brent Boehlert and assistant project manager Jacqueline Willwerth, as well as five other experts.

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Other IEc team experts who contributed to the analysis, reporting, and capacity building include:

- **Benjamin Ssekamuli** is a water resources specialist with expertise in a range of water systems modeling software platforms. He is leading the capacity building activities for this effort, and has led dozens of training workshops focused on analytical tools and techniques.
- **Eng. Emmanuel Olet**, an expert on energy economics, and a consulting civil engineer with 15 years of experience. His extensive project experience is heavily focused on work within Sub-Saharan Africa and, specifically, Uganda.
- **James Neumann**, a Principal at IEc with over 25 years of consulting experience in environmental economics. Mr. Neumann specializes in natural resource economics, and is one of the lead authors for a USEPA analysis that links benefit-cost analysis with economy-wide modeling for a study of U.S. air pollution policy.
- **Dr. Susan Murcott** is a water supply and sanitation expert with 15 years of experience in water and wastewater consulting.
- **Dr. Krishna Prasad** is a civil and water resource engineer with over 20 years of experience on irrigation and institutions.

SSIP IMPLEMENTATION GUIDE

This Strategic Sector Investment Plan (SSIP) is intended to be a living plan that is updated regularly as new information becomes available and priorities change. The SSIP can be updated using the Sector Investment Model (SIM), which is described in Volume 4. This brief note provides (a) recommended best practices for utilization of the SIM and (b) priority improvements to the tool.

BEST PRACTICES FOR UTILIZATION OF THE SIM AND INFORMATION MANAGEMENT

Two best practices are recommended for ensuring the SIM is used effectively in the planning process:

- **Establish a SIM expert team within the Sector.** Establish a small group of expert staff within the Sector who are responsible for operating and modifying the SIM. This group must be deeply familiar with how the SIM operates, and would ideally be representative of a broad cross section of the sector (e.g., representatives from each of the nine subsectors). A good starting point for this group would be the team of Sector partners who participated in the SIM capacity building program over the last year.

- **Maintain a master version of the SIM.** Although it will be important to disseminate the SIM to the various subsectors in order to build transparency and to facilitate the planning process, it will be critical to maintain a single master version of the SIM that houses the official information, priorities, and updates from the sector planning process. It is recommended that the expert team gather updated data and build consensus on priorities within their respective sectors, and then meet at least every six months to update the SIM with the latest information.

USING THE SIM IN THE BUDGET PLANNING PROCESS

The SIM provides a logical, transparent rationale behind cross-subsector spending, and thus can be used to inform sector-wide budgeting beginning in 2019/2020. However, given the limited scope of this current study, there are several uncertainties in the SIM results that must be addressed before the tool can be used to inform budget allocations. The following are the priority SIM improvements:

- **Improve spending preference weights**. Sector spending preferences in the SIM have a huge effect on investment planning outcomes. A more in-depth workshop to elicit the spending preferences of the Sector is needed, involving a broad representation of decision-makers at the highest levels.

- **Enhance cost estimates across space and time.** Investment cost estimates and their indicators also have a pronounced effect on spending. Further refinement of these estimates by additional analysis and modeling, and by reaching out to regional experts for catchment level results would greatly improve the reliability of SIM results.

- **Improve indicator information**. Measurement of baseline indicator levels and target definitions could be refined, and the indicators can be enhanced through a process to identify the "best" list of investment indicators from the numerous options available.

- **Better characterize vulnerability to uncertainty**. Running the SIM across a wide range of future combinations of inputs would allow for a better characterization of which parameters are most sensitive to uncertainty.

ABSTRACTS

VOLUME 1: FUNDING REQUIREMENTS TO MEET NATIONAL 2030 TARGETS FOR THE WATER AND ENVIRONMENT SECTOR

The Water and Environment Sector currently receives about 800 billion UGX per year for investment in activities modeled in the SSIP. With this funding, the Sector has managed to make progress across a number of indicators that track the Sector's performance across its major areas of intervention. The Sector has stated a set of targets for these indicators to be met by 2030, in line with the United Nations Sustainable Development Goals (SDG). Based on the Sector investment modeling and planning undertaken in this report, the current level of funding with an assumed moderate annual growth rate of 3 percent (business as usual, or BAU scenario) will not be sufficient for the Sector to meet its targets. In this funding requirements assessment, accounting for external trends such as population growth, it is estimated that the Sector will need an average annual budget of almost 7.6 trillion UGX over the next 13 years to 2030. This is about nine times the current funding allocated to SSIP investments. This volume describes the methods used in costing analysis and presents the results in terms of both the full sector funding requirement from 2018 to 2030 and an analysis of how the sector indicators will perform by 2030 in the business as usual budget allocation.

VOLUME 2: CONSOLIDATED STRATEGIC SECTOR INVESTMENT PLAN (SSIP)

Through various development plans and international agreements, MWE and the Government of Uganda have agreed to achieve certain targets in the areas of water resource development and environmental management. Given the current level of funding, limited growth in future funding and a rapidly growing population, reaching these targets will be a challenge. The SSIP seeks to answer this question: in which types of investment should the Water and Environment Sector (WES) invest in order to maximize performance, as measured by 24 indicators, and best reflect the priorities of the sector? While Volume 1 of this Strategic Sector Investment Plan (SSIP) focuses on the spending requirements needed to reach 2030 targets, Volume 2 analyzes how to allocate resources within the WES given limited budgets. The volume considers three budget scenarios—all of which are considerably below what is needed to achieve 2030 indicator targets—and given these constraints, describes spending pathways for water and environmental investments that are aligned with WES priorities. The emphasis of this volume is on reporting insights from developing a strategic investment plan at the WES level; details on subsector level planning are documented in Volume 3. This volume first reviews the measurement metrics and spatial units that drive the SSIP, then provides an overview of the Sector Investment Model (SIM), and lastly reviews findings and lessons learned under the three budget scenarios. These include a BAU scenario (current funding), a moderate investment scenario (1.5x current funding), and a high investment scenario (3x current funding).

The three spending scenarios result in considerably different levels of indicator achievement, driven by differences in unit costs and indicator gaps that drive differences in funding allocation within the SIM. Several of the high performing indicators—including Water for Production Functionality, Permit Compliance, and Operational weather stations—have low unit costs relative to the spending allocation provided by Sector preferences. Others, such as Village water supply, benefit from receiving "ancillary benefits" that spill over from investing in achieving other indicators. On the

other hand, the poorer performing indicators tend to be comparably expensive, in terms of the cost to reduce one percent of the gap. Examples include safely managed drinking water, which requires investing in expensive piped water supply, and forest coverage, which requires rehabilitation of forests. Sector outcomes tend to rise under all budget scenarios, although much more modestly under the BAU scenario. From a spatial perspective, a number of factors vary by catchment (the spatial scale used for this analysis—23 hydro-geographic regions of Uganda), including population, unit costs of investment (e.g., storage construction costs vary based on topographic characteristics), and the 2017 starting level for several of the indicators. These differences drive a non-uniform pattern of spending across space, where catchments with higher unit costs, higher populations (or units of investment such as irrigable hectares), and lower 2017 indicator levels receive a greater share of the funding. Lastly, O&M expenditures on both existing and new investments are assumed to be part of the allocated budget. Under the high budget scenario, approximately 20% of the total budget is spent on O&M expenses.

VOLUME 3: SUBSECTOR STRATEGIC INVESTMENT PLANS

The current Sector planning effort marks the first time the Water and Environment Sector has undertaken strategic planning as a sector rather than subsectors. In doing so, the Sector is able to develop a plan that best meets the priorities of the sector as a whole, acknowledging that many costs and benefits are shared across subsectors. The previous volume (Volume 2) in this report describes the sector-wide results of this planning process. This volume presents the subsector investment plans under three potential funding scenarios in terms of the implications for each subsector within the Water and Environment Sector of Uganda. The results show that at business as usual funding levels, very few subsectors will achieve any of the targets set for 2030. As the budget is increased, and indicator achievement becomes more prevalent across various indicators, the sector can shift funding allocation across subsectors to support indicators that have lower achievement levels, either due to high costs or lower initial prioritization within the sector. This type of funding reallocation is most common in the Moderate-High funding scenario, when a budget of 2400 billion UGX per year is assumed.

VOLUME 4: SECTOR INVESTMENT MODEL

The Sector Investment Model (SIM) is the engine of the Strategic Investment Plan for the Water and Environment Sector (SSIP), and is the collaborative product of both Sector and outside experts. Volumes 1 through 3 of this report describe the SSIP findings, and this volume focuses on the SIM itself. The SIM is a decision support tool that aids in annual investment planning across the 23 catchments in Uganda.   The model is designed to work in two modes to accomplish its two main objectives. The first is the funding requirements mode which uses information on indicator costs and achievement gaps to estimate the total funding requirements to meet Sector goals (documented in Volume 1 and 3). The second is the strategic allocation mode (Volume 2 and 3). In this mode, distribution of funding is based on both the cost of improvement in each indicator and a prioritization algorithm. Priorities are defined in the SIM based on several factors, including current budget allocation, the remaining gap between indicator baselines and targets, and the Sector's preferences, as reporting during the stakeholder engagement process. The two modes of the SIM rely on the same databases of information that characterize the status, costs, preferences, and targets of the Sector indicators. SIM outputs are thus either a budget requirement, or an investment mix and subsequent indicator achievement trajectory.

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ACRONYM LIST

BAU	Business-as-Usual
GHG	Greenhouse Gas
O&M	Operations and Maintenance
SDG	Sustainable Development Goals
SIM	Sector Investment Model
SSIP	Strategic Sector Investment Plan
UGX	Ugandan Shilling
WfP	Water for Production

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ABSTRACT

The Water and Environment Sector currently receives about 800 billion UGX per year for investment in activities modeled in the SSIP. With this funding, the Sector has managed to make progress across a number of indicators that track the Sector's performance across its major areas of intervention. The Sector has stated a set of targets for these indicators to be met by 2030, in line with the United Nations Sustainable Development Goals (SDG). Based on the Sector investment modeling and planning undertaken in this report, the current level of funding with an assumed moderate annual growth rate of 3 percent (business as usual, or BAU scenario) will not be sufficient for the Sector to meet its targets. In this funding requirements assessment, accounting for external trends such as population growth, it is estimated that the Sector will need an average annual budget of about 7.6 trillion UGX over the next 13 years to 2030. This is about nine times the current funding allocated to SSIP investments. This volume describes the methods used in costing analysis and presents the results in terms of both the full sector funding requirement from 2018 to 2030 and an analysis of how the sector indicators will perform by 2030 in the business as usual budget allocation.

1. VOLUME 1: FUNDING REQUIREMENTS TO MEET NATIONAL 2030 TARGETS FOR THE WATER AND ENVIRONMENT SECTOR

1.1 INTRODUCTION

The Water and Environment Sector has historical received funding at a level of less than 1% of GDP. With this level of funding, the Sector has not been able to make adequate progress towards its targets for resource protection and service provision. These targets, beyond representing major improvements in services vital to the Ugandan people, also represent international commitments of the Ugandan government. Of the 24 indicators included in the SSIP, 18 are directly related to Sustainable Development Goals, the United Nations global program for poverty alleviation and environmental protection. While not legally binding, the country's participation in the program is monitored closely and has helped shape national priorities.

The purpose of this volume is to outline the amount of funding required annually for the Sector to reach the 2030 targets on schedule. The Sector will need this funding in order to meet its targets and remain in compliance with the international commitments of the SDGs. Investment at current levels will not results in met targets, especially in the SDG indicators which tend to be more expensive to achieve.

Indicator target costing is calculated within the Sector Investment Model or SIM. In addition to its use as budget allocation model, the SIM also serves as a consolidated database of investment unit costs, targets and baselines, and indicator units (e.g. population, GHG emissions, etc.) across all years of the SSIP (2017-2030) and all water management catchments in Uganda (see Volume 4 for more information on the SIM).

The results of this analysis show that at the current level of funding, very few, if any, of the 24 indicator targets will be achieved by 2030. In order for Uganda to meet not only the international standards agreed upon in the SDGs, but also to meet the important priorities defined by the Water and Environment Sector, the Sector requires funding of almost 5 trillion UGX in 2018, increasing to almost 10 trillion by 2030, accounting for population growth.

This volume provides more detailed results of this analysis. First, however, the inputs and methods of this calculation are described. The remaining sections of this volume begin with a description of the indicators tracked in the SIM and provide current levels of achievement and 2030 target figures. This is followed by a discussion of the cost accounting methods used to quantify the funding requirement. Next, results of two funding scenarios are presented. First is the full funding requirement of the Sector. Second are the results of underfunding based on a projected business as usual funding allocation

1.2   WATER AND ENVIRONMENT SECTOR NATIONAL INDICATORS AND 2030 TARGETS

During the initial phase of this study, Sector stakeholders selected a set of indicators currently used in the Sector to monitor performance for inclusion in the SIM (see the 2017 Sector Performance Report). These indicators cover all major functions of the Sector. The group considered only indicators for which there was a link between investment and indicator performance. For example, indicators related to good governance, funding, reporting, and gender are not included in the SSIP or SIM. Table 1-1 below presents the 24 indicators included in the SIM and this analysis along with their 2017 baseline status and 2030 goals. Note that for many of these indicators the Sector did not have an official 2030 target selected. In these instances (the non-bolder figures in the table), the study team selected a reasonable target based on expert judgement. Three indicators (5-Per capita investment cost; 19-Level of Water Stress; and 23-Climate Vulnerability Index) are reporting indicators, meaning they do not link directly to investments within the SIM. Rather they are the byproduct of progress in other indicators. Their status is reported however no costs for achieving these indicators are included in this analysis.

TABLE 1-1.   INDICATORS MONITORED IN THE FUNDING REQUIREMENT ANALYSIS

	INDICATOR	DEFINITION	BASELINE[1]	TARGET	RELATED SDG	OTHER TARGET
1	Village water supply	Percentage of villages with a source of safe water supply	66%	100%		Presidential Directive
2	Functional rural water sources	Functionality: rural: % of water sources functional at time of spot-check	85%	100%	6.1.1	
3	Improved drinking water	Basic water: Percentage of population using an improved drinking water source	70%	100%	6.1.1	NDPII
4	Safely managed drinking water	Safely managed water: Percentage of population using safely managed drinking water services located on premises	7%[2]	100%	6.1.1	
5	Per capita investment cost	Per Capita Investment Cost: Average cost per beneficiary of new water and sanitation schemes (USD)	$32	$75		
6	Urban water service functionality	Functionality: urban: % piped water service availability	92%	100%	6.1.1	
7	Solid waste disposal	% urban solid waste safely disposed of or recycled in municipalities	68%	90%	11.6.1	
8	Improved sanitation	Basic sanitation: Percentage of population using an improved sanitation facility not shared with other households	19%[2]	50%	6.2.1	NDPII
9	Safely managed sanitation	Safely managed sanitation: Percentage of	9%	100%	6.2.1	

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	INDICATOR	DEFINITION	BASELINE[1]	TARGET	RELATED SDG	OTHER TARGET
		population using safely managed sanitation services				
10	Handwashing at home	Hand washing: Percentage of population with hand washing facilities with soap and water at home	37%	90%	6.2.1	NDPII
11	Handwashing at school	Schools: Percentage of pupils enrolled in schools with basic hand washing facilities	35%	90%	6.2.1	
12	Irrigation	Irrigation: Proportion of irrigation potential utilized	0.49%	4%	6.4	
13	Water for Production (WfP) functionality	WfP Functionality: % of water for production facilities that are functional at time of spot-check	85%	100%		
14	Storage Capacity	Cumulative Water for Production Storage Capacity (million m³)	38.87	163.67		NDPII
15	Compliance with water standards	Drinking water quality: % of water samples taken that comply with national standards: Point water sources / Piped schemes or to be combined?	64%	90%	6.1.1	
16	Permit compliance	Compliance with permit conditions: % of permit holders complying with permit conditions	71%	90%		
17	Wastewater treatment	Proportion of wastewater safely treated	20%	60%	6.3.1	
18	Ambient water quality	Proportion of bodies of water with good ambient water quality	0%	100%	6.3.2	NDPII
19	Level of water stress	Level of water stress: Water withdrawal as a proportion of available water resources	60%	100%	6.4.2	
20	Wetlands coverage	% Uganda's land surface area covered by forest	8.6%[3]	13%	6.6.1	NDPII
21	Forest Coverage	% Uganda's land surface area covered by wetlands	9%	24%	15.1.1	NDPII
22	GHG emissions	CC Mitigation: % change in direct and indirect GHG emissions	0%	22%	13.2	NDPII

analysis, an overall population growth rate of 3.05% is used.[1] A full report of indicator populations (units) by catchment and year is available in the annexes of Volume 4.

This costing exercise also assumes that all indicators move linearly from baseline achievement to target levels. In practice, some may reach their targets well before 2030 and others may require a large push of funding leading up to 2030 (i.e. a last mile investment). Without further forecasting information available, this assumption provides a reasonable trajectory.

1.3.2 ESTIMATING THE REMAINING GAP TO ACHIEVE 2030 TARGETS

The first step in the funding requirement analysis is to calculate the number of additional units to be covered by 2030 above the baseline coverage to meet 2030 targets. As examples, this could be the number of people to be covered with safely managed drinking water, the number of hectares of degraded wetland to be rehabilitated, or the number of weather stations to replace. These gaps are designed to incorporate outside trends. In the previous examples, the number of people to be covered by safe drinking water in 2030 is based on the projected 2030 population and the number of wetlands to be rehabilitated includes an encroachment trend (signaling if no investment is made, the wetlands area will decrease). Unit gaps for each indicator are presented in Table 1-2.

TABLE 1-2. UNIT GAPS TO ACHIEVING 2030 TARGETS

	INDICATOR	GAP	UNITS
1	Village water supply	47,349	villages
2	Functional rural water sources	68,785	rural water sources
3	Improved drinking water	28,780,503	people
4	Safely managed drinking water	52,272,805	people
5	Per capita investment cost	[reporting]	US dollars
6	Urban water service functionality	10,448	sources
7	Solid waste disposal	610,906	tonnes
8	Improved sanitation	47,595,980	people
9	Safely managed sanitation	51,151,465	people
10	Handwashing at home	35,532,276	people
11	Handwashing at school	12,296,652	students
12	Irrigation	104,156	hectares
13	WfP functionality	756	sources
14	Storage Capacity	125	Million cubic meters (MCM)
15	Compliance with water standards	643	samples
16	Permit compliance	700	permits
17	Wastewater treatment	25,416,614	people
18	Ambient water quality	1,823,421	tonnes of biological oxygen demand (BOD)

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[1] Population growth is assumed to be at a constant rate of 3.05% per year, in accordance with the 2018-2020 average UBOS 2014 Population Projection figures.

	INDICATOR	GAP	UNITS
19	Level of water stress	[reporting]	
20	Wetlands coverage	1,180,830	hectares
21	Forest Coverage	4,025,558	hectares
22	GHG emissions	18,053,293	tonnes CO_2
23	Climate vulnerability index	[reporting]	
24	Operational weather stations	1,280	weather stations

1.3.3 UNIT COSTS: METHODS AND REVIEW PROCESS

The next step in the target costing analysis is to define unit costs for each indicator. In order to define unit costs, each indicator must first be linked to one or more investment in the Sector. Next, a per-unit cost is estimated for each relevant investment category. Table 1-3. shows the 24 indicators and their related investments across three investment types: Capital, Operations and Maintenance (O&M), and Software.

TABLE 1-3.   INDICATORS AND RELATED INVESTMENTS

	INDICATOR	RELATED INVESTMENTS		
		CAPITAL	O&M	SOFTWARE
1	Village water supply	• Water Supply-Basic • Water Supply-Piped	• Water Supply-Basic • Water Supply-Piped	
2	Functional rural water sources	• Water Source Repair-Rural		
3	Improved drinking water	• Water Supply-Basic • Water Supply-Piped	• Water Supply-Basic • Water Supply-Piped	
4	Safely managed drinking water	• Water Supply-Piped	• Water Supply-Piped	
5	Per capita investment cost	*Reporting Indicator*		
6	Urban water service functionality	• Water Source Repair-Urban		
7	Solid waste disposal	• Solid Waste Disposal		
8	Improved sanitation	• Faecal Sludge Management	• Faecal Sludge Management	• Basic Sanitation Campaign
9	Safely managed sanitation	• Faecal Sludge Management	• Faecal Sludge Management	• Safely Managed Sanitation Campaign
10	Handwashing at home			• Home Handwashing Campaign
11	Handwashing at school			• School Handwashing

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INDICATOR		RELATED INVESTMENTS		
		CAPITAL	O&M	SOFTWARE
				Campaign
12	Irrigation	• Irrigation	• Irrigation	
13	WfP functionality	• Water Source Repair-WfP		• Water for Production Local Training
14	Storage Capacity	• Storage	• Storage	
15	Compliance with water standards		• Drinking Water Samples	
16	Permit compliance	• Monitoring Equipment		• Permit Compliance Monitoring
17	Wastewater treatment	• Wastewater Treatment	• Wastewater Treatment	
18	Ambient water quality	• Wetlands Restoration • Forest Rehabilitation • Wastewater Treatment	• Wetlands Restoration • Forest Rehabilitation • Wastewater Treatment	
19	Level of water stress	*Reporting Indicator*		
20	Wetlands coverage	• Wetlands Restoration	• Wetlands Restoration	
21	Forest Coverage	• Forest Rehabilitation	• Forest Rehabilitation	
22	GHG emissions	• Forest Rehabilitation	• Forest Rehabilitation	
23	Climate vulnerability index	*Reporting Indicator*		
24	Operational weather stations	• Weather Stations	• Weather Stations	
Note: Bolded investments represent the most efficient set of investments to achieve progress.				

For Indicators 1 (Village Water Supply), 3 (Improved Drinking Water), and 18 (Ambient Water Quality), there are alternative investments to achieving the intended improvement. If the indicator were to be achieved in isolation, the least expensive alternative would be the likely investment choice (shown in bold in Table 3). Therefore, when the unit costs are calculated, only the least expensive, or most efficient , investment costs are included. In reality, however, the Sector is trying to achieve multiple goals at the same time. Each of the less-efficient investments for the three indicators mentioned is an efficient investment for another indicator. Therefore, as the Sector allocates funding to those investments primarily for the purpose of achieving one goal, the other indicators will receive ancillary benefits. For example, the Sector will choose to invest in wetlands restoration to improve indicators 18, but as it invests in forest rehabilitation and wastewater treatment for indicators 17 and 21, respectively, there will also be an improvement seen in the ambient water quality.

The study team developed the unit costs with input and review from Sector staff. Where information was available, costs were estimated specifically for each catchment and year. A full description of the cost estimates can be found in the annexes of Volume 4. Table 1-4 gives the unit cost per investment for the first year of the model. As noted, there are co-benefits of certain investments within the sector so the total cost of achieving 2030 targets is less than the product of indicator unit gaps and unit costs. Annual unit costs by catchment are also available in the Volume 4 annexes.

TABLE 1-4.   2018 NATIONAL AVERAGE UNIT COSTS BY INDICATOR

	INDICATOR	UNIT COST (THOUS. UGX)	UNITS
1	Village water supply	25,136	villages
2	Functional rural water sources	5,546	rural water sources
3	Improved drinking water	85	people
4	Safely managed drinking water	387	people
5	Per capita investment cost	reporting indicator	
6	Urban water service functionality	8,298	sources
7	Solid waste disposal	256	tonnes
8	Improved sanitation	20	people
9	Safely managed sanitation	190	people
10	Handwashing at home	20	people
11	Handwashing at school	20	students
12	Irrigation	43,545	hectares
13	WfP functionality	32,913	sources
14	Storage Capacity	19,578,654	MCM
15	Compliance with water standards	495,881	samples
16	Permit compliance	32,211	permits
17	Wastewater treatment	387	people
18	Ambient water quality	13,058	tonnes of BOD
19	Level of water stress	reporting indicator	
20	Wetlands coverage	10,369	hectares
21	Forest Coverage	6,369	hectares
22	GHG emissions	251	tonnes CO2
23	Climate vulnerability index	reporting indicator	
24	Operational weather stations	218,949	weather stations

The magnitude of unit costs varies widely, as does the magnitude of unit gaps. This, along with the inclusion of co-benefits, makes direct comparisons of funding requirement by indicator difficult. In general, advanced coverage indicators (i.e. 4-Safely managed drinking water, and 9-Safely managed sanitation) are most costly, as are the environmental protection indicators (i.e. 20-Wetlands coverage, and 21-Forest Coverage). However each of these four indicators

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mentioned offer co-benefits, so while expensive to achieve, investment in these indicators improves achievement across a wide range of indicators.

1.4 ANNUAL FUNDING REQUIREMENTS

Using the data described above, the SIM calculated the annual costs required to achieve all indicator targets by 2030. The SIM is able to capture co-benefits of investment in certain categories, such as the water quality benefits of wetlands restoration and the improvement in the number of villages with a safe water source from safely managed water supply investment. Figure 1-1 shows the required funding per year and includes the SSIP investment Sector budget allocation for FY2017-2018 for comparison.[2] For example, costs related to policy and planning are not included in the SSIP and therefore not included in the red bar in 2017.

FIGURE 1-1. ANNUAL SECTOR BUDGET REQUIREMENTS TO REACH 2030 TARGETS
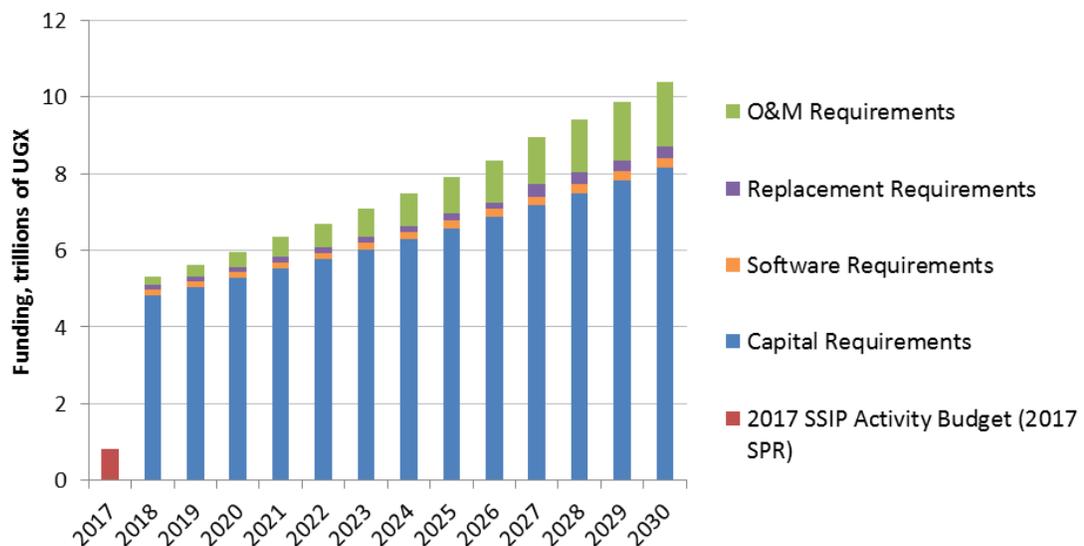
The Sector's average annual funding requirement is 7.6 trillion UGX over the next 13 years. As seen in Figure 1, this is about nine times the current funding allocated to SSIP investments. While capital investments (shown in blue) make up the majority of these costs, a growing component of the total budget will also need to be devoted to O&M and replacement to keep up the functionality of a growing and aging capital stock. By 2030, O&M and replacement are estimated to be about 16% of the total budget requirement.

Several important yet high-cost indicators comprise the majority of this requirement. Figure 1-2 presents the funding required by indicator to reach 2030 targets. Note that these costs do not account for co-benefits, and therefore, the cost of simultaneously achieving all indicators is less than the sum of the figures below. In particular, several of the high cost indicators (i.e. forest coverage, ambient water quality, safely managed drinking water, and safely managed sanitation)

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[2] Released budget related to SSIP activities, as found in the 2017 Sector Performance Report.

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are influenced by investments that also improve other indicators. Therefore incurring these costs may negate the need for the investments directed to the indicators receiving the ancillary benefits.

FIGURE 1-2. TOTAL FUNDING REQUIREMENTS BY INDICATOR (2018-2030)
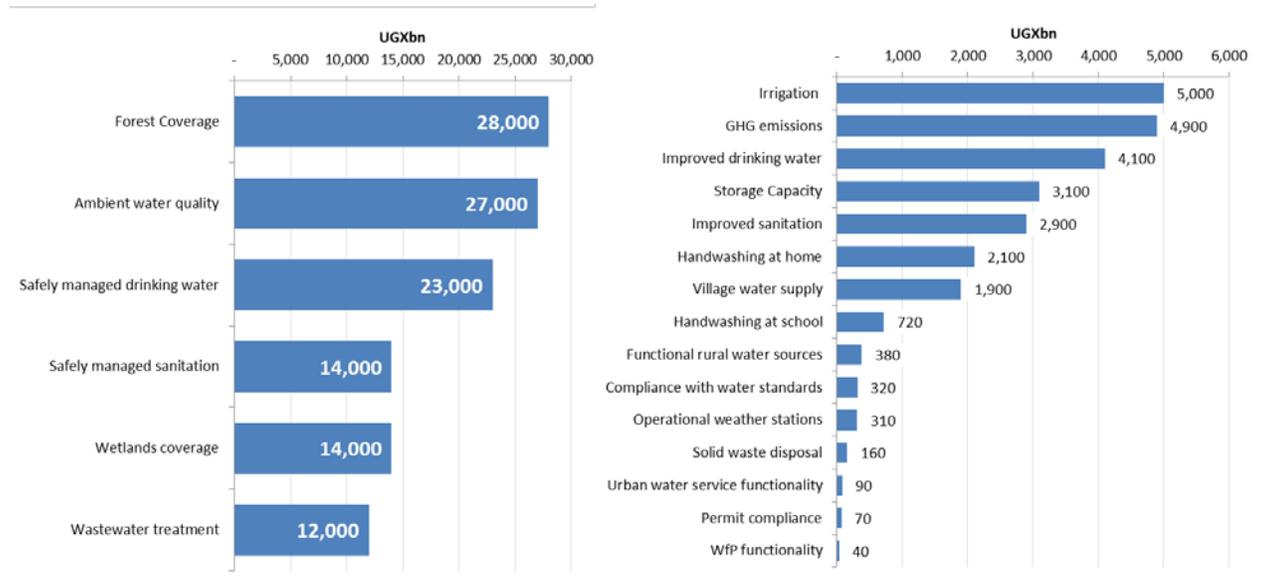
Note: These costs do not account for co-benefits. The cost of simultaneously achieving all indicators is less than the sum of the above requirements.

1.5   PROJECTED TARGET SHORTFALL UNDER CURRENT FUNDING LEVELS

If instead of receiving the funding required to meet 2030 targets the Sector continues to receive funding at the current level, the 2030 targets will not be realized, and many will remain far from the targets. Figure 1-3 presents the Business-as-Usual (BAU) funding trajectory, assuming the Sector continues to receive the current level of funding, growing at 3 percent each year.

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FIGURE 1-3. BUSINESS-AS-USUAL FUNDING TRAJECTORY
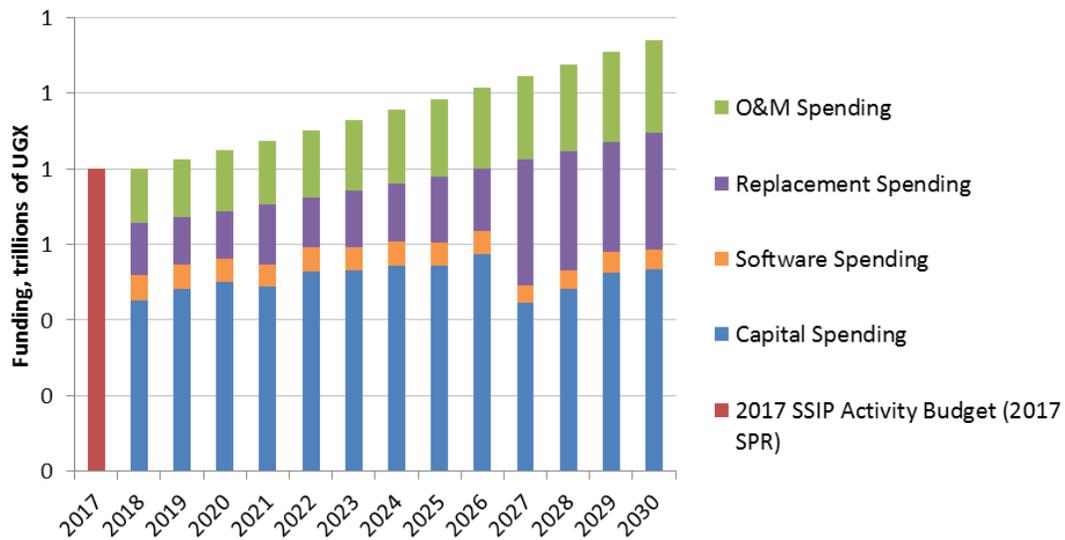
Under this funding scenario, in 2030 many indicators will not reach their targets, as shown in Table 1-5. Fifteen of the 21 indicators costed for this analysis will be less than halfway to their 2030 targets compared to the 2017 baseline and only three will be within ten percent. Current high-priority indicators such as the improved and safely managed drinking water and sanitation are well below targets (greater than 70 percent of the gap from baseline to target would still need to be closed in each of the indicators). In the wastewater treatment indicator, the gap becomes larger by 2030, meaning the funding available is not sufficient to keep up with the growing population.

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TABLE 1-5. SHORTFALLS BY INDICATOR

	Indicator	Baseline	Target	2030-BAU
1	Village water supply	66%	100%	90%
2	Functional rural water sources	85%	100%	88%
3	Improved drinking water	70%	100%	71%
4	Safely managed drinking water	7%	100%	10%
5	Per capita investment cost	32.00	[reporting]	55.02
6	Urban water service functionality	92%	100%	99%
7	Solid waste disposal	68%	90%	75%
8	Improved sanitation	19%	100%	50%
9	Safely managed sanitation	9%	100%	13%
10	Handwashing at home	37%	90%	38%
11	Handwashing at school	35%	90%	53%
12	Irrigation	0.49%	4%	1%
13	WfP functionality	85%	100%	99%
14	Storage Capacity	38.87	163.67	59.62
15	Compliance with water standards	64%	90%	73%
16	Permit compliance	71%	90%	88%
17	Wastewater treatment	20%	60%	16%
18	Ambient water quality	0%	100%	8%
19	Level of water stress		[reporting]	4%
20	Wetlands coverage	9%	13%	11%
21	Forest Coverage	9%	24%	10%
22	GHG emissions	0%	22%	4%
23	Climate vulnerability index		[reporting]	34.90
24	Operational weather stations	43%	100%	74%

Legend: % of gap between baseline and target remaining

Target met	Within 50% of target
Within 5% of target	Less than 50% of target achieved

If the Sector does not receive the funding necessary to meet indicator targets by 2030, it will be increasingly difficult to do so in subsequent years given the rate of population growth. Small increases in Sector funding will not be sufficient to close these gaps. A substantial increase in annual funding, on the order of six times current levels growing by more than the current three percent on average, is necessary to meet the Sector goals.

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STRATEGIC INVESTMENT PLAN FOR THE WATER AND ENVIRONMENT SECTOR, UGANDA (2018-2030)

VOLUME 2: CONSOLIDATED STRATEGIC SECTOR INVESTMENT PLAN FOR THE WATER AND ENVIRONMENT SECTOR OF UGANDA

FINAL REPORT

INDUSTRIAL ECONOMICS, INCORPORATED

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TABLE OF CONTENTS

ACRONYM LIST

BAU	Business-As-Usual
MAAIF	Ministry of Agriculture, Animal Industry, and Fisheries
MoH	Ministry of Health
MWE	Ministry of Water and Environment
O&M	Operations and Maintenance
OECD	Organisation for Economic Co-operation and Development
SIM	Sector Investment Model
SSIP	Strategic Sector Investment Plan
UGX	Ugandan Shillings
WES	Water and Environment Sector

ABSTRACT

Through various development plans and international agreements, MWE and the Government of Uganda have agreed to achieve certain targets in the areas of water resource development and environmental management. Given the current level of funding, limited growth in future funding and a rapidly growing population, reaching these targets will be a challenge. The SSIP seeks to answer this question: in which types of investment should the Water and Environment Sector (WES) invest in order to maximize performance, as measured by 24 indicators, and best reflect the priorities of the sector? While Volume 1 of this Strategic Sector Investment Plan (SSIP) focuses on the spending requirements needed to reach 2030 targets, Volume 2 analyzes how to allocate resources within WES given limited budgets. The volume considers three budget scenarios—all of which are considerably below what is needed to achieve 2030 indicator targets—and given these constraints, describes spending pathways for water and environmental investments that are aligned with WES priorities. The emphasis of this volume is on reporting insights from developing a strategic investment plan at the WES level; details on subsector level planning are documented in Volume 3. This volume first reviews the measurement metrics and spatial units that drive the SSIP, then provides an overview of the Sector Investment Model (SIM), and lastly reviews findings and lessons learned under the three budget scenarios. These include a BAU scenario (current funding), a moderate-low investment scenario (1.5x current funding), and a moderate-high investment scenario (3x current funding).

The three spending scenarios result in considerably different levels of indicator achievement, driven by differences in unit costs and indicator gaps that drive differences in funding allocation within the SIM. Several of the high performing indicators—including Water for Production Functionality, Permit Compliance, and Operational weather stations—have low unit costs relative to the spending allocation provided by Sector preferences. Others, such as Village water supply, benefit from receiving "ancillary benefits" that spill over from investing in achieving other indicators. On the other hand, the poorer performing indicators tend to be comparably expensive, in terms of the cost to reduce one percent of the gap. Examples include safely managed drinking water, which requires investing in expensive piped water supply, and forest coverage, which requires rehabilitation of forests. Sector outcomes tend to rise under all budget scenarios, although much more modestly under the BAU scenario. From a spatial perspective, a number of factors vary by catchment (the spatial scale used for this analysis—23 hydro-geographic regions of Uganda), including population, unit costs of investment (e.g., storage construction costs vary based on topographic characteristics), and the 2017 starting level for several of the indicators. These differences drive a non-uniform pattern of spending across space, where catchments with higher unit costs, higher populations (or units of investment such as irrigable hectares), and lower 2017 indicator levels receive a greater share of the funding. Lastly, O&M expenditures on both existing and new investments are assumed to be part of the allocated budget. Under the moderate-high budget scenario, approximately 20% of the total budget is spent on O&M expenses.

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2.   **VOLUME 2: CONSOLIDATED STRATEGIC SECTOR INVESTMENT PLAN FOR THE WATER AND ENVIRONMENT SECTOR OF UGANDA**

While Volume 1 of this Strategic Sector Investment Plan (SSIP) focuses on the spending requirements needed to reach 2030 targets, Volume 2 analyzes how to allocate resources within the Water and Environment Sector (WES) given limited budgets. The volume considers three budget scenarios—all of which are considerably below what is needed to achieve 2030 indicator targets—and given these constraints, describes spending pathways for water and environmental investments that are aligned with WES priorities. The emphasis of this volume is on reporting insights from developing a strategic investment plan at the WES level; details on subsector level planning are documented in Volume 3.

2.1   **BACKGROUND AND MOTIVATION**

Through various policies, strategies, and strategic plans, the water and environment sector and the Government of Uganda have agreed to achieve certain targets in the areas of water resource development and environmental management. Given the current level of funding, limited growth in future funding, and a rapidly growing population, reaching these targets will be a challenge. The SSIP seeks to answer this question: in which types of investment should MWE invest in order to maximize indicator performance and best reflect the priorities of the sector?

2.1.1   **OBJECTIVE OF THE CONSOLIDATED SSIP**

The SSIP provides a bridge from policy to budgeting by identifying investment priorities that efficiently improve indicator achievements and are feasible given projected financing. With a sound and thorough investment plan, not only can the sector make the most of its allotted funding, but also it will demonstrate to donor organizations and national budget officials that the sector has a clear and direct plan for using any funds received.

This investment plan is also built to work in conjunction with other planning efforts in the sector: most notably, the Water and Environment Sector Development Plan 2020 and 2030 Sustainable Development Goals. The recent work done to align indicators across all planning documents has been carried through in the SSIP.

The SSIP does not identify investments at the project level. It is designed as a screening level assessment of the funding needs and priorities by investment and region. The SIM also does not comprehensively cover all functions and goals of the sector. Indicators related to crosscutting issues and governance such as gender equity and sector funding targets are not included in the SSIP, as progress in these indicators is more a function of policy than investment.

The 2030 SSIP represents the first time the water and environment sector will present one consolidated investment plan. By developing a strategic, consolidated plan, the Ministry can consider the tradeoffs required to distribute funds, and more importantly, sector planners can

model and communicate how certain investments have crosscutting impacts. In the context of the SSIP, the nine sub-sectors within the water and environment sector are: Rural Water and Sanitation, Urban Water and Sewerage, Water for Production, Water Resource Management, Wetlands Management, Forestry, Sanitation and Hygiene, Climate Change, and Meteorology.

2.1.2 STRUCTURE OF THE SSIP DOCUMENTATION

The results and methodologies of the SSIP process are documented in four volumes. **Volume 1** is the **Funding Requirements to Meet National 2030 Targets for the Water and Environment Sector**. Volume 1 outlines the budget required to reach 2030 indicator targets, and the consequences of underfunding. **Volume 2** (the current document) is the **Consolidated Strategic Sector Investment Plan**. This document provides the SSIP results in the context of the comprehensive water and environment sector. **Volume 3** contains the **Subsector Strategic Investment Plans**. Volume 3 provides more details about the SSIP findings that are particularly relevant to each subsector. **Volume 4** and its associated annexes, describe the details of the **Sector Investment Model**, or SIM. Users of the SIM may also be interested in the **SIM User Guide**, which provide more technical direction on the use of SIM Excel tool. Finally, the key findings of the SSIP are also presented in a four page **Popular SSIP**, which can be used to communicate the investment plan results to a broader audience.

The remainder of this volume is organized as follows; first the definitions of the SSIP components are laid out (including subsectors, indicators, and investments). Next, the modeling framework of the SIM is presented. The results of the investment planning process are then discussed, focusing on strategic allocation of limited funds, and other insights.

2.2 COMPONENTS OF THE STRATEGIC SECTOR INVESTMENT PLAN

There are several terms related to the organization and components of this document and the underlying analysis that are important to define because many of these terms have multiple definitions outside of the SSIP context. This section defines those components.[1]

2.2.1 SUBSECTORS

MWE has defined nine subsectors that align with the directorates and agencies in the water and environment sector to organize the results of the SSIP. These subsectors and their related directorates, agencies, and organizations, both inside and beyond MWE, are presented below in Table 2-1 below.

TABLE 2-1. WATER AND ENVIRONMENT SUBSECTORS AND RELATED AGENCIES

SUBSECTOR	RELATED AGENCIES AND ORGANIZATIONS
Rural Water and Sanitation	• Rural Water Supply and Sanitation Department (RWSD) • Urban Water and Sewerage Department (UWSD)

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[1] Further description of the SIM components can be found in Volume 4.

SUBSECTOR	RELATED AGENCIES AND ORGANIZATIONS
Urban Water and Sewerage	• Urban Water and Sewerage Department (UWSD) • National Water and Sewerage Corporation (NWSC)
Sanitation and Hygiene	• Kampala Capital City Authority (KCCA) • Rural Water Supply and Sanitation Department (RWSD) • Urban Water and Sewerage Department (UWSD)
Water for Production	• Water for Production Department (WFPD)
Water Resource Management	• National Environmental Management Authority (NEMA) • Water Quality Management Department (WQMD) • Water Resource Monitoring and Assessment Department (WRMAD) • Water Resource Planning and Regulation Department (WRPRD)
Wetlands Management	• Wetlands Management Department (WMD)
Forestry	• National Forest Authority (NFA) • Forest Sector Support Department (FSSD)
Climate Change	• Climate Change Department (CCD) • Directorate of Environmental Affairs (DEA) • Uganda National Meteorological Authority (UNMA)
Meteorology	• Uganda National Meteorological Authority (UNMA)
Organizations Relevant for All Subsectors	• Environmental Support Services Department (ESSD) • District Local Governments • Development Partners (DP) • Non-governmental Organizations (NGO) • Community Supported Organizations (CSO)

It is important to note that the conclusions presented in this plan are for investments made by organizations within the water and environment sector, shown above. Many of the objectives of the sector rely on support from outside Ministries and Agencies, including most notably, Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) and Ministry of Health (MoH). This plan assumes outside agencies will continue to fund complementary projects at the current level.

2.2.2 OUTCOMES

The nine subsectors align with the institutional structure of the sector. For the purposes of investment planning, a second categorization of sector functions was created, organized around the primary outcomes of the sector; in other words, the primary services for which the sector is responsible. As shown in Table 2-2, the seven outcomes align fairly well with the nine subsectors.

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2.2.3 INDICATORS

In the SSIP, benefits of investment are measured by indicator progress. Twenty five indicators, covering the primary functions of the sector, are included in the plan. The indicators are selected from the list of revised indicators developed in the 2016 Review of the Water and Environment Sector Performance (Measurement) Monitoring Framework (hydrophil GmbH 2016) with stakeholder consultation at the beginning of the SSIP 2030 process. Where baseline and target information in missing, as is the case with several of the indicators developed during the 2016 Review, placeholder values have been assigned. The indicators and associated baseline and target information are presented in Table 2-2.

TABLE 2-2. 25 INDICATORS BY OUTCOME AND SUBSECTOR

Outcomes	Subsector(s)	Indicators	Baseline	Target
Clean Water supply	Rural Water and Sanitation	1. Village water supply	**66%**	**100%**
		2. Functional rural water sources	**85%**	100%
	Rural Water and Sanitation/Urban Water and Sewerage	3. Improved drinking water	**70%**	**100%**
		4. Safely managed drinking water	7%	**100%**
		*5. Per capita investment cost	**$32**	**$75**
	Urban Water and Sewerage	6. Urban water service functionality	**92%**	100%
Sanitation and Public Health	Sanitation and Hygiene	7. Solid waste disposal	**68%**	90%
		8. Improved sanitation	**19%**	50%
		9. Safely managed sanitation	9%	**100%**
		10. Handwashing at home	**37%**	90%
		11. Handwashing at school	**35%**	90%
Water for Food Production	Water for Production	12. Irrigation	**0.49%**	**4%**
Water for Economic Activity		13. WfP functionality	**85%**	100%
		14. Storage Capacity	**38.87**	**163.67**
Water Quality and Quantity	Water Resource Management	15. Compliance with water standards	**64%**	90%
		16. Permit compliance	**71%**	90%
	WRM/ Sanitation and Hygiene	17. Wastewater treatment	20%	**60%**
	Water Resource Management	18. Ambient water quality	0%	100%
		*19. Level of water stress	60%	100%
Ecosystem Protection	Wetlands Management	20. Wetlands coverage	**8.6%**	**13%**
	Forestry	21. Forest Coverage	**9%**	**24%**
Climate Change Adaptation and Mitigation	Climate Change	22. GHG emissions	0%	**22%**
		*23. Climate vulnerability index	50%	**100%**
	Meteorology	24. Operational weather stations	43%	100%

Notes: Bold baseline and target figures are from the 2017 Water and Environment Sector Performance Report unless otherwise noted.

*Indicator is only reported and not included in the objective function

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2.2.4 INVESTMENTS

Funding received by the sector is distributed among a set of investments, each with a defined relationship to at least one of the 24 indicators. The investment categories are intentionally somewhat general, as this SSIP does not attempt to identify investments at the project level; however the 14 investment identify general areas where funding is needed to impact indicator achievement. These 14 investments are further broken down in the SIM to separately model the components of each investment category related to capital, O&M, replacement, and software. The investment categories are described in Table 2-3.

TABLE 2-3. SSIP INVESTMENT CATEGORIES

INVESTMENT	EXAMPLES
Investments for Service Provision	Reservoir construction, irrigation systems, water supply investments, wastewater treatment
Investments for Monitoring	Weather monitoring, water resources monitoring and permitting.
Operations, Maintenance & Repair	Recurring O&M costs
Replacement	Infrastructure replacement
Software	Permit Compliance
Capacity Development	Staff training and education campaigns

2.2.5 CATCHMENTS

Investments in the SSIP are reported nationally and regionally. The SSIP Regions were defined to:

1. Be specific enough to provide meaningful detail to the investment plan without requiring an unreasonable amount of data collection and without inferring localized results from non-localized data;

2. Align with existing MWE and Government of Uganda planning and administrative regions; and

3. Map to hydrological features, demographic trends, and land use patterns that may influence investment needs.

With these objectives in mind, the country was divided into 23 regions, as shown in Figure 2-1, which are referred to as catchments because they are primarily based on the catchments of Uganda.

The catchments are primarily based on hydrological features, and where possible, considerations were made to make the catchment boundaries align with political boundaries, particularly along the border of the county. Several data sources used in this analysis provided information at the district level (112 total) . To translate this information, a series of weights was developed that creates catchment level averages out of district level data. The same method can be used to reverse this process: i.e. to calculate district level data from the catchment results.

FIGURE 2-1. TWENTY THREE SSIP CATCHMENTS OF UGANDA

Further details about the components discussed above can be found in Volumes 3 and 4.

2.3   INVESTMENT PLANNING METHODS

The elements above are organized into a Sector Investment Model (SIM) that formulates investment plans within the SSIP. As a decision support tool, the SIM allocates budget resources to investments across time and space based on a set of Sector priorities. The model determines investments annually over the 2018 to 2030 period, and for each of the 23 catchments described above. The SIM is built in Microsoft Excel and is intended to be accessible for all decision makers within the Sector. More detail is provided on the SIM in Volume 4 and the User Guidelines, but a brief overview is provided here for context.

2.3.1   SIM FRAMEWORK

The SIM has two primary functions: to determine budget requirements needed to meet indicator targets, and to allocate limited funds to optimize indicator achievement (Figure 2-2). In allocation mode, external trends such as population growth are combined with information on Sector budget allocation, preferences (described below), and unit investment costs (e.g., cost per person for water supply) to specify how investments should be made to move toward indicator targets. In budget requirements mode, the problem is reversed, where indicator targets and unit investment costs drive investment decisions in order to estimate required funding levels annually.

Each indicator may be affected by several investments, and each investment may affect multiple indicators. Unit investment costs vary by catchment, as costs and impacts may vary spatially.

FIGURE 2-2. SECTOR INVESTMENT MODEL (SIM) STRUCTURE
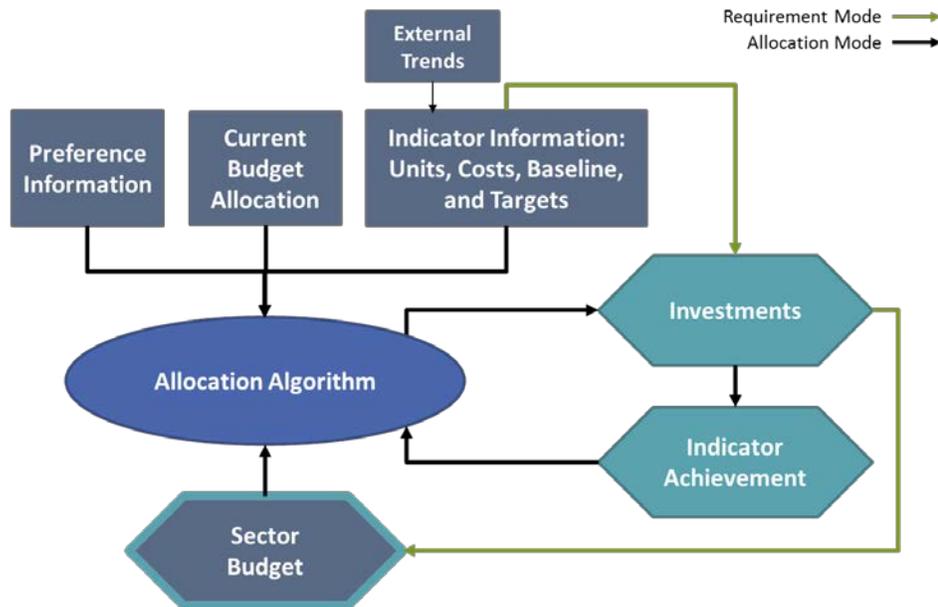
The allocation algorithm distributes funds based on a set of weights which represent the relative preference of each indicator and the gap remaining between the indicator's status and its target.

2.3.2   EXTERNAL TRENDS

As noted above a major driver of investing decisions is how external drivers change over time and across catchments. Between 2017 and 2030, population in Uganda is anticipated to increase from 37 million to 57 million people. This means that maintaining current indicator performance in areas such as clean water supply provision and wastewater treatment will already require major investments, and that making forward progress will require considerably more. Figure 2-3 shows the population distribution in each of the 23 catchments, in both 2017 and 2030.

FIGURE 2-3. POPULATION DENSITY IN 2017 AND 2030 (PEOPLE PER SQUARE KM)
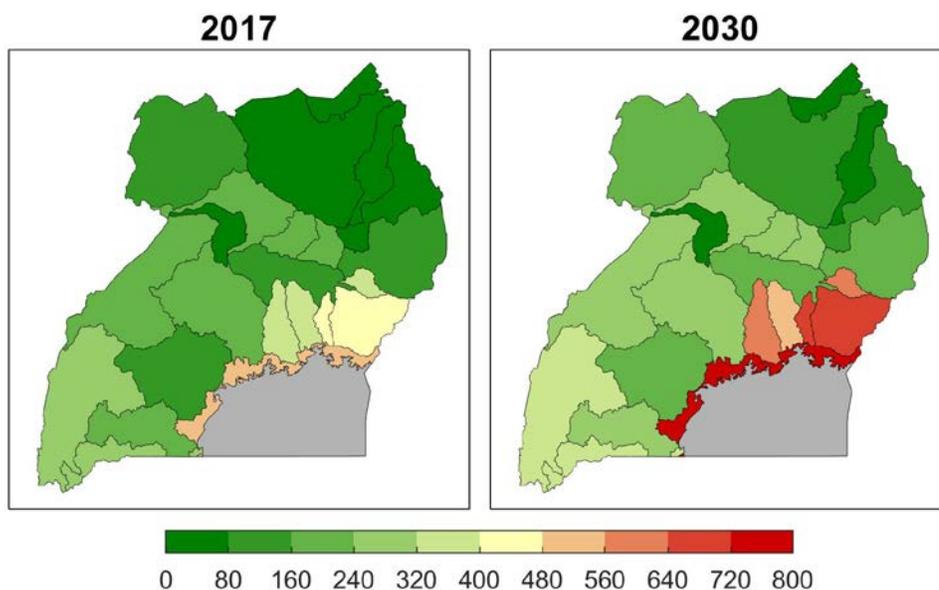
2.3.3   SPENDING DRIVERS IN THE SIM

Of notable importance, spending in the SIM is allocated across indicators based on two drivers: (1) "preferences" that are Sector-specified weights on indicators that externally drive investment choices; and (2) how far the indicator is from reaching its target (the "gap"), which is a weight that is determined within the SIM each year as indicator gaps are closed. All else equal, indicators receive higher levels of funding when they have higher preferences and larger gaps; the relative importance of these two drivers can be determined by the SIM user. Indicator performance gap is also the driver of budget allocations across catchments.

Sector preference weights are based on past budget allocation decisions that best reflect near term priorities, and the Sector's stated relative preferences between indicators. The stated preferences were first elicited at a Workshop aimed at distilling longer term spending priorities.[2] These preferences were then further refined based on a small group discussion with Sector representatives who considered both the preferences reported at the Workshop and the costs of achieving each indicator. The 2017/2018 budget allocation drives preferences in 2018, and these linearly move toward the preferences participants provided during the Workshop (Table 2-4). Note that while the results presented in the SSIP and Subsector Investment Plans represent the current priorities of the sector, the SIM can be used to test other scenarios and to explore how changing the assumptions of the SSIP may lead to different investment priorities.

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[2] The Workshop was held in Kampala in August 2017, and included Sector decision-makers. See details of this process in Volume 4, Annex A.

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TABLE 2-4. INDICATOR SPENDING PREFERENCES OVER TIME

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Village water supply	2%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%	4%
Functional rural water sources	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%
Improved drinking water	12%	11%	11%	10%	10%	9%	9%	8%	8%	7%	7%	6%	6%	5%
Safely managed drinking water	31%	30%	28%	26%	25%	23%	21%	20%	18%	16%	14%	13%	11%	9%
Urban water service functionality	10%	10%	9%	9%	9%	8%	8%	7%	7%	7%	6%	6%	5%	5%
Solid waste disposal	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Improved sanitation	4%	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%
Safely managed sanitation	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%	5%	5%
Handwashing at home	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Handwashing at school	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Irrigation	10%	10%	9%	9%	9%	9%	9%	8%	8%	8%	8%	7%	7%	7%
WfP functionality	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Storage Capacity	2%	3%	3%	4%	4%	4%	5%	5%	6%	6%	6%	7%	7%	8%
Compliance with water standards	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%
Permit compliance	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Wastewater treatment	1%	2%	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%
Ambient water quality	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	6%	6%
Wetlands coverage	1%	2%	2%	2%	3%	3%	4%	4%	4%	5%	5%	6%	6%	7%
Forest Coverage	6%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	8%	8%
GHG emissions	0.4%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	3%	3%
Operational weather stations	2%	2%	3%	3%	4%	4%	4%	5%	5%	5%	6%	6%	7%	7%

Note: Blue represents higher preferences and orange represents lower preferences relative to other indicators

2.3.4 BUDGET SCENARIOS

The SIM develops investment plans under three budget scenarios, all of which are assumed to escalate at 3% per year between 2018 and 2030. Starting points under the three scenarios are as follows:

- **Business-As-Usual (BAU).** Under the BAU scenario, the annual budget is assumed to remain similar to historical levels, and starts at roughly the allocation available during the 2017/2018 fiscal year of 800 billion UGX (for details, see Volume 4).

- **Moderate-Low.** A modest increase of 50% over the BAU scenario, to 1.2 trillion UGX per year.

- **Moderate-High.** A much more aggressive increase of 200% over the BAU scenario, to 2.4 trillion UGX per year.

Each of these budget scenarios is run through the SIM to evaluate how investment decisions are made, and what indicator levels result over time and across catchments.   Figure 2-3 shows budget availability over time.

FIGURE 2-4. INDICATOR SPENDING PREFERENCES OVER TIME
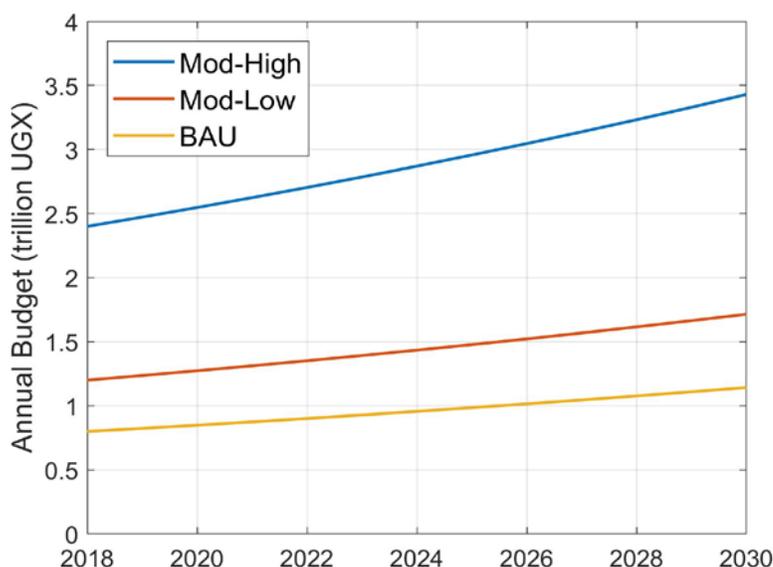
2.3.5 O&M EXPENDITURES AND REPLACEMENT COSTS IN THE SIM

Operations and maintenance (O&M) and infrastructure replacement are critical in order to maintain long-lived infrastructure investments. Although ideally, O&M and replacement for productive infrastructure that have tariffs (e.g., water supply or treatment systems) would be funded by ratepayers, history suggests this is often not the case. For instance, in the case of water supply and sanitation, the OECD finds that neglect of O&M budgets is the primary reason for non-functionality observed in many rural systems.[3] As such, the SIM assumes that O&M and replacement expenditures for both existing infrastructure and all future investments come out of the available spending under each budget scenario. The existing stock of water supply, sanitation, storage, and other infrastructure is estimated to cost 137 billion UGX to maintain (i.e., roughly 17% of the 2018 BAU budget) and requires 127 billion UGX in replacement in 2018 (17% of 2018 BAU budget) to maintain existing coverage. Spending this sum each year is assumed to maintain existing infrastructure in functioning condition, and means that only 526 billion UGX out of an original budget of 800 billion UGX is available for spending on new investments in 2018. Replacement costs are estimated through a replacement schedule for existing infrastructure (i.e. pre-SSIP investment) based on the known age of a sample of existing piped water systems for water supply infrastructure and a constant rate of 1/lifespan units requiring replacement per year for other infrastructure. All projects built within the SSIP have assumed lifespans that extend past 2030 and therefore no replacement costs are incurred through 2030 for investments put in place after 2017. Costs of future O&M are in addition to this 146 billion UGX figure. Implications for future O&M expenditures are explored in the next section.

Caveats and uncertainties of the SIM model are discussed in Volume 4 of this report.

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[3] OECD. 2009. Strategic Financial Planning for Water Supply and Sanitation. Accessed on November 15, 2017 from https://www.oecd.org/env/resources/43949580.pdf.

2.4   FINDINGS OF THE CONSOLIDATED INVESTMENT PLANS

As noted above, the consolidated SSIP aims to map out a Sector-wide investment plan that is consistent with the spending priorities of the Sector. This section summarizes the key characteristics of the three plans that were developed under the BAU, moderate-low, and moderate-high budget scenarios.

2.4.1   OVERALL PERFORMANCE THROUGH 2030 UNDER BUDGET SCENARIOS

The three spending scenarios result in considerably different levels of indicator achievement. Table 2-5 reports the 2030 level of each indicator under the three budget scenarios, along with the percentage of the gap between 2017 and each target that was closed by the investment plan. As described above, spending decisions each year are driven by two factors: the Sector preference and the gap that year relative to the target. Several of the high performing indicators—including Water for Production Functionality, Permit Compliance, and Operational weather stations—have low unit costs relative to the spending allocation provided by Sector preferences. Others, such as Village water supply, benefit from receiving "ancillary benefits" that spill over from investing in achieving other indicators. In that example, village water supply coverage increases as investments occur to improve drinking water and the safety of managed drinking water supplies. On the other hand, the poorer performing indicators tend to be comparably expensive, in terms of the cost to reduce one percent of the gap. Examples include safely managed drinking water, which requires investing in expensive piped water supply, and forest coverage, which requires rehabilitation of forests. The poorest performing case is wastewater treatment, which is both extremely expensive and, as seen in the indicator spending preferences table above, relatively low priority according to Sector budgets. Although investment in wastewater treatment within the SIM is considerable because of the large gap, the indicator falls because investment cannot keep up with the population growth rate , which rises over 50 percent over the study period.

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TABLE 2-5. INDICATOR ACHIEVEMENT LEVELS UNDER EACH BUDGET SCENARIO BY 2030

Indicator	Base	Target	2030 Achievement			Percent of Gap 2017 Closed		
			BAU	Mod	High	BAU	Mod	High
Village water supply	66%	100%	90%	100%	100%	70%	100%	100%
Functional rural water sources	85%	100%	88%	93%	98%	20%	50%	86%
Improved drinking water	70%	100%	71%	80%	97%	2%	34%	91%
Safely managed drinking water	7%	100%	10%	16%	35%	4%	10%	31%
Urban water service functionality	92%	100%	99%	100%	100%	84%	100%	100%
Solid waste disposal	68%	90%	75%	81%	87%	31%	61%	88%
Improved sanitation	19%	100%	50%	68%	96%	39%	61%	94%
Safely managed sanitation	10%	100%	13%	19%	39%	3%	10%	33%
Handwashing at home	37%	90%	38%	49%	70%	2%	22%	62%
Handwashing at school	35%	90%	53%	66%	81%	34%	57%	84%
Irrigation	0.49%	4%	1%	1%	2%	10%	20%	50%
WfP functionality	85%	100%	99%	100%	100%	90%	100%	100%
Storage Capacity	24%	100%	36%	48%	74%	17%	31%	66%
Compliance with water standards	61%	90%	73%	80%	87%	35%	62%	88%
Permit compliance	71%	90%	88%	90%	90%	88%	97%	100%
Wastewater treatment	20%	60%	16%	18%	26%	-11%	-6%	16%
Ambient water quality	0%	100%	8%	16%	43%	8%	16%	43%
Wetlands coverage	8.60%	130%	8%	17%	44%	8%	17%	44%
Forest Coverage	9%	24%	3%	7%	20%	3%	7%	20%
GHG emissions	0%	22%	4%	9%	22%	20%	40%	100%
Operational weather stations	43%	100%	74%	85%	97%	54%	74%	94%

*Excludes three reporting indicators: cost per capita, water stress, and climate change vulnerability
In coloring, green means closer to target, whereas red means far from target.

2.4.2   SECTOR FUNDING OVER TIME

Figure 2-5 reports share of funding over time by investment under the BAU scenario, which as can be seen, presents a very different picture in 2018 than in 2030. Again, these changes are driven by shifting Sector priorities over time, rising population, and the relative year-by-year indicator gaps that unfold as investment decisions occur.

FIGURE 2-5. FUNDING DISTRIBUTION OVER TIME ACROSS INVESTMENTS UNDER THE BAU BUDGET SCENARIO
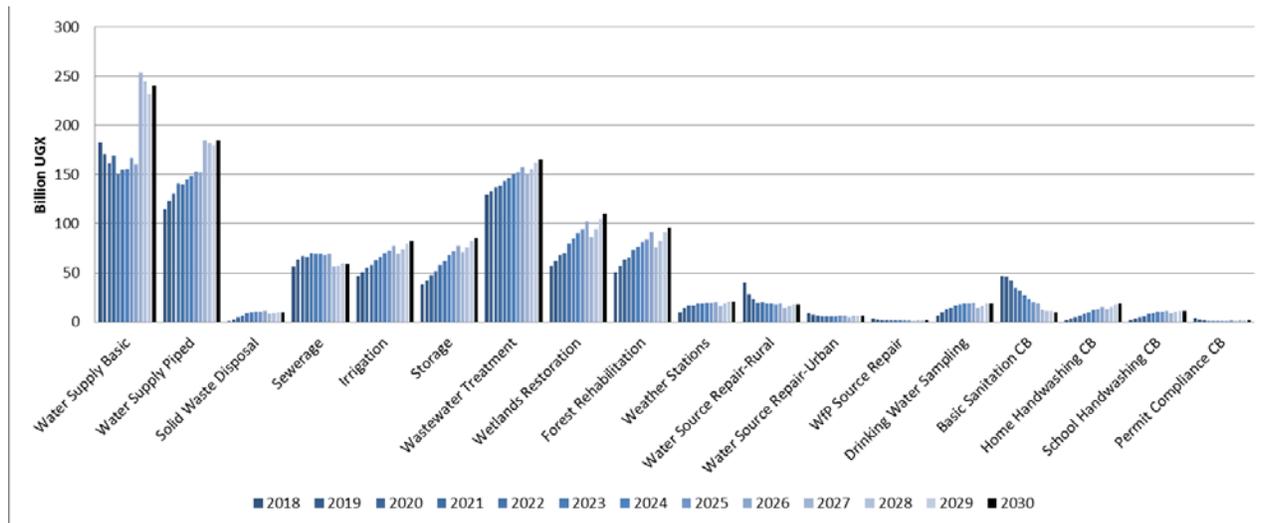
Note: "CB" denotes investments in software.

2.4.3 CATCHMENT-LEVEL SPENDING AND INDICATOR ACHIEVEMENT

A number of factors vary by catchment, including population, unit costs of investment (e.g., storage construction costs vary based on topographic characteristics), and the 2017 starting level for several of the indicators. These differences drive a non-uniform pattern of spending across space, where catchments with higher unit costs, higher populations (or units of investment such as irrigable hectares), and lower 2017 indicator levels receive a greater share of the funding. Figure 2-6 shows the average annual *per capita* allocation of funds within each of the catchments and across budget scenarios. As expected, BAU spending is far lower, with average annual spending at roughly 10,000 to 30,000 UGX per capita. The one catchment that falls well outside of this range is the Kiryandongo catchment in the western part of the country. This catchment has a very small population yet comparably high irrigation potential, so the spending per capita is disproportionately high. Under the moderate-high scenario, per capita spending rises to between 50,000 and 80,000 UGX on these water investments.

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To visualize how indicator levels that differ across catchments tend to converge over time because of gap weighting, Figure 2-7 presents the case of functional rural water sources under the moderate-low budget scenario where each of the colored lines represent the trajectory of an individual catchment and the black dotted line represents the National average. As can be seen, the range of performance levels in 2017 ranges from 67% to 93%, but by 2024 these differences have largely disappeared. The SIM allocates a greater share of funding to catchments that are performing at lower levels, with the aim of generating equal levels of performance across catchments. Clearly, closing this gap will not be feasible across all indicators, because some regional differences are too significant to close over the SSIP study period.

FIGURE 2-7. FUNCTIONAL RURAL WATER SOURCES ACROSS CATCHMENTS, UNDER THE BAU
BUDGET SCENARIO, 2017-2030
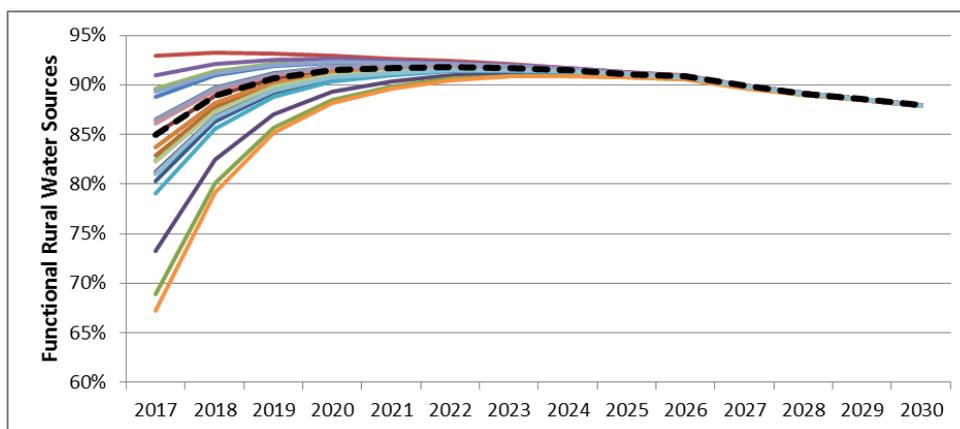
Note: The dashed line is the National average achievement level across catchments.

2.4.4 OPERATIONS & MAINTENANCE AND REPLACEMENT EXPENDITURES OVER TIME

As noted above, O&M expenditures on both existing and new investments are assumed to be part of the allocated budget. Figure 2-8 shows the balance between capital, O&M, and replacement cost spending over the 2018 period and under each of the budget scenarios. Under the moderate-high budget scenario, approximately 700 million UGX, or 20% of the total budget is being spent on O&M and replacement expenses. The share of O&M rises more rapidly under the moderate-high budget scenario because several investments with high O&M expenses (e.g., wastewater treatment) comprise a larger share of spending.

Replacement costs do not vary by investment scenario because they depend on existing infrastructure. By 2030, approximately 300 million UGX is needed annually to replace aging infrastructure.

FIGURE 2-8. SPENDING ON CAPITAL AND O&M UNDER THE THREE BUDGET SCENARIOS
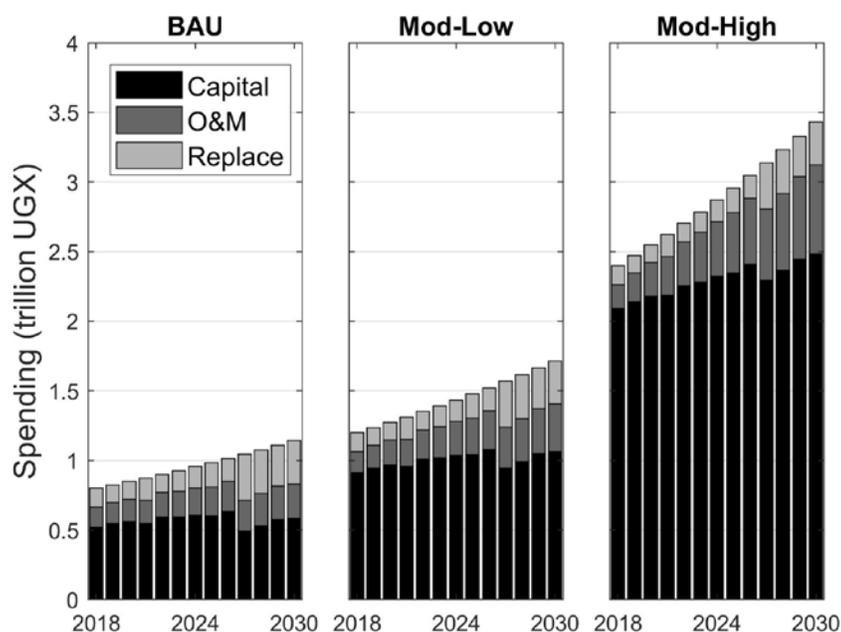
2.4.5 INVESTMENT SUMMARY

Table 2-6 shows the expected level of investment by investment category in the SSIP from 2018 to 2030.

TABLE 2-6. INVESTMENT LEVELS BY SCENARIO (BILLIONS OF UGX)

Investment	Scenario	Year							
		2018	2019	2020	2021	2022	2023	2024	2025-2030[1]
Water Supply-Basic	BAU	183	171	161	169	150	155	156	216
	MODL	277	223	187	183	156	159	158	222
	MODH	559	216	153	141	106	108	106	177
	Full	59	52	52	74	56	67	70	144

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Investment	Scenario	Year							
		2018	2019	2020	2021	2022	2023	2024	2025-2030[1]
Water Supply-Piped	BAU	115	123	131	141	140	145	148	173
	MODL	183	211	233	248	250	256	259	282
	MODH	399	535	583	605	610	615	619	657
	Full	1119	1202	1293	1399	1490	1601	1713	2186
Sewerage	BAU	57	63	67	66	70	70	70	61
	MODL	94	112	123	124	129	128	127	116
	MODH	211	287	309	311	314	310	306	294
	Full	533	572	613	656	700	747	796	990
Irrigation	BAU	47	51	55	58	63	66	70	76
	MODL	59	68	78	84	94	101	108	121
	MODH	100	134	159	178	200	215	229	242
	Full	381	381	381	381	381	381	381	381
Storage	BAU	38	42	47	51	58	62	68	77
	MODL	45	54	64	74	85	94	102	118
	MODH	67	97	125	149	173	189	200	193
	Full	218	221	225	229	233	236	240	253
Wastewater Treatment	BAU	130	133	137	139	144	147	150	157
	MODL	145	153	161	167	176	182	190	210
	MODH	194	229	252	271	293	314	336	417
	Full	654	695	737	782	829	878	930	1133
Wetlands Restoration	BAU	57	62	68	70	80	84	90	99
	MODL	111	121	136	144	160	170	181	204
	MODH	296	364	387	403	430	450	472	521
	Full	721	768	816	866	918	972	1028	1243
Forest Rehab.	BAU	51	57	63	65	74	77	82	87
	MODL	96	111	126	133	146	154	162	181
	MODH	246	320	349	367	394	416	441	534
	Full	1510	1608	1709	1814	1923	2035	2152	2602
Other[2]	BAU	123	121	119	114	122	121	122	114
	MODL	189	182	166	154	155	149	146	136
	MODH	328	289	231	197	181	166	155	147
	Full	128	131	138	146	153	162	170	202

Note: Includes capital, O&M, replacement, and software costs.
[1] 2025-2030 values are annual averages.
[2] Other investments include solid waste disposal, weather station, water source repair (rural, urban, and water for production), drinking water samples, permit compliance, basic sanitation, and home and school handwashing.

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STRATEGIC INVESTMENT PLAN FOR THE WATER AND ENVIRONMENT SECTOR, UGANDA (2018-2030)

VOLUME 3: STRATEGIC SUBSECTOR INVESTMENT PLANS FOR THE WATER AND ENVIRONMENT SECTOR OF UGANDA

FINAL REPORT

INDUSTRIAL ECONOMICS, INCORPORATED

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TABLE OF CONTENTS

ACRONYM LIST

BAU   Business-As-Usual
MWE   Ministry of Water and Environment
O&M   Operations and Maintenance
OECD   Organisation for Economic Co-operation and Development
SIM   Sector Investment Model
SSIP   Strategic Sector Investment Plan
UGX   Ugandan Shillings
WES   Water and Environment Sector

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ABSTRACT

This volume reports subsector findings from the Strategic Investment Plan for the Water and Environment Sector, Uganda (2018-2030). This Sector planning effort marks the first time the Water and Environment Sector has undertaken strategic planning as a sector rather than subsectors. In doing so, the Sector is able to develop a plan that best meets the priorities of the sector as a whole, acknowledging that many costs and benefits are shared across subsectors. The plan is developed using a Sector Investment Model (SIM) to model various pathways for the Sector to achieve 24 indicators selected to represent the Sector's main intervention areas. The previous volume (Volume 2) in this report describes the sector-wide results of this planning process. This volume presents subsector results under three potential funding scenarios. The results show that at business as usual funding levels, very few subsectors will achieve any of the targets set for 2030. As the budget is increased, and indicator achievement becomes more prevalent across various indicators, the Sector can shift funding allocation across subsectors to support indicators that have lower achievement levels, either due to high costs or lower initial prioritization within the sector. This type of funding reallocation is most common in the Moderate-High funding scenario, when a budget of 2400 billion UGX per year is assumed.

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3. VOLUME 3: STRATEGIC SUBSECTOR INVESTMENT PLANS FOR THE WATER AND ENVIRONMENT SECTOR OF UGANDA

The subsector investment plans that follow are part of the Strategic Sector Investment Planning process. The results of this process are documented across the four volumes of this report. Volume 1 of the report presents the full cost to the Sector of achieving all 2030 targets for 24 indicators selected to represent the major functions of the Sector. Volume 2 is the Consolidated Subsector Investment Plan, where the strategic investment results are discussed in terms of overall progress towards the primary goals of the Sector. The current volume (Volume 3) provides subsector details that underlie the results of the Consolidated Plan. The Sector Investment Model, or SIM, which produces these results, is described in more detail in Volume 4. Volume 4 also contains the annexes of the report, including data tables of SIM inputs and outputs.

3.1. BACKGROUND AND MOTIVATION

This volume presents the results of three investment planning scenarios in terms of the implications for each subsector within the Water and Environment Sector of Uganda. Prior to this current strategic planning effort, the water sector and the environment and natural resources subsector were responsible for producing their own investment plan. Now the Sector has moved to a consolidated funding request system. As a unified sector, investment planning can be coordinated in a manner that best achieves the mandates of the sector given various funding levels.

This volume covers the nine subsectors listed in Table 3-1. The subsector investment plans are extracted from the consolidated sector investment plans, as modeled by the SIM and described in Volume 2. Three future funding scenarios are explored in these investment plans:

- **Business-As-Usual (BAU).** Under the BAU scenario, the annual budget is assumed to remain similar to historical levels, and starts at roughly the allocation available during the 2017/2018 fiscal year of 800 billion UGX (for details, see Volume 4).

- **Moderate-Low.** An increase of 50% over the BAU scenario, to 1.2 trillion UGX per year.

- **Moderate-High.** A much more aggressive increase of 200% over the BAU scenario, to 2.4 trillion UGX per year.

Each budget constraint is modeled in the SIM and the results are presented in terms of improvement in 24 indicators that represent the primary interventions of the sector. Each subsector has at least one indicator in the SIM.

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The SIM allocates these limited resources across investment categories and catchments according to weights that represent 1) the relative priority of indicators impacted by each investment, and 2) the gap for each impacted indicator between baseline levels and 2030 targets.

TABLE 3-1. SUBSECTORS AND RELATED AGENCIES IN THE SECTOR

SUBSECTOR	RELATED AGENCIES AND ORGANIZATIONS
Rural Water and Sanitation	• Rural Water Supply and Sanitation Department (RWSD) • Urban Water and Sewerage Department (UWSD)
Urban Water and Sewerage	• Urban Water and Sewerage Department (UWSD) • National Water and Sewerage Corporation (NWSC)
Sanitation and Hygiene	• Kampala Capital City Authority (KCCA) • National Water and Sewerage Corporation (NWSC) • Rural Water Supply and Sanitation Department (RWSD) • Urban Water and Sewerage Department (UWSD)
Water for Production	• Water for Production Department (WFPD)
Water Resource Management	• National Environmental Management Authority (NEMA) • Water Quality Management Department (WQMD) • Water Resource Monitoring and Assessment Department (WRMAD) • Water Resource Planning and Regulation Department (WRPRD)
Wetlands Management	• Wetlands Management Department (WMD)
Forestry	• National Forest Authority (NFA) • Forest Sector Support Department (FSSD)
Climate Change	• Climate Change Department (CCD) • Directorate of Environmental Affairs (DEA) • Uganda National Meteorological Authority (UNMA)
Meteorology	• Uganda National Meteorological Authority (UNMA)
Cross-cutting agencies	• Environmental Support Services Department (ESSD) • District Local Governments • Development Partners (DP) • Non-governmental Organizations (NGO) • Community Supported Organizations (CSO)

This volume also presents the results of the full funding requirement analysis. Using information on anticipated annual unit costs for each indicator and assuming a linear trajectory from all baseline levels to 2030 targets, the SIM reports the annual funding required to meet all indicator targets by 2030.

The results in this volume are presented at the subsector level; however the results still take into account the important links between subsectors. In order for the Sector to achieve 2030 goals in the most efficient manner possible, the various subsectors must first have well defined priorities within each subsector, and coordinate investments to best make use of the co-benefits available.

The remainder of this volume begins with an overview of the investment planning process and a description of funding allocation in the SIM. Next, investment plans from each of the nine subsectors are presented. Each investment plan contains information about indicator achievement and investment under three future scenarios.

3.2. INVESTMENT PLANNING METHODS

The SIM has two primary functions: to determine budget requirements needed to meet indicator targets, and to allocate limited funds to optimize indicator achievement. Both of these analyses incorporate assumptions on external trends such as population growth. This is an important aspect of the investment plans: many subsectors are providing services and resource on a per capita basis, meaning even with no improvement in the indicator score, additional funding is necessary to maintain current provision rates. Unit investment costs vary by catchment, as costs and impacts may vary spatially.

Another important aspect of the SIM framework is the modeling of co-benefits between subsector investments. Each indicator may be affected by several investments, and each investment may affect multiple indicators.

For a full discussion of the investment planning methods used to define the subsector investment plans that follow, please see Volume 4.

3.3. STRATEGIC SUBSECTOR INVESTMENT PLANS

The sections below detail the subsector investment plans for the nine subsectors of the Water and Environment Sector. Each section contains an introduction to the subsector and an explanation of the indicators included in the SSIP, a discussion of the funding requirements for the subsector to reach the 2030 targets, and the strategic investment plans for the subsector under three possible future scenarios.

3.3.1. RURAL WATER SUPPLY AND SANITATION

3.3.1.1. Introduction

As of the 2017 Water and Environment Sector Performance Report (MWE 2017), national safe water coverage for rural areas is estimated at 70 percent, up from 67 percent in June of the previous year. Access to basic rural sanitation has reached 80 percent by June 2017, above the 2014/2015 target of 77 percent coverage. Investments in key rural water supply technologies and further sanitation education programs are crucial to maintaining and improving this coverage. While coverage may have increased, functionality decreased to 85 percent in 2017 from 86 percent in 2016 and 88 percent in 2014.

Water is supplied through a variety of sources including water supply, boreholes, shallow wells, and protective springs, which make up 88 percent of the technology mix. The remaining 12 percent is supplied by piped systems and rainwater harvesting tanks. Future targets for water supply specify certain technologies. For example, a Vision 2040 goal is to have 100 percent of the

population with access to safe piped water by 2040, which will require additional funding. The SDGs do not explicitly require certain technologies, instead setting the goal as "safe and affordable drinking water" for 100 percent of the population by 2030. The strategic investment plan considers the technology mix employed when costing out increased coverage. The plan also weights the tradeoffs between efficiency of water provision technologies and equitable distribution of water provision, particularly in the context of rapid population growth of 3.05 percent in Uganda in 2016 (UBOS 2014).

The functions of the Rural Water Supply and Sanitation subsector are represented in the SIM by the five indicators presented in Table 3-2. The village water supply indicator is a presidential directive mandating one improved water source per village. Improved drinking water is defined as coverage by any water source (i.e. piped supply, boreholes, shallow wells, protected streams, and rainwater harvesting tanks). Safely managed drinking water represents piped water coverage.

TABLE 3-2. RURAL WATER SUPPLY AND SANITATION INDICATORS

		VILLAGE WATER SUPPLY	FUNCTIONAL RURAL WATER SOURCES	IMPROVED DRINKING WATER	SAFELY MANAGED DRINKING WATER	PER CAPITA INVESTMENT COST
BASELINE[1]		66%	85%	70%	7%	$32
TARGET[1]		100%	100%	100%	100%	$75
UNITS		villages	sources	people	people	USD
2018 UNIT COST (KUGX)		25,136	5,546	85	387	
INVESTMENTS	CAPITAL	Water Supply-Basic Water Supply-Piped	Water Source Repair-Rural	Water Supply-Basic Water Supply-Piped	Water Supply-Piped	*Reporting Indicator*
	O&M	Water Supply-Basic Water Supply-Piped	n/a	Water Supply-Basic Water Supply-Piped	Water Supply-Piped	
	REPLACEMENT	Water Supply-Basic Water Supply-Piped	n/a	Water Supply-Basic Water Supply-Piped	Water Supply-Piped	
	SOFTWARE	n/a	n/a	n/a	n/a	

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

3.3.1.2. Funding Requirements to Achieve Indicator Targets

Table 3-3 presents the annual funding requirement to reach the targets of the rural water supply subsector. A continuously growing population is one of the main drivers of funding requirement to achieve the indicators in the rural water supply subsector. Each year, the number of people represented by a one percent coverage increase is rising. This is reflected in the growing annual cost estimates across all indicators, as seen in Table 3-3 despite the assumption of a linear path

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from baseline to target in indicator terms. These figures do not include the impacts of benefits accruing across indicators for a given investment. An example of the shared benefits can be seen in the two water supply indicators (improved and safely managed drinking water), where under the benefits sharing 2030 trajectory model, there is no funding in basic water supply (i.e. shallow wells, boreholes, and protected springs) because by reaching the safely managed water supply goal of piped water to every household, the improved water indicator is also achieved and requires no additional funding. The majority of requirement is for capital investments, however O&M and replacements play an important role.

TABLE 3-3. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Rural Water Supply											Investment Type Mix			
	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
Village Water Supply	97	98	103	118	115	126	133	146	222	1,934	60%	20%	20%	0%
Functional rural water sources	23	24	25	26	27	28	29	30	37	382	100%	0%	0%	0%
Improved drinking water	170	171	179	207	199	218	231	254	390	3,386	58%	20%	22%	0%
Safely managed drinking water	913	981	1,055	1,142	1,216	1,307	1,398	1,498	2,075	18,717	86%	12%	2%	0%
Cost per Capita														
Note: These figures do not account for co-benefits between indicators														

Note in the table above, the costs for improved drinking water and safely managed drinking water pertain to the cost required to cover only the rural population. Additional funding is necessary to meet this goal for the urban population (see Table 3-6).

3.3.1.3. Strategic Allocation of Resources under Limited Funding

Indicators in the rural water supply subsector currently receive a relatively large share of the budget, and therefore the starting weights for these indicators are high and investment levels in the first several years are high. The 2030 preferences in the model put relatively less weight on these indicators, as seen in Figure 3-1, which causes a slow down in indicator achievement over time in the underfunding scenarios. However, the subsector continues to have one of the highest total weights in 2030. Note that the preferences shown in Figure 3-1 are only one input to the investment allocation algorithm and therefore do not direct correlate the share of funding received.

FIGURE 3-1. PREFERENCE WEIGHTS ON RURAL WATER SUPPLY AND SANITATION INDICATORS OVER TIME
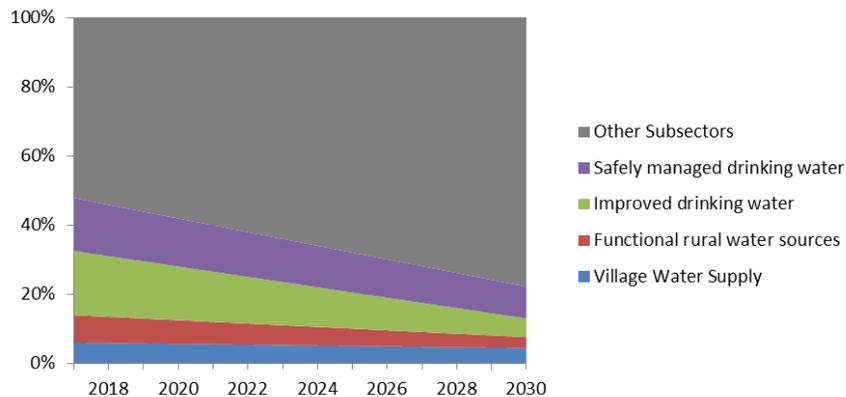
Unlike the full funding scenario, investment is still made in basic water supply in each underfunding scenario, particularly in the near term, as it is a less costly way to provide clean drinking water and results in progress in Indicators 1(village water supply) and 3 (improved water supply). Achievement of Indicator 4 (safely managed drinking water) is expensive relative to the other indicators and the gap between baseline and target is large; even the moderately high levels of investment across all years results in modest indicator achievement (10 percent in BAU and 35 percent in high funding, relative to 100 percent target).

FIGURE 3-2. RURAL WATER SUPPLY AND SANITATION SUBSECTOR INDICATOR FUNDING BY SCENARIO
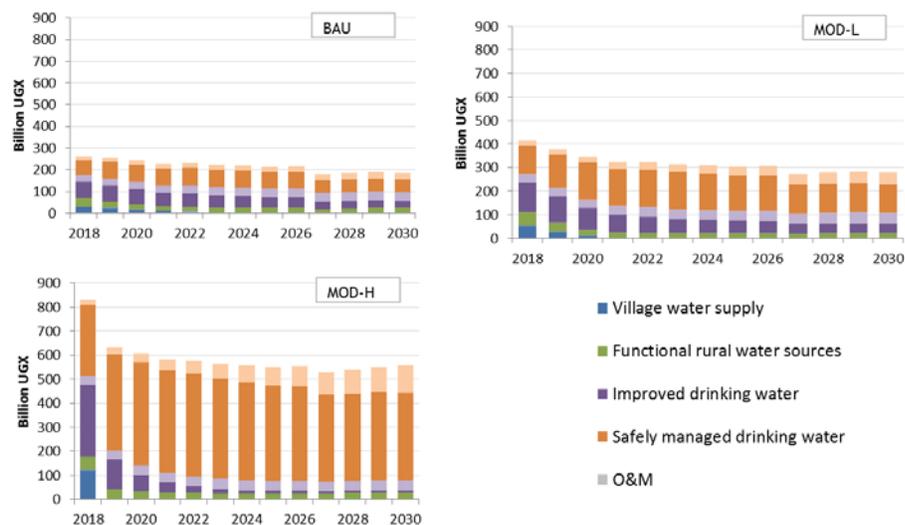
Note: Funding above does not include replacement costs for existing infrastructure.

FIGURE 3-3. RURAL WATER AND SANITATION SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
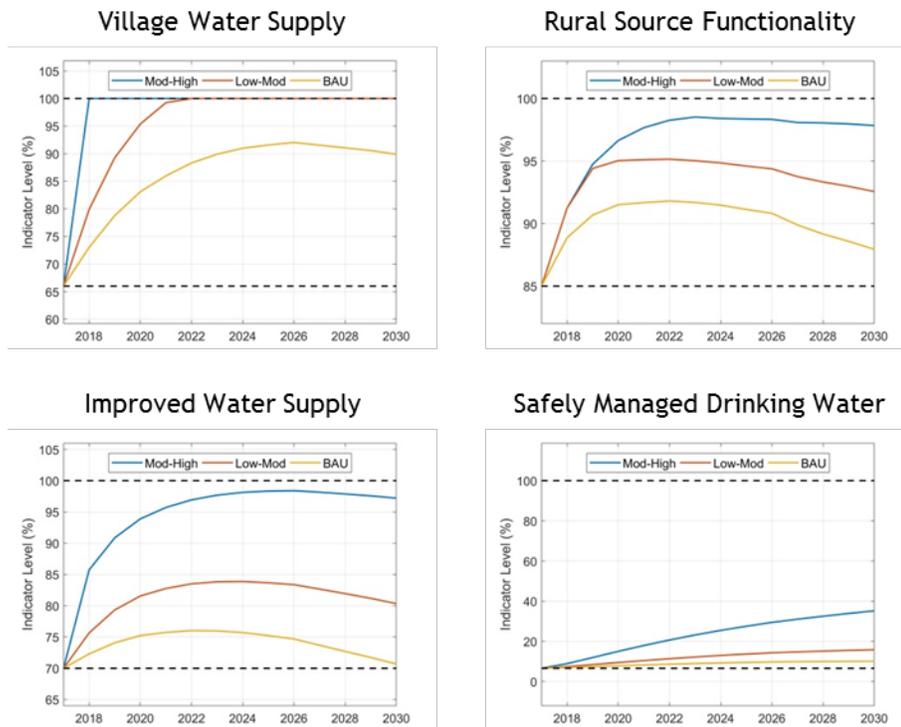
The distribution of investments in this subsector across space is primarily driven by population distribution however other factors such as variation in baseline coverage and existing capital requiring maintenance also determine funding allocation. As seen in Figure 3-4, per capita spending across all indicators in the subsector is highest in the north.

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FIGURE 3-4. RURAL WATER SUPPLY AND SANITATION AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
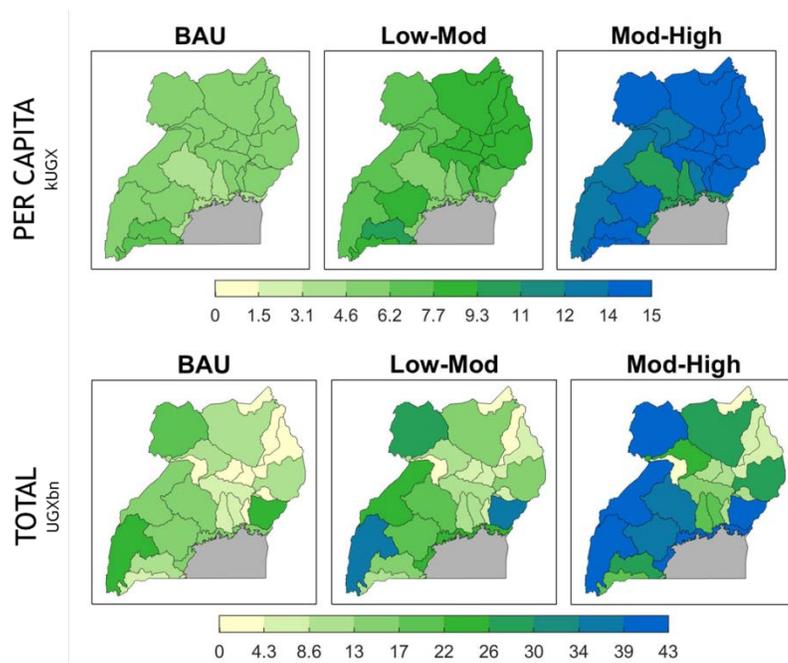
3.3.1.4. Subsector Planning Results Summary

Under all funding scenarios, achievement in village water supply is close to reaching 2030 targets. Rural water functionality and improved drinking water are relatively underachieveing in the BAU and Moderate-Low funding scenarios but get close to full achievement in the Moderate-High scenario. Due to its high cost and large gap between baseline and target, particularly in the face of a growing population, reaching the target for safely managed drinking water would require a higher level of funding than currently allocated in the Moderate-High funding scenario, either through an increase in total budget or an adjustment in Sector preferences.

TABLE 3-4. RURAL WATER SUPPLY AND SANITATION INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Village Water Supply	66%	73%	79%	83%	86%	88%	90%	91%	92%	90%	100%
Functional rural water sources	85%	89%	91%	92%	92%	92%	92%	91%	91%	88%	100%
Improved drinking water	70%	72%	74%	75%	76%	76%	76%	76%	75%	71%	100%
Safely managed drinking water	7%	7%	7%	8%	8%	9%	9%	9%	9%	10%	100%
Cost per Capita		$29	$34	$38	$42	$46	$49	$51	$54	$55	$75
Moderate Low Funding: 1200 UGXbn											
Village Water Supply	66%	80%	89%	95%	99%	100%	100%	100%	100%	100%	100%
Functional rural water sources	85%	91%	94%	95%	95%	95%	95%	95%	95%	93%	100%
Improved drinking water	70%	76%	79%	82%	83%	84%	84%	84%	84%	80%	100%
Safely managed drinking water	7%	7%	8%	9%	10%	11%	12%	13%	14%	16%	100%
Cost per Capita		$30	$38	$47	$54	$59	$62	$65	$67	$69	$75
Moderate High Funding: 2400 UGXbn											
Village Water Supply	66%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Functional rural water sources	85%	91%	95%	97%	98%	98%	99%	98%	98%	98%	100%
Improved drinking water	70%	86%	91%	94%	96%	97%	98%	98%	98%	97%	100%
Safely managed drinking water	7%	9%	12%	15%	18%	21%	23%	25%	28%	35%	100%
Cost per Capita		$30	$60	$74	$85	$91	$95	$98	$99	$99	$75

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3.3.2. URBAN WATER SUPPLY AND SEWERAGE

3.3.2.1. Introduction

While percent safe water coverage in rural areas has increased over the past year, urban water supply has stagnated at 71 percent. Urban Water and Sewerage faces many of the same challenges as the rural water supply, with the additional pressure of population growth in urban areas due to urbanization and reclassification of rural areas to urban centers. At the same time, the goals for urban improved water supply follow a more aggressive schedule, with 100 percent coverage targeted by 2020. This would also achieve the SDG of 100 percent coverage by 2030.

The functions of the Urban Water Supply and Sanitation subsector are represented in the SIM by the four indicators presented in Table 3-5. Note that two of these indicators (improved drinking water and safely managed drinking water) are shared with the rural water supply subsector.

TABLE 3-5. URBAN WATER SUPPLY AND SEWERAGE INDICATORS

INDICATOR		IMPROVED DRINKING WATER	SAFELY MANAGED DRINKING WATER	PER CAPITA INVESTMENT COST	URBAN WATER SERVICE FUNCTIONALITY
BASELINE[1]		**70%**	**7%**	**$32**	**92%**
TARGET[1]		**100%**	**100%**	**$75**	100%
UNITS		people	people	USD	sources
2018 UNIT COST (KUGX)		85	387	*Reporting Indicator*	8,298
INVESTMENTS	Capital	Water Supply-Piped	Water Supply-Piped		Water Source Repair-Urban
	O&M	Water Supply-Piped	Water Supply-Piped		n/a
	Replacement	Water Supply-Piped	Water Supply-Piped		n/a
	Software	n/a	n/a		n/a

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

3.3.2.2. Funding Requirements to Achieve Indicator Targets

As is the case in the rural water supply subsector, the safely managed drinking water indicator is the most costly to achieve. Also, as in the rural supply subsector, the full funding requirement to reach subsector goals is less than the sum of these three costs because meeting the safely managed drinking water target will also meet the improved drinking water target.

TABLE 3-6. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Urban Water Supply	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Investment Type Mix			
											Capital	O&M	Replace	Software
Improved drinking water	38	39	40	47	45	49	52	57	88	763	58%	20%	22%	0%
Safely managed drinking water	206	221	238	257	274	294	315	337	467	4,216	86%	12%	2%	0%
Cost per Capita														
Urban water service functionality	5	6	6	6	6	6	7	7	8	87	100%	0%	0%	0%

Note: These figures do not account for co-benefits between indicators

As noted in the rural water supply investment plan, the responsibility for improved drinking water and safely managed drinking water is shared between the urban and rural water supply subsectors. The investment needs above are the costs required to cover the urban population. Additional funding is necessary to meet this goal for the rural population (see Table 3-3).

3.3.2.3. Strategic Allocation of Resources under Limited Funding

Indicators in the urban water supply subsector currently receive a relatively large share of the budget, and therefore the starting weights for these indicators are high and investment levels in the first several years are large. The 2030 preferences in the model put relatively less weight on these indicators, as seen in Figure 3-5, which causes a slow down in indicator achievement over time in the underfunding scenarios. Note that the preferences shown in Figure 3-5 are only one input to the investment allocation algorithm and therefore do not direct correlate the share of funding received.

FIGURE 3-5. PREFERENCE WEIGHTS ON URBAN WATER SUPPLY AND SANITATION INDICATORS OVER TIME
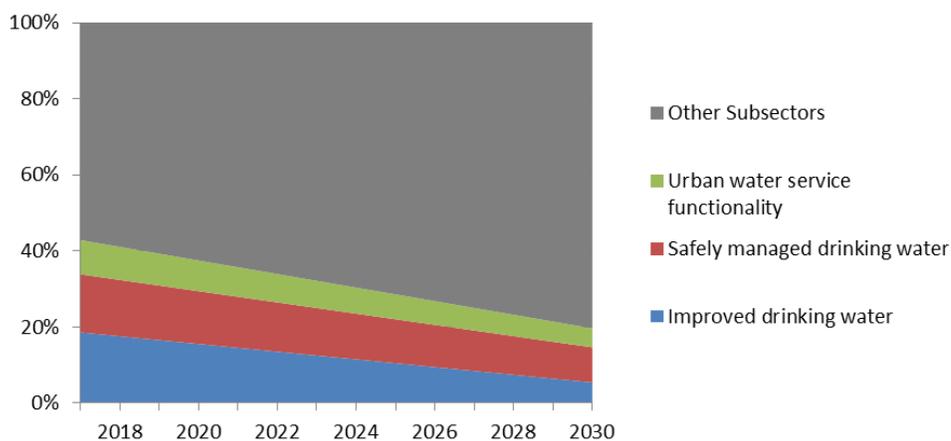
Investment in urban water supply indicators remains relatively constant over time in the BAU and Moderate-Low funding scenarios. Although the relative preference to the subsector diminishes over time, the rapidly growing population causes a growing gap between current achievement and target levels in the two lowest funding scenarios, which brings investment back into the subsector. In all scenarios, capital investment levels stay relatively constant across time, however increasing shares of O&M and replacement are needed to maintain existing infrastructure.

FIGURE 3-6.   URBAN WATER SUPPLY AND SEWERAGE SUBSECTOR INDICATOR FUNDING BY SCENARIO
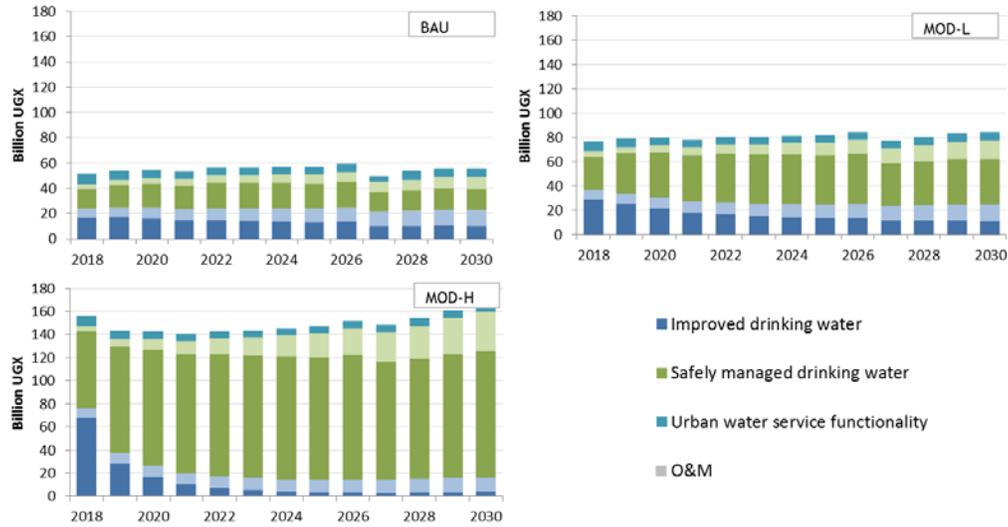
Note: Funding above does not include replacement costs for existing infrastructure.

FIGURE 3-7.   URBAN WATER AND SEWERAGE SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
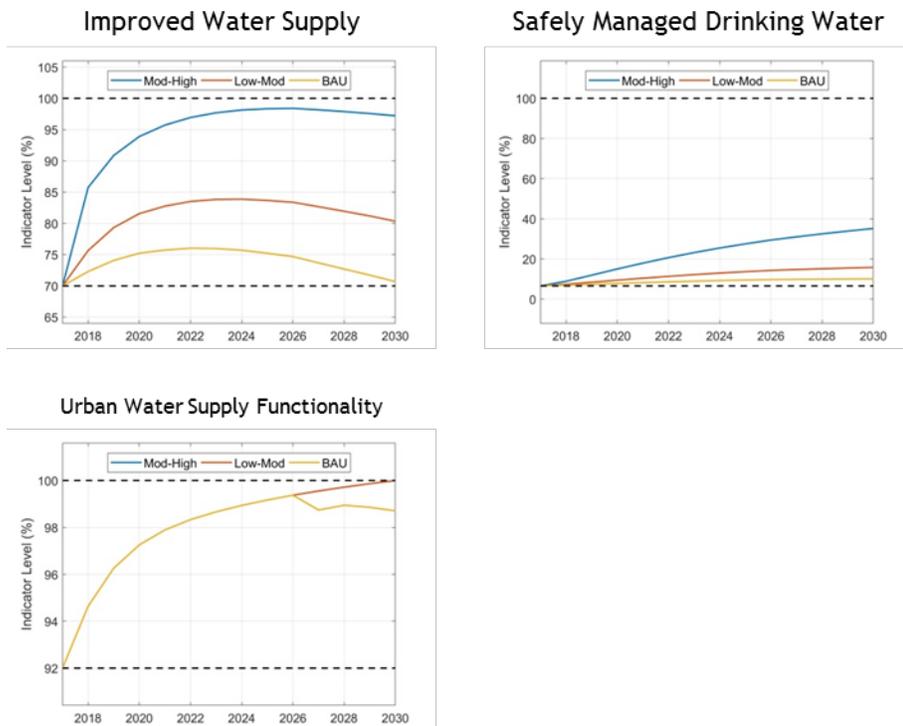
Figure 3-8 shows the distribution of investments in this subsector over 23 catchments, including both capital and O&M costs. Funding requirements per capita over space are concentrated in

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areas with high urban populations where either existing infrastructure needs to be maintained or where capital investment is made to close the achievement gap under each funding scenario.

FIGURE 3-8. URBAN WATER SUPPLY AND SEWERAGE AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
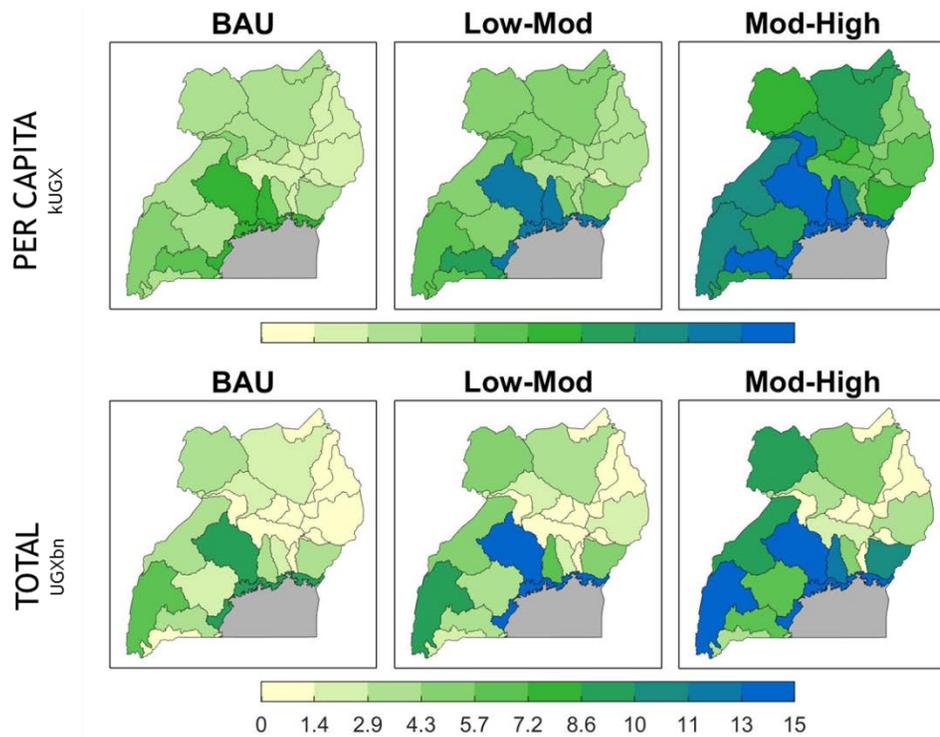
3.3.2.4. Subsector Planning Results Summary

Table 3-7 shows that current funding levels will likely be enough to reach the water source functionality goal however even a tripling of the current budget will not be adequate to meet the safely managed drinking water target. Without continue high levels of investment, the subsector will not be able to achieve its goals due to rapid population growth and urbanization.

TABLE 3-7. URBAN WATER SUPPLY AND SEWERAGE INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Improved drinking water	70%	72%	74%	75%	76%	76%	76%	76%	75%	71%	100%
Safely managed drinking water	7%	7%	7%	8%	8%	9%	9%	9%	9%	10%	100%
Cost per Capita		$29.24	$33.54	$38.06	$42.24	$45.65	$48.78	$51.38	$53.64	$55.02	$0
Urban water service functionalit	92%	95%	96%	97%	98%	98%	99%	99%	99%	99%	100%
Moderate Low Funding: 1200 UGXbn											
Improved drinking water	70%	76%	79%	82%	83%	84%	84%	84%	84%	80%	100%
Safely managed drinking water	7%	7%	8%	9%	10%	11%	12%	13%	14%	16%	100%
Cost per Capita		$29.52	$38.03	$46.71	$53.78	$58.71	$62.44	$65.12	$67.31	$69.30	$0
Urban water service functionalit	92%	95%	96%	97%	98%	98%	99%	99%	99%	100%	100%
Moderate High Funding: 2400 UGXbn											
Improved drinking water	70%	86%	91%	94%	96%	97%	98%	98%	98%	97%	100%
Safely managed drinking water	7%	9%	12%	15%	18%	21%	23%	25%	28%	35%	100%
Cost per Capita	$0.00	$29.99	$59.68	$74.16	$84.57	$91.12	$95.33	$97.84	$99.34	$99.24	$0
Urban water service functionalit	92%	95%	96%	97%	98%	98%	99%	99%	99%	100%	100%

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3.3.3. SANITATION AND HYGIENE

3.3.3.1. Introduction

The sanitation and hygiene subsector is a joint effort across a number of Ministries, as defined in the Sanitation Memorandum of Understanding (GoU 2011). Indicators such as the percent of people with access to improved sanitation and hand-washing facilities have increased moderately in recent years (from 70 to 80 percent of the rural population and 77 to 85.5 percent of the urban population, MWE 2017). An estimated 37 percent of the rural population and 40 percent of the urban population have access to a facility for handwashing as of 2017 (MWE 2017). The costs of poor sanitation in Uganda are inequitably distributed with the highest economic burden falling disproportionately on the poorest (Mutano et al. 2015). MWE requires the necessary funding to fulfill its obligations so that the group of ministries can achieve their common goals (e.g., faecal sludge management and educational campaigns for safe sanitation behaviors). Similar to the water supply subsectors, distributional equity will be an important consideration of this investment plan. Increased investments in sanitation and hygiene promotion are required not only to realize health and welfare benefits of sanitation but also to avert large economic losses.

As in many other subsectors, interagency coordination is key to the success of the Sanitation and Hygiene subsector. The relationship between the MWE and Urban City Councils like Kampala Capital City Authority (KCCA), who manage urban storm water drainage and solid waste management, is also key for the sanitation sub sector. MWE will need to work with urban local government to address the lack of treatment and disposal facilities. Most urban centers also have poor or unmaintained drainage networks. This problem is further compounded by indiscriminate dumping of solid waste in the drains causing silting and flooding.

The sanitation and hygiene subsector is represented in the sector strategic investment planning process by the five indicators described in Table 3-8. Note that improved sanitation refers to access to private facilities and safely managed sanitation refers to the manner in which the facility is maintained.

TABLE 3-8. SANITATION AND HYGIENE INDICATORS

INDICATOR		SOLID WASTE DISPOSAL	IMPROVED SANITATION	SAFELY MANAGED SANITATION	HANDWASHING AT HOME	HANDWASHING AT SCHOOL
BASELINE[1]		68%	19%	9%	37%	35%
TARGET[1]		90%	100%	100%	90%	90%
UNITS		tonnes	people	people	people	students
2018 UNIT COST (KUGX)		256	20	190	20	20
INVEST	CAPITAL	Solid Waste Disposal	Fecal Sludge Management	Fecal Sludge Management	n/a	n/a
	O&M	n/a	Fecal Sludge	Fecal Sludge	n/a	n/a

INDICATOR	SOLID WASTE DISPOSAL	IMPROVED SANITATION	SAFELY MANAGED SANITATION	HANDWASHING AT HOME	HANDWASHING AT SCHOOL
		Management	Management		
REPLACEMENT	n/a	n/a	n/a	n/a	n/a
SOFTWARE	n/a	Basic Sanitation Campaign	Safely Managed Sanitation Campaign	Home Handwashing Campaign	School Handwashing Campaign

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

3.3.3.2. Funding Requirements to Achieve Indicator Targets

As is the case in the water supply subsectors, funding requirements in the sanitation subsector are heavily influenced by population growth. This subsector also includes investments in a number of software, or capacity building costs and less investment in capital infrastructure, as much of the responsibility for infrastructure development, such as latrines or handwashing supplies falls on individuals and communities and is not funded by the subsector.

TABLE 3-9. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Sanitation and Public Health											Investment Type Mix			
	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
Solid waste disposal	15	10	10	11	11	11	12	12	13	156	100%	0%	0%	0%
Improved Sanitation	158	168	177	187	198	209	220	232	301	2,912	67%	0%	0%	33%
Safely managed sanitation	695	744	795	848	904	962	1,023	1,087	1,453	13,557	82%	7%	0%	11%
Handwashing at home	116	122	129	135	143	150	158	166	212	2,084	67%	0%	0%	33%
Note: These figures do not account for co-benefits between indicators														

3.3.3.3. Strategic Allocation of Resources under Limited Funding

Currently the sanitation subsector receives about 20 percent of the overall sector budget. The 2030 preferences give relatively less weight to the indicators in this subsector.

FIGURE 3-9. PREFERENCE WEIGHTS ON SANITATION INDICATORS OVER TIME

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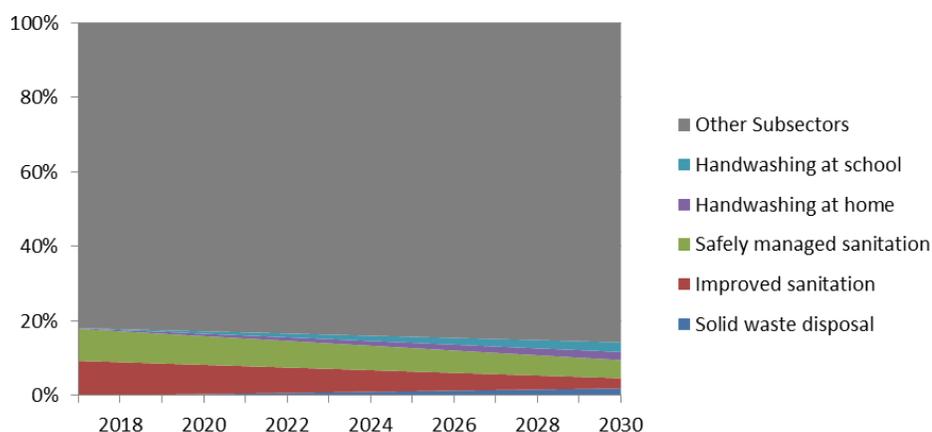
As seen in Figure 3-10, improved sanitation investments are also substituted with safely managed sanitation investments over time, as increases in safely managed coverage directly results in increases in improved coverage. As the improved coverage achievements near the target, funding allocation is transferred to other indicators, including safely managed sanitation, which continue to have a large gap between achievement and target levels at all modeled funding levels.

FIGURE 3-10. SANITATION SUBSECTOR INDICATOR FUNDING BY SCENARIO
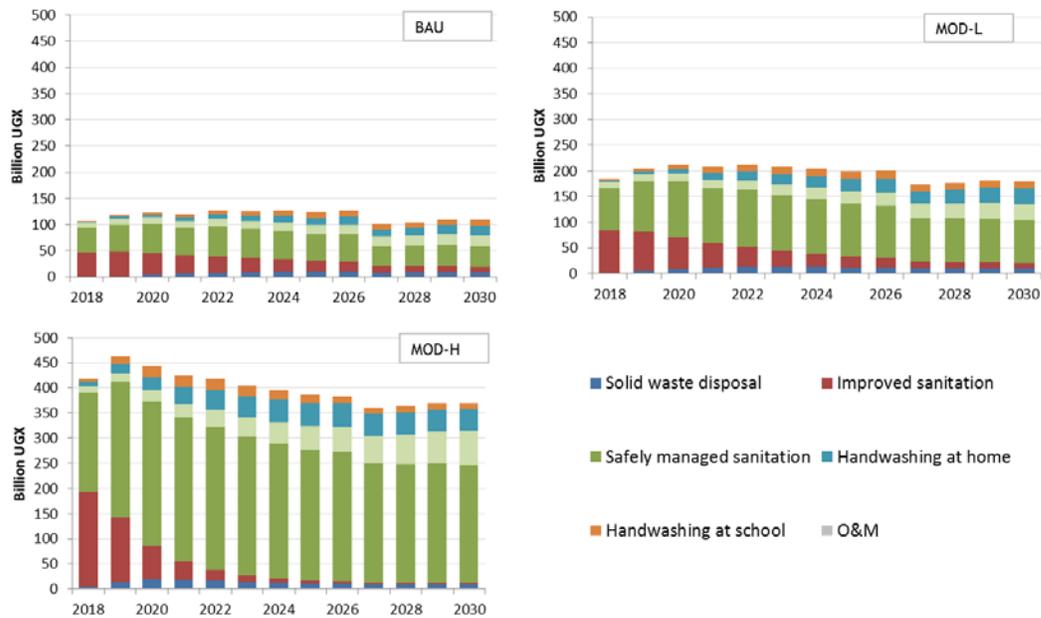
FIGURE 3-11. SANITATION AND HYGIENE SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE
AND TARGET LEVELS
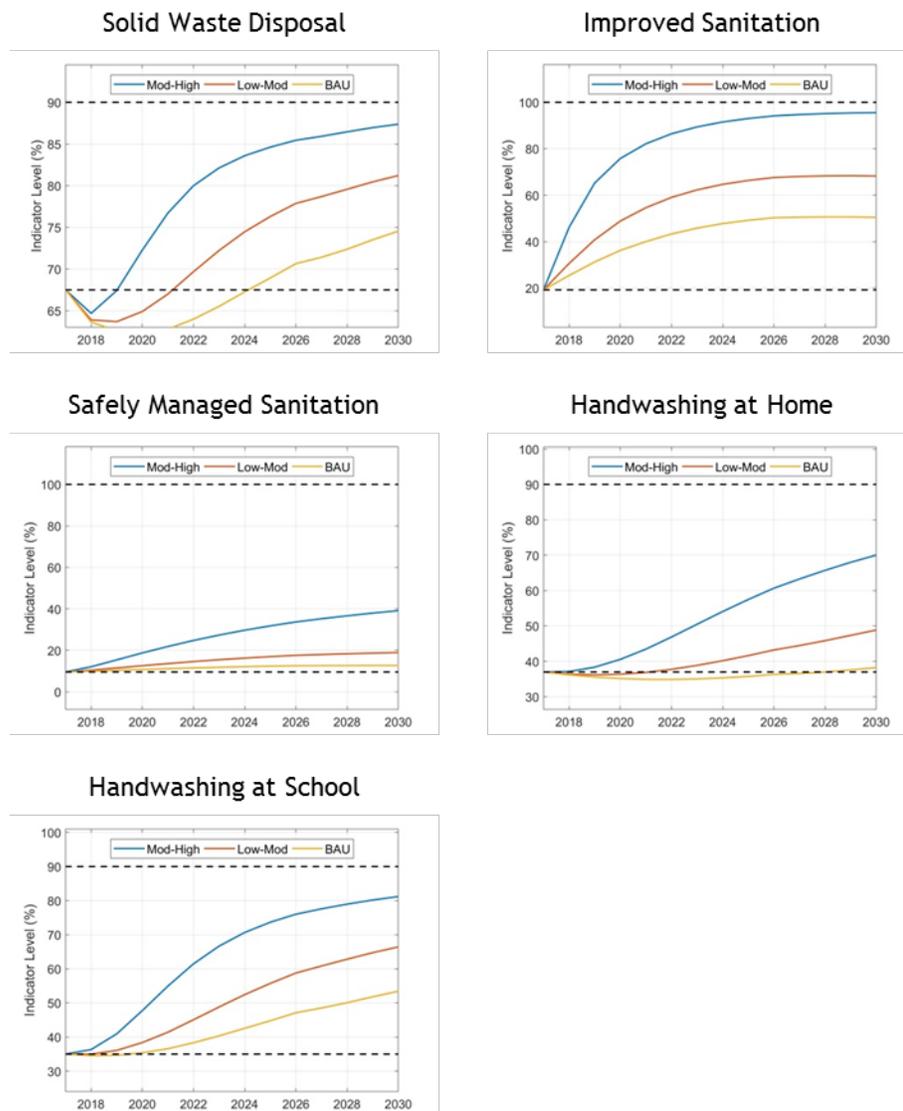
Under the BAU scenario, the solid waste disposal and handwashing at school indicators are able to close about half of the gap between baseline and target levels. Handwashing at home, improved sanitation, and safely managed sanitation close less than half of their gaps. Between the Moderate-High and Moderate-Low funding scenarios, which represents a doubling of budget, the gap closure more than doubles. In the Moderate-High scenario, as other indicators approach target levels, more funds become available for currently underachieving indicators.

Baseline information for the sanitation indicators is not available at a spatially disaggregated level therefore the per capita spending is relatively unvaried across space. The exception being catchments with large towns, which receive funding for solid waste disposal in urban areas, while rural catchments do not.

FIGURE 3-12. SANITATION AND HYGIENE AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
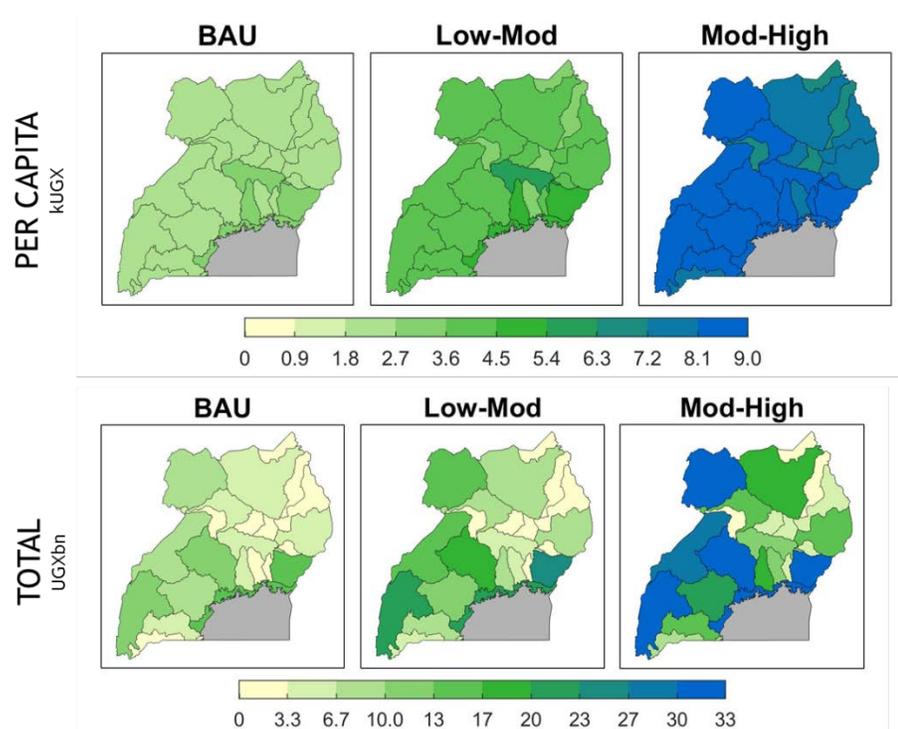
3.3.3.4. Subsector Planning Results Summary

Given the large achievement gaps currently facing the sanitation subsector, a substantial increase in funding is necessary to reach 2030 targets, particularly for safely managed sanitation. Less expensive indicators such as handwashing and home and school do approach the target levels by 2030 in the Moderate-High funding scenario, but because of the low preference weights assigned to these indicators in favor of other measures, they significantly underachieve in the BAU scenario.

TABLE 3-10. SANITATION INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Solid waste disposal	68%	64%	63%	62%	63%	64%	66%	67%	69%	75%	90%
Improved Sanitation	19%	25%	31%	36%	40%	43%	46%	48%	49%	50%	100%
Safely managed sanitation	10%	10%	10%	11%	11%	12%	12%	12%	12%	13%	100%
Handwashing at home	37%	36%	36%	35%	35%	35%	35%	35%	36%	38%	90%
Handwashing at school	35%	35%	35%	35%	37%	38%	40%	43%	45%	53%	90%
Moderate Low Funding: 1200 UGXbn											
Solid waste disposal	68%	64%	64%	65%	67%	70%	72%	74%	76%	81%	90%
Improved Sanitation	19%	31%	41%	49%	55%	59%	62%	65%	66%	68%	100%
Safely managed sanitation	10%	10%	12%	13%	14%	15%	15%	16%	17%	19%	100%
Handwashing at home	37%	36%	36%	36%	37%	38%	39%	40%	42%	49%	90%
Handwashing at school	35%	35%	36%	38%	41%	45%	49%	52%	56%	66%	90%
Moderate High Funding: 2400 UGXbn											
Solid waste disposal	68%	65%	67%	72%	77%	80%	82%	84%	85%	87%	90%
Improved Sanitation	19%	46%	65%	76%	82%	86%	89%	92%	93%	96%	100%
Safely managed sanitation	10%	12%	15%	19%	22%	25%	27%	30%	32%	39%	100%
Handwashing at home	37%	37%	38%	41%	43%	47%	50%	54%	57%	70%	90%
Handwashing at school	35%	36%	41%	48%	55%	61%	67%	71%	74%	81%	90%

3.3.4. WATER FOR PRODUCTION

3.3.4.1. Introduction

Water for Production (WfP) includes water supply to industry and services, as well as irrigation and livestock water provision. While some industries self-supply water, it would be beneficial to increase MWE's capacity and ability to serve all customers in order to facilitate management of water resources. Expanded irrigation coverage as proposed in the national Irrigation Master Plan (MWE 2011) and the Agriculture Sector Investment Strategy (MAAIF 2011), has the benefit of improved crop yields, improving income for farmers and increasing available food supply. There is also a secondary benefit of protecting wetlands by moving irrigated crops from wetlands to upland areas equipped with irrigation infrastructure. Similarly, livestock water production improves livestock yields and moves livestock out of riverbed, improving downstream water quality. These water quality benefits can also be realized with improved water harvesting and sustainable land use policies in rainfed areas.

At the time of the 2016 Sector Performance Report, MWE had 37.2 MCM of storage capacity for Water for Production and a goal of between 28 and 55 MCM by 2040, emphasizing the construction of large and small scale water schemes for irrigation, livestock and rural industries (GoU NDPII). However, total volume added by investments in the area in FY 2016/2017 was 1,680,000 m^3 compared to 5,845,000 m^3 of volume in FY 2015/2016. The area of irrigated land in Uganda is targeted to increase sevenfold in the next twenty years. This will require strategic planning to make sure new and expanded irrigation schemes are in the most advantageous areas, and that the hydrology of the region supports the plans. This may be accomplished by an agriculture value chain approach, as proposed in the NDP II. Careful collaboration between the responsible agencies (e.g. MWE, MAAIF, and the Ministry of Local Government) is a particularly important consideration in this subsector.

The water of production subsector is represented by indicators covering irrigation, water for production source functionality, and storage capacity, as seen in Table 3-11. WfP subsector irrigation investments include construction headworks and primary and secondary canals.

TABLE 3-11. WATER FOR PRODUCTION INDICATORS

	INDICATOR	IRRIGATION	WFP FUNCTIONALITY	STORAGE CAPACITY
BASELINE[1]		**0.49%**	**85%**	**38.87 MCM**
TARGET[1]		4%	100%	**163.67 MCM**
UNITS		hectares	sources	MCM (million cubic meters)
2018 UNIT COST (KUGX)		43,545	32,913	19,578,654
INVESTMENTS	CAPITAL	Irrigation	Water Source Repair-WfP	Storage
	O&M	Irrigation	n/a	Storage
	REPLACEMENT	Irrigation	n/a	Storage
	SOFTWARE	n/a	Water for Production Local Training	n/a

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

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3.3.4.2. Funding Requirements to Achieve Indicator Targets

Unlike the sanitation and water supply subsector indicators, the majority of water for production indicators are not directly tied to population growth. WfP sources are assumed to grow in proportion to population to keep up with growing demand however irrigation and storage targets are fixed over time. This results in a constant spending trend assumption in the full funding scenario as shown in Table 3-12. The majority of the requirement is in capital investments; however replacement and O&M do also play a role. Note that no O&M for irrigation is included in the costs as this cost is intended to be the responsibility of the farmers benefiting from the initial investment.

TABLE 3-12. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Water for Production											Investment Type Mix			
	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
Irrigation	381	381	381	381	381	381	381	381	381	4,955	92%	0%	8%	0%
WfP functionality	3	3	3	3	3	3	3	4	4	44	78%	0%	0%	22%
Storage Capacity	218	221	225	229	233	236	240	244	262	3,119	77%	17%	6%	0%
Note: These figures do not account for co-benefits between indicators														

3.3.4.3. Strategic Allocation of Resources under Limited Funding

The preference weights for water for production indicators grow over time, leading to an increasing trend in funding within the sector over time across all scenarios. There is a slight drop in funding amounts in the high scenario as these indicators reach their targets, freeing up funds for other subsectors.

FIGURE 3-13. PREFERENCE WEIGHTS ON WATER FOR PRODUCTION INDICATORS OVER TIME
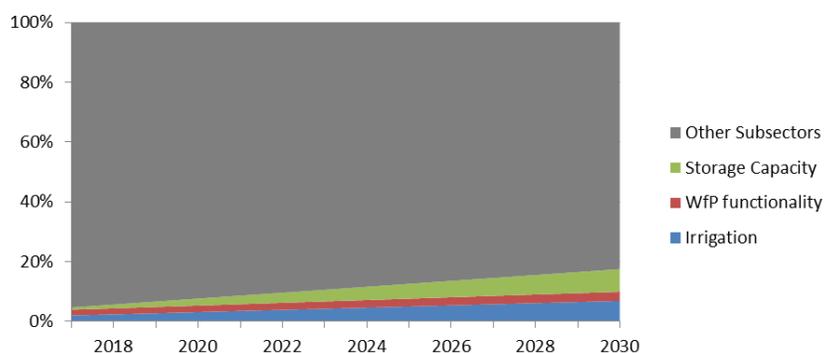
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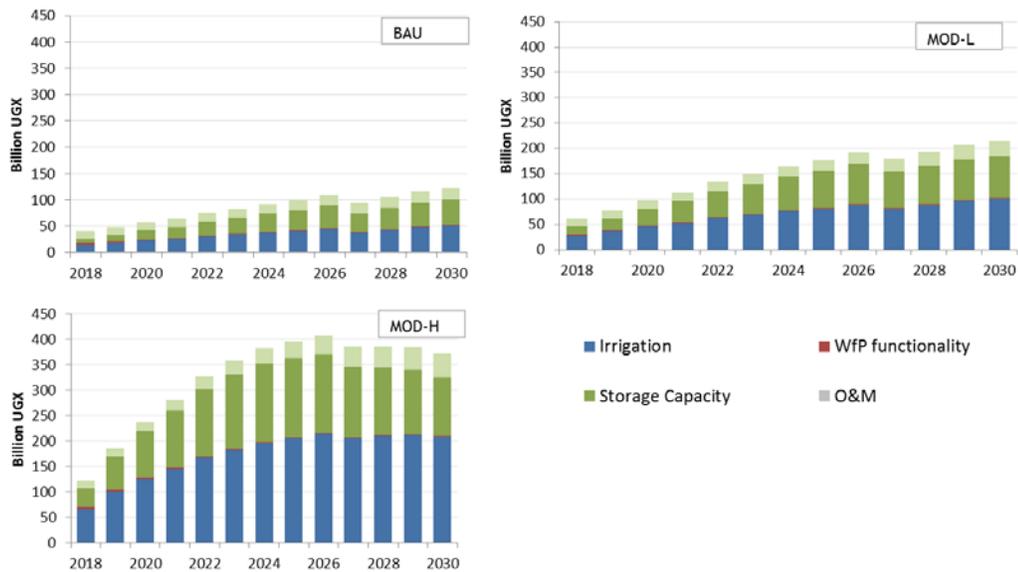
Note: Funding above does not include replacement costs for existing infrastructure.

Under all three underfunding scenarios, irrigation and storage capacity miss their targets. Water for production functionality, which is a relatively inexpensive indicator, reaches the target in all three scenarios.

FIGURE 3-15. WATER FOR PRODUCTION SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
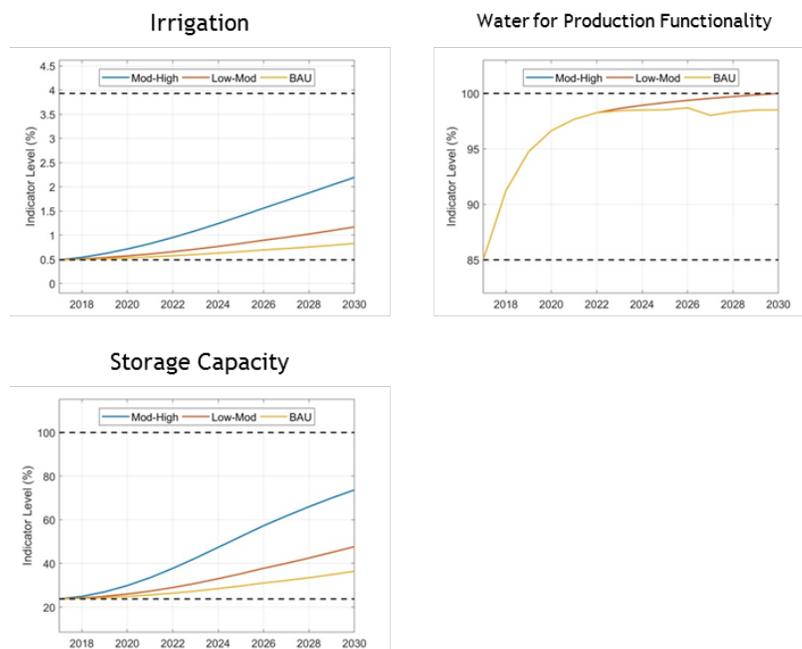
Funding is distributed over space a seen in Figure 3-16. Areas with existing irrigation infrastructure receive the most funding both to cover O&M for existing schemes and promote expansion.

FIGURE 3-16. WATER FOR PRODUCTION AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
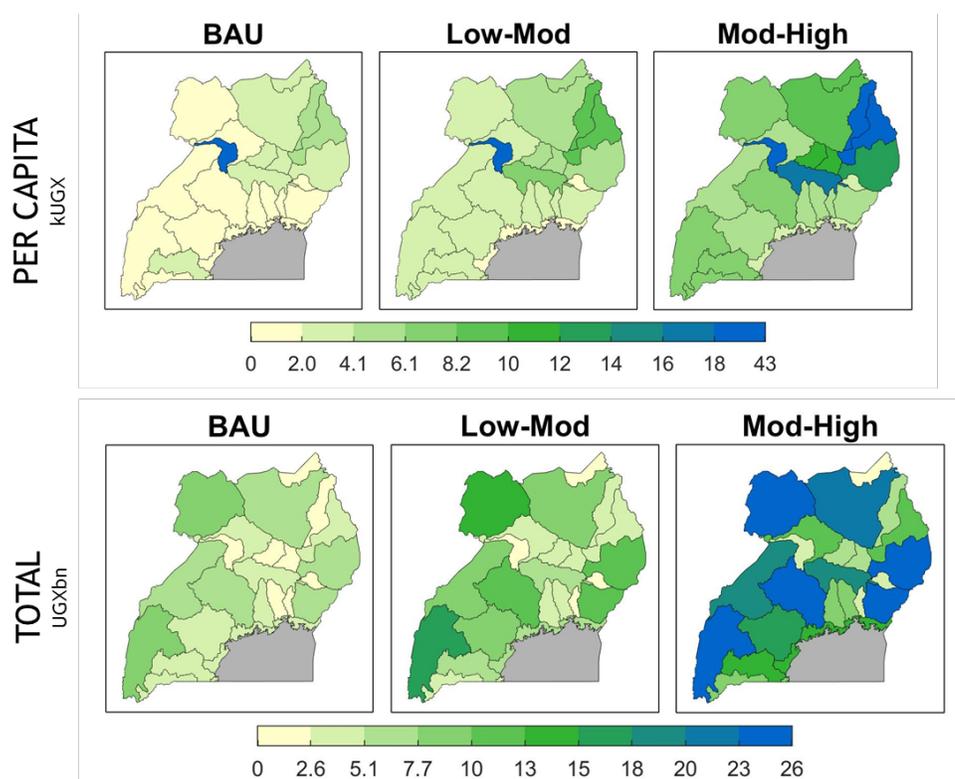
3.3.4.4. Subsector Planning Results Summary

While source functionality is easily achieved with existing funding levels, both irrigation and storage capacity require more than tripling of funding to achieve 2030 targets. Alternatively, a shifting of sector priorities further towards these indicators would increase achievement for these indicators.

TABLE 3-13. WATER FOR PRODUCTION INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Irrigation	0.49%	0.50%	0.52%	0.53%	0.55%	0.57%	0.60%	0.63%	0.66%	0.83%	4%
WfP functionality	85%	91%	95%	97%	98%	98%	98%	99%	99%	99%	100%
Storage Capacity	38.9	39.3	39.9	40.8	41.8	43.2	44.8	46.6	48.6	59.6	163.67
Moderate Low Funding: 1200 UGXbn											
Irrigation	0.49%	0.51%	0.54%	0.57%	0.61%	0.66%	0.71%	0.77%	0.83%	1.17%	4%
WfP functionality	85%	91%	95%	97%	98%	98%	99%	99%	99%	100%	100%
Storage Capacity	38.9	39.6	40.8	42.6	44.7	47.4	50.5	54.0	57.8	78.1	163.67
Moderate High Funding: 2400 UGXbn											
Irrigation	0.49%	0.54%	0.62%	0.71%	0.82%	0.95%	1.09%	1.24%	1.40%	2.19%	4%
WfP functionality	85%	91%	95%	97%	98%	98%	99%	99%	99%	100%	100%
Storage Capacity	38.9	40.8	44.1	48.9	54.8	61.8	69.5	77.6	85.7	120.6	163.67

3.3.5. WATER RESOURCE MANAGEMENT

3.3.5.1. Introduction

Water resource management is critical to the success of all other subsectors. Reliable and sufficient water availability and quality are imperative to meeting many of the SDGs. Indicators for the Water Resource Management sector have evolved over time, but indicators focus on the percent of water abstraction and discharge permit holders complying with permit conditions (MWE 2017). From FY 2015/2016 to FY 2016/2017, there was an increase in percent compliance from 74 to 75 percent for surface water abstraction and 56 to 59 for wastewater discharge. For groundwater extraction and drilling, these numbers decreased slightly, from 74 to 71 percent and 90 to 89 percent, respectively. As a whole, several sectors have begun to have a significant impact on water quality: pollution from urban expansion and industry, particularly the oil industry; bacterial contamination from poor sanitation; run-off of agricultural nutrients; and pollution from aquaculture.

As Uganda's economy and population have grown, several significant water resources issues have become apparent. Although overall water availability remains high, there have been recurrent droughts and local water shortages. The envisaged expansion of irrigation could substantially impair the hydrological balance and the environment unless a strategic and regulatory approach is taken. Likewise, unmanaged intensification and expansion of rainfed farming will increasingly contribute to the deterioration of land and water resources in many catchments. Perhaps most importantly, the climate is expected to become warmer and less predictable in the coming years, with more frequent and pronounced extreme events such as floods and droughts bearing consequences for water availability and quality.

The investment planning process includes five indicators from the water resources management subsector, shown in Table 3-14.

TABLE 3-14. WATER RESOURCE MANAGEMENT INDICATORS

	INDICATOR	COMPLIANCE WITH WATER STANDARDS	PERMIT COMPLIANCE	WASTEWATER TREATMENT	AMBIENT WATER QUALITY	LEVEL OF WATER STRESS
	BASELINE[1]	61%	71%	20%	0%	*Low*
	TARGET[1]	90%	90%	60%	100%	*High*
	UNITS	water samples	permits	people	tonnes of BOD	
	2018 UNIT COST (KUGX)	495,881	32,211	387	13,058	
INVESTMENTS	CAPITAL	Drinking Water Samples	n/a	Wastewater Treatment	Wetlands Restoration Forest Rehabilitation Wastewater Treatment	*Reporting Variable*
	O&M	n/a	n/a	Wastewater Treatment	Wetlands Restoration Forest Rehabilitation	

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INDICATOR	COMPLIANCE WITH WATER STANDARDS	PERMIT COMPLIANCE	WASTEWATER TREATMENT	AMBIENT WATER QUALITY	LEVEL OF WATER STRESS
				Wastewater Treatment	
REPLACEMENT	n/a	n/a	Wastewater Treatment	n/a	
SOFTWARE	n/a	Permit Compliance Monitoring[2]	n/a	n/a	

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

[2]Note although listed as a software cost, permit compliance monitoring does include some investment for monitoring equipment.

3.3.5.2. Funding Requirements to Achieve Indicator Targets

The water resources management indicators require investments across several subsectors. For example, there are important shared benefits between investments in ecosystem protection (i.e. wetlands and forest rehabilitation) and ambient water quality. The costs of achieving the water quality target in isolation are likely more expensive than would be politically feasible to fund; however the same investments produce benefits in wetlands coverage and forest coverage making the total benefits of these types of investments more in line with the costs.

TABLE 3-15. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Water Resources Management											Investment Type Mix			
	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
Compliance with water standards	19	19	20	21	22	23	24	25	31	319	100%	0%	0%	0%
Permit compliance	4	4	4	5	5	5	5	5	7	68	67%	0%	0%	33%
Wastewater treatment	654	695	737	782	829	878	930	984	1,292	12,306	78%	16%	6%	0%
Ambient water quality	1,832	1,867	1,903	1,939	1,975	2,011	2,047	2,083	2,263	26,612	88%	12%	0%	0%
Water Stress														
Note: These figures do not account for co-benefits between indicators														

3.3.5.3. Strategic Allocation of Resources under Limited Funding

Water resources management indicators benefit in this strategic plan from increasing relative preference weights. It is common in developing economies to shift priorities towards water resource and ecosystem protection over time as basic human services (i.e. clean water provision and sanitation) are met.

FIGURE 3-17. PREFERENCE WEIGHTS ON WATER RESOURCES MANAGEMENT INDICATORS OVER TIME
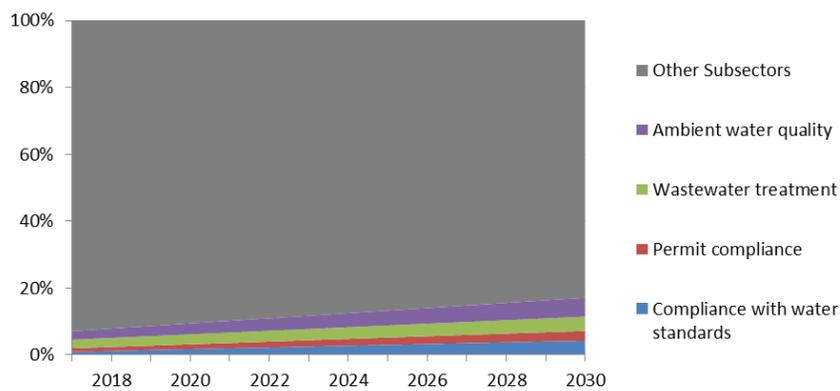
Investment in this subsector grows over time in all three scenarios, particularly in the Moderate-High funding scenario, where funds from other subsectors nearing their targets before 2030 become available for these indicators. O&M in this subsector includes both wastewater treatment capital maintenance, and annual regulatory and enforcement activities on rehabilitated ecosystems.

FIGURE 3-18. WATER RESOURCES MANAGEMENT SUBSECTOR INDICATOR FUNDING BY SCENARIO
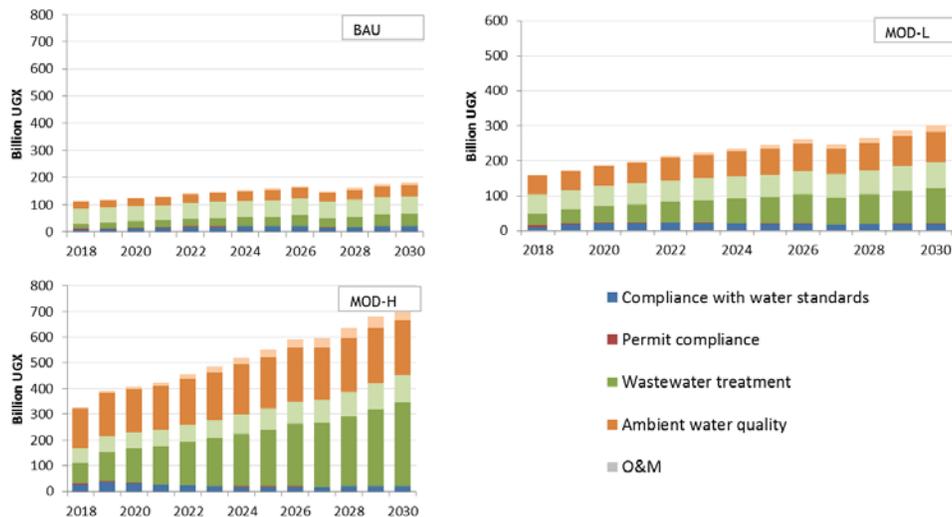
Note: Funding above does not include replacement costs for existing infrastructure.

Despite the growing budgets for these indicators, significant gaps in achievement remain, even in the Moderate-High funding scenario for wastewater treatment and ambient water quality. Permitting and drinking water sample compliance are relatively inexpensive and meet or nearly meet the target at least in the Moderate-High funding scenario. Ambient water quality and wastewater treatment are significantly more expensive to achieve.

FIGURE 3-19. WATER RESOURCES MANAGEMENT SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
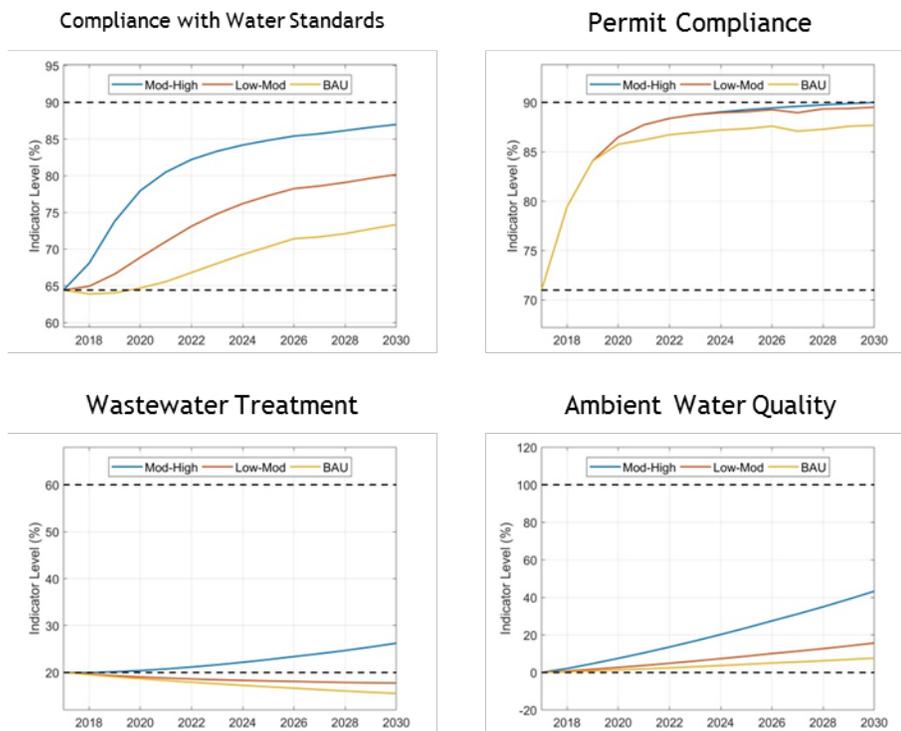
The demand for wastewater treatment grows over time with population. In the BAU and Moderate-Low funding scenarios, the incremental increases in funding are not enough to meet this growing demand. As a result, the indicator achievement drops below current levels.

Catchments with large water bodies (e.g. Lake Victoria and Lake Kyoga) receive the majority of funding for ambient water quality improvement, although that funding is distributed across all catchments with consideration for the distribution surface water area. Population centers also receive more total funding due to the per capita nature of the wastewater treatment indicator.

FIGURE 3-20. WATER RESOURCES MANAGEMENT AVERAGE ANNUAL SUBSECTOR INVESTMENT BY
CATCHMENT
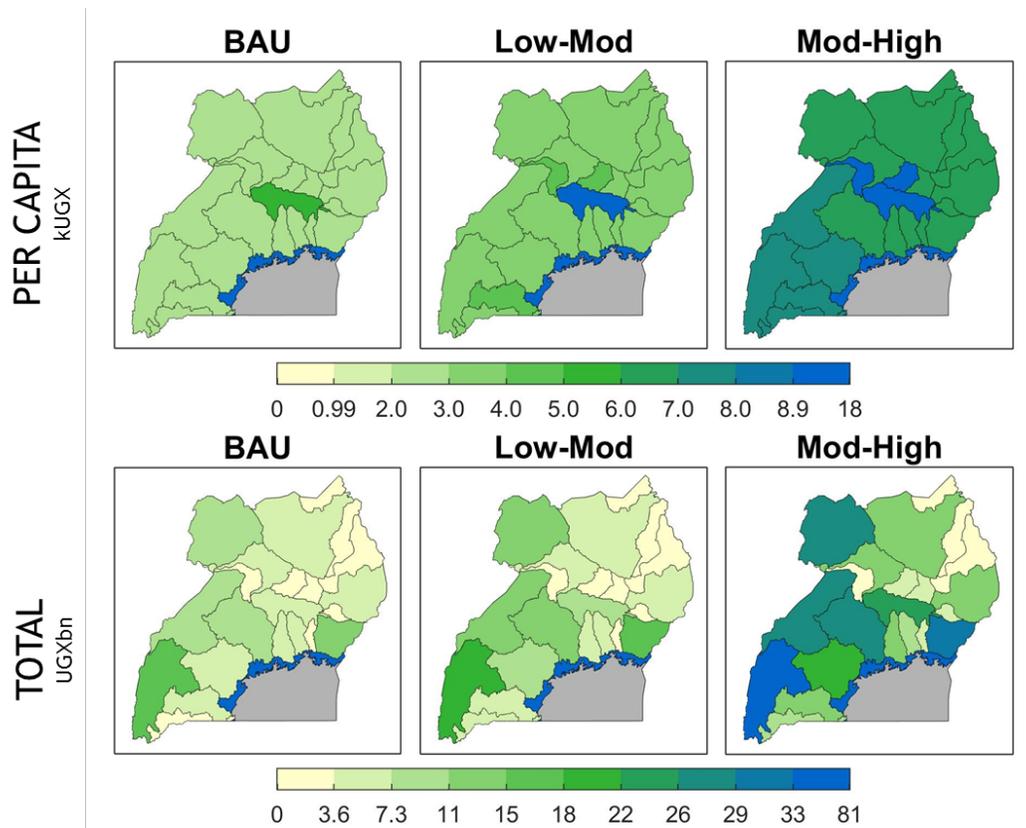
3.3.5.4. Subsector Planning Results Summary

The indicators of the water resources management subsector are relatively costly to achieve, however they share benefits across subsectors, particularly with the forestry and wetlands subsectors. Although the preference weights for these indicators grow as the allocation shifts to the stakeholder-defined preference, it is not enough to achieve the subsector targets, particularly wastewater treatment and ambient water quality. In the high funding scenario, although the ambient water quality is still only halfway to the ultimate target, there is a significant increase in the measurement, which represents a large improvement in ambient water quality and ecosystem health across Uganda.

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	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Compliance with water standard	64%	64%	64%	65%	66%	67%	68%	69%	70%	73%	90%
Permit compliance	71%	79%	84%	86%	86%	87%	87%	87%	87%	88%	90%
Wastewater treatment	20%	20%	19%	19%	18%	18%	18%	17%	17%	16%	60%
Ambient water quality	0%	0%	1%	1%	2%	2%	3%	4%	4%	8%	100%
Water Stress	2%	3%	3%	3%	3%	3%	3%	3%	3%	4%	$0
Moderate Low Funding: 1200 UGXbn											
Compliance with water standard	64%	65%	67%	69%	71%	73%	75%	76%	77%	80%	90%
Permit compliance	71%	79%	84%	87%	88%	88%	89%	89%	89%	90%	90%
Wastewater treatment	20%	20%	19%	19%	19%	19%	18%	18%	18%	18%	60%
Ambient water quality	0%	1%	2%	3%	4%	5%	6%	7%	9%	16%	100%
Water Stress	2%	3%	3%	3%	3%	3%	3%	3%	3%	4%	$0
Moderate High Funding: 2400 UGXbn											
Compliance with water standard	64%	68%	74%	78%	81%	82%	83%	84%	85%	87%	90%
Permit compliance	71%	79%	84%	87%	88%	88%	89%	89%	89%	90%	90%
Wastewater treatment	20%	20%	20%	20%	21%	21%	22%	22%	23%	26%	60%
Ambient water quality	0%	2%	5%	8%	10%	14%	17%	20%	24%	43%	100%
Water Stress	2%	3%	3%	3%	3%	3%	3%	3%	3%	4%	$0

3.3.6. FORESTRY

3.3.6.1. Introduction

Forestry plays a significant role in the national economy through its contributions to energy (firewood and charcoal), building materials, and ecological balance. Forested area in Uganda has been steadily decreasing over the past few years and currently covers about 9 percent of the land area, as of FY 2016/2017.There are 1.27 million ha of gazetted forest reserves while another 730,000 ha are located in national parks and game reserves. Under NDP goals, this coverage is targeted to increase to 18 percent by 2020 and back to natural conditions of 24 percent coverage by 2040. The National Forest Authority is actively supporting the continued management of Central Forest Reserves (CR) and formation of Collaborative Forest Management (CFM) agreements.

MWE, along with the National Forest Authority (NFA) will need support for encroachment enforcement to stop deforestation in addition to funds for reforestation. A large portion of encroachment is due to firewood collection. Although not modeled in this SSIP, if MWE and the NFA are successful at enforcing firewood collection limits, the country will see the added benefits of switching fuels to cleaner sources that have fewer health risks and require less time for collection. Institutional coordination with the Ministry of Energy and Mineral Development (Rural Electrification Agency) will be key as rural electrification could reduce the dependence on biomass, allowing the restoration of ecological balance.

The objectives of the forestry subsector are represented by the forest coverage indicator, as seen in Table 3-17. Forestry "O&M" refers to annual enforcement and monitoring activities.

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TABLE 3-17. FORESTRY INDICATORS

INDICATOR		FOREST COVERAGE
BASELINE[1]		**9%**
TARGET[1]		**24%**
UNITS		hectares
2018 UNIT COST (KUGX)		6,369
INVESTMENTS	CAPITAL	Forest Rehabilitation
	O&M	Forest Rehabilitation
	REPLACMENT	n/a
	SOFTWARE	n/a

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

3.3.6.2. Funding Requirements to Achieve Indicator Targets

The required funding for forest coverage takes into account not only the current deficit in proportion of land area covered in forests, but also the continuous encroachment on forests. With no investment in this subsector, the forested area in Uganda would decline at a rate of 2.5 percent per year. This is reflected in the annual funding requirements: the growth over time is a result of both recovering additional lost area each year and the accumulating enforcement and monitoring costs. As discussed in the water resources management plan, the forest rehabilitation and regulation investments provide benefits beyond just the forestry subsector.

TABLE 3-18. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Forests											Investment Type Mix			
	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
Forest Coverage	1,510	1,608	1,709	1,814	1,923	2,035	2,152	2,273	2,947	28,363	89%	11%	0%	0%
Note: These figures do not account for co-benefits between indicators														

3.3.6.3. Strategic Allocation of Resources under Limited Funding

The relative preference weight for the forestry indicator remains almost the same between the current funding mix and the 2030 preference weights, at just under 10 percent of the Sector total.

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FIGURE 3-21. PREFERENCE WEIGHTS ON FORESTRY INDICATORS OVER TIME
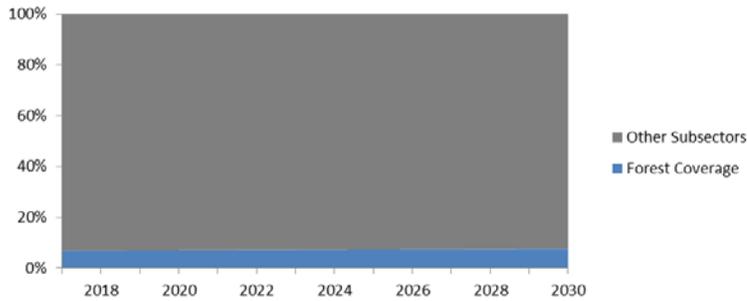
The subsector receives a more than doubling of funding between the Moderate-Low and Moderate-High funding scenarios, particularly in the final years of the period. As other indicators near achievement more funds are available for forestry rehabilitation. A similar trend can be seen in the indicator performance over time across the three scenarios. The progress also benefits from increasing preferences in the water resource management indicators which also require increasing forested area in the country.

FIGURE 3-22. FORESTRY SUBSECTOR INDICATOR FUNDING BY SCENARIO
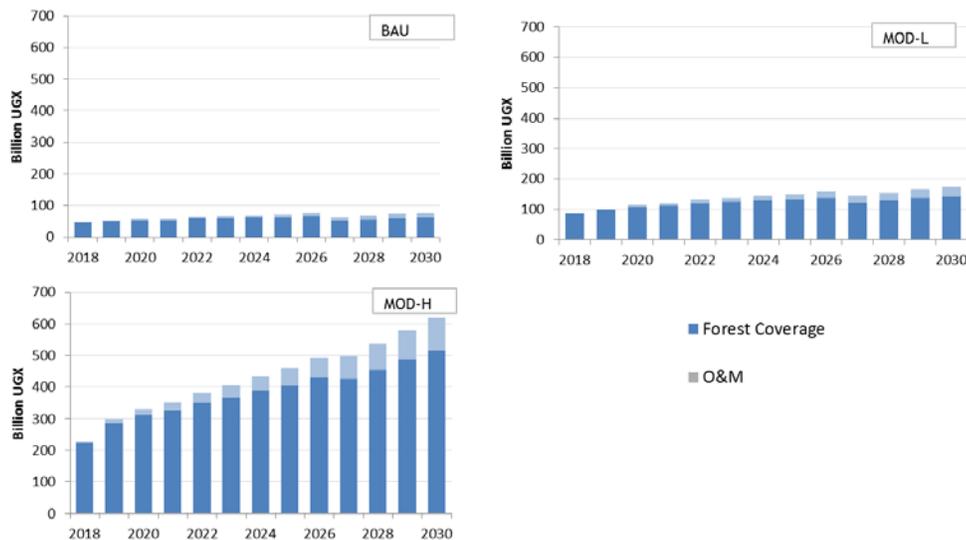
FIGURE 3-23. FORESTRY SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
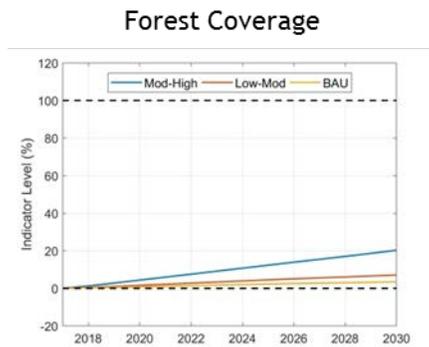
Funding allocation across space is assumed to scale with existing forested area by catchment. This analysis does not consider specific afforestation project plans but instead relies on the assumption that forests will be rehabilitated across the catchments in direct proportion to the existing distribution of forested area.

FIGURE 3-24. FORESTRY AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
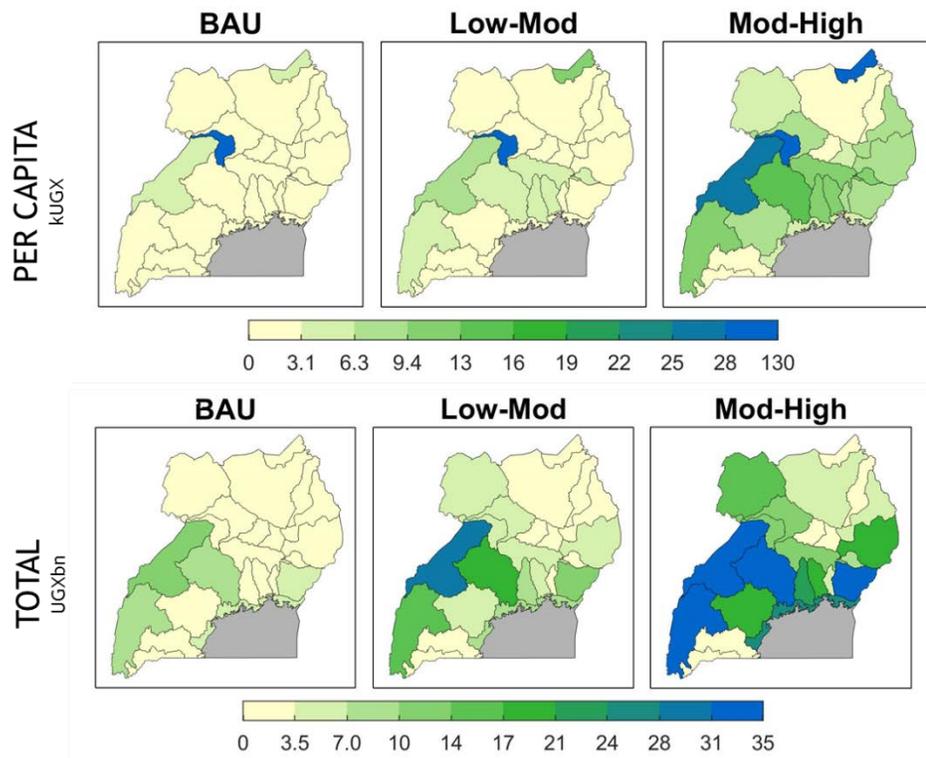
3.3.6.4. Subsector Planning Results Summary

The subsector is unable to fully reach its targets by 2030 even under the Moderate-High funding scenario, however the gap between baseline and target is closed about 25 percent with the high

level of funding. In the BAU scenario, the amount of funding is sufficient to maintain the status quo forested area and supports a small increase in the total area.

TABLE 3-19. FORESTRY INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Forest Coverage	9.0%	9.0%	9.1%	9.1%	9.2%	9.2%	9.3%	9.3%	9.4%	9.7%	24%
Moderate Low Funding: 1200 UGXbn											
Forest Coverage	9.0%	9.1%	9.2%	9.3%	9.4%	9.5%	9.6%	9.7%	9.8%	10.4%	24%
Moderate High Funding: 2400 UGXbn											
Forest Coverage	9.0%	9.2%	9.4%	9.7%	10.0%	10.3%	10.6%	10.9%	11.2%	13.1%	24%

3.3.7. WETLANDS MANAGEMENT

3.3.7.1. Introduction

Wetlands in Uganda provide many benefits to the people and the economy through their provision of materials, food source habitats, and environmental protections. Currently wetlands cover about 8.6 percent of the land area, and are targeted to increase to 13 percent by 2020, holding steady at 13 percent through 2040 according to NDP II. Only a fraction of this area is under management plans (11.3 percent in 2016). To reach these goals, MWE needs to not only protect the remaining wetlands area but also actively restore degraded and filled wetlands areas. In FY 2016/2017, MWE has restored 476 hectares (ha) of wetlands and set aside 167.7 kilometers of critical wetlands (MWE 2017).

The wetlands subsector is represented by the indicator measuring the proportion of Uganda's land area covered by wetlands. Wetlands "O&M" refers to annual enforcement and monitoring activities.

TABLE 3-20. WETLANDS MANAGEMENT INDICATORS

INDICATOR		WETLANDS COVERAGE
BASELINE[1]		**8.6%**
TARGET[1]		**13%**
UNITS		hectares
2018 UNIT COST (KUGX)		10,369
INVESTMENTS	CAPITAL	Wetlands Restoration
	O&M	Wetlands Restoration
	REPLACEMENT	n/a
	SOFTWARE	n/a

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

3.3.7.2. Funding Requirements to Achieve Indicator Targets

As is the case in the forestry subsector, the required funding for wetlands coverage takes into account not only the current deficit in proportion of land area covered in wetlands, but also an assumed trajectory of wetlands degradation, if no additional funding were allocated, of 2.5 percent per year. This is reflected in the annual funding requirements: the growth over time is a result of both recovering additional lost area each year and the accumulating enforcement and monitoring costs. Wetlands coverage also provides benefits to water resources management targets, therefore the total costs seen in the second panel below could be shared by the two subsectors.

TABLE 3-21. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Wetlands											Investment Type Mix			
	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
Wetlands coverage	721	768	816	866	918	972	1,028	1,086	1,407	13,546	89%	11%	0%	0%
Note: These figures do not account for co-benefits between indicators														

3.3.7.3. Strategic Allocation of Resources under Limited Funding

The preference weight for wetlands rehabilitation is fairly constant at 5 to 7 percent over time.

FIGURE 3-25. PREFERENCE WEIGHTS ON WETLANDS INDICATORS OVER TIME
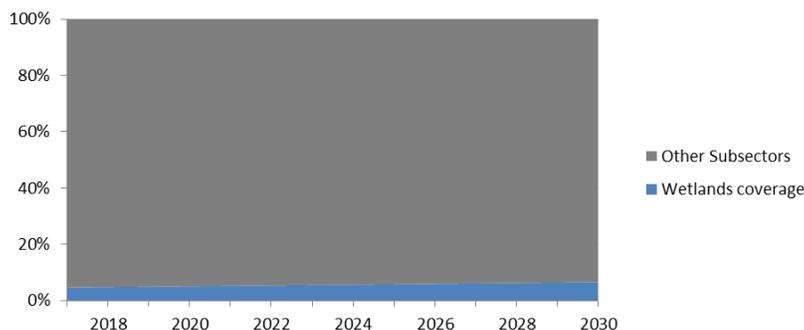
O&M spending increases over time as new hectares of wetlands will require additional monitoring and enforcement against degradation. The Moderate-High scenario sees more than double the funding of the Moderate-Low scenario, although the total budget has doubled, because additional funds are freed up from other indicators nearing their targets.

FIGURE 3-26. WETLANDS SUBSECTOR INDICATOR FUNDING BY SCENARIO
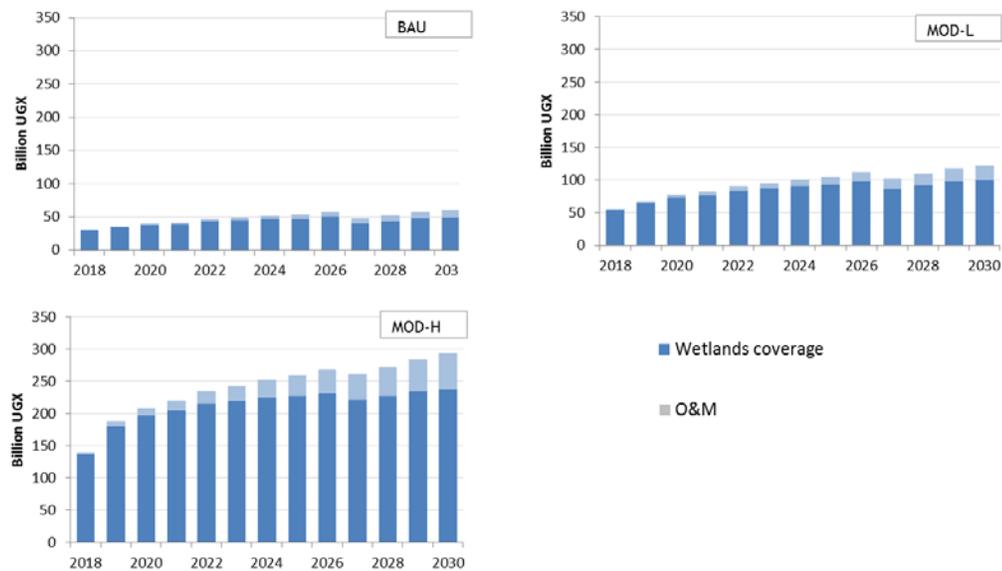
In the BAU scenario, about 20 percent of the gap between baseline and target wetlands coverage is closed. Because the gap is currently relatively small (11% baseline and 13% target) the final status of wetland coverage in Uganda is fairly good. In the High funding scenario, the target is nearly met but still remains about 10 percent below target levels.

FIGURE 3-27. WETLANDS SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
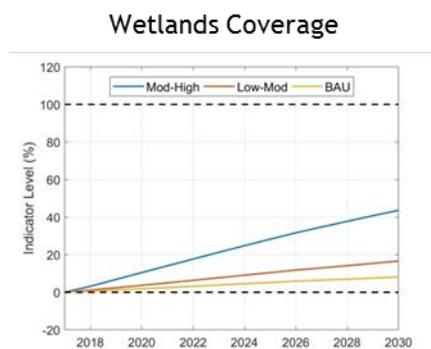
Following the same assumption that is used in the forestry subsector, the growth in wetlands coverage is assumed to occur across catchments in proportion to existing wetlands coverage. Increased spending in catchments with large lakes provides the ancillary benefit of improving ambient water quality.

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FIGURE 3-28. WETLANDS AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
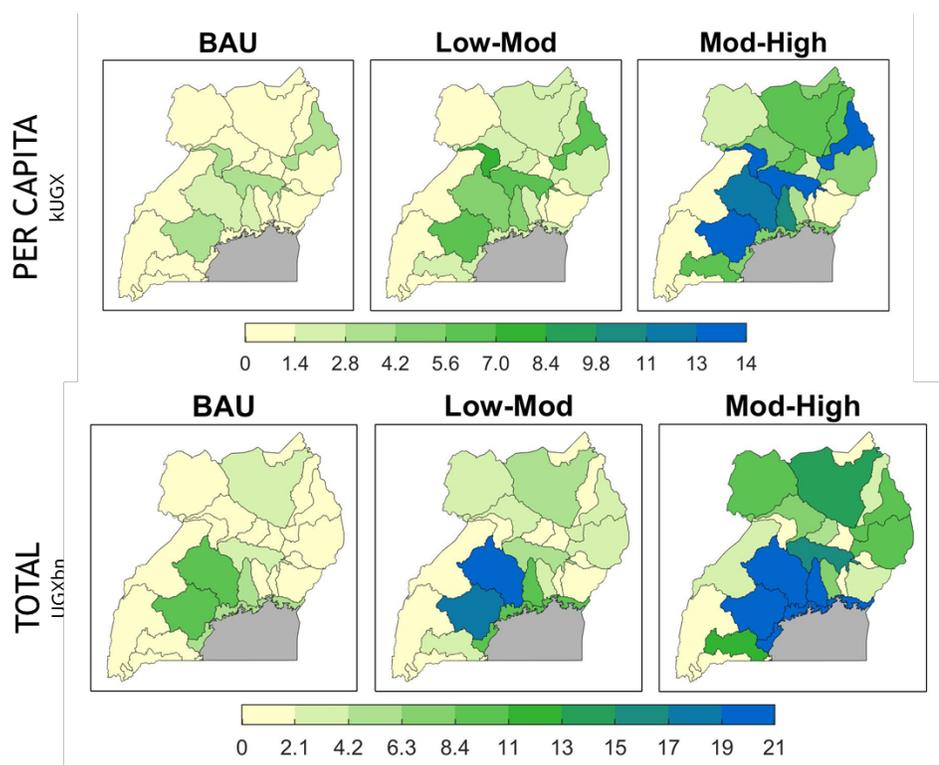
3.3.7.4. Subsector Planning Results Summary

Due to its increasing preference weight and ancillary benefits in other subsectors, wetlands restoration and rehabilitation receives sufficient funding to make at least modest progress even in the BAU scenario. In the Moderate-High funding scenario the target is achieved, with wetlands coverage surpassing the goal (due to the linked benefits of wetlands for other indicators)

TABLE 3-22. WETLANDS INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Wetlands coverage	10.9%	10.9%	11.0%	11.0%	11.0%	11.1%	11.1%	11.1%	11.2%	11.4%	13%
Moderate Low Funding: 1200 UGXbn											
Wetlands coverage	10.9%	11.0%	11.0%	11.1%	11.1%	11.2%	11.3%	11.4%	11.4%	11.9%	13%
Moderate High Funding: 2400 UGXbn											
Wetlands coverage	10.9%	11.0%	11.2%	11.4%	11.6%	11.8%	12.0%	12.2%	12.4%	13.5%	13%

3.3.8. METEOROLOGY

3.3.8.1. Introduction

The Uganda National Meteorological Authority (UNMA) is responsible for monitoring weather and climate and providing forecasts and advisories to government and other stakeholders for use in sustainable development. Meteorology is another subsector whose investments produce benefits across a number of development indicators. The dedicated meteorology "Platinum Indicator" has not been consistently measured in recent years making it difficult to track trends in

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achievement, although currently the network includes 95 stations cover over 60 percent of the country (MWE 2016). As of June 2017, Automatic Weather Stations (AWS) coverage had improved against the NDPII target; however, only 34 out of 100 rain gauges regularly report data.

Coordination between Meteorological authority and the DWRM is essential particularly on interventions for flood and drought forecasting and early warning systems. Furthermore, in order to reach the 2040 target for operational weather stations, further work is needed to improve the functionality of current weather stations and replace weather stations degraded beyond repair.

The meteorology subsector is represented in the SIM by the operational weather stations indicator, as described in Table 3-23.

TABLE 3-23. METEOROLOGY INDICATORS

INDICATOR	OPERATIONAL WEATHER STATIONS
BASELINE[1]	43%
TARGET[1]	100%
UNITS	stations
2018 UNIT COST (KUGX)	218,949
INVESTMENTS CAPITAL	Weather Stations
INVESTMENTS O&M	Weather Stations O&M
INVESTMENTS REPLACEMENT	Weather Stations
INVESTMENTS SOFTWARE	n/a

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

3.3.8.2. Funding Requirements to Achieve Indicator Targets

Weather station construction and O&M costs increase over time in proportion to population growth. The total funding required to achieve this target is relatively small, however existing funding allocation to this indicator is minimal.

TABLE 3-24. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Meteorology	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
Operational weather stations	12	14	16	18	20	22	24	26	37	314	88%	11%	2%	0%

Note: These figures do not account for co-benefits between indicators

3.3.8.3. Strategic Allocation of Resources under Limited Funding

Although the subsector currently receives limited funding, the preference weights are scheduled to increase the priority of this subsector on the path to 2030, as seen in Figure 3-29. This is a large increase given the small starting weight on the subsector (1 percent in 2018 to 7 percent in 2030, of total weight).

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FIGURE 3-29. PREFERENCE WEIGHTS ON METEOROLOGY INDICATORS OVER TIME
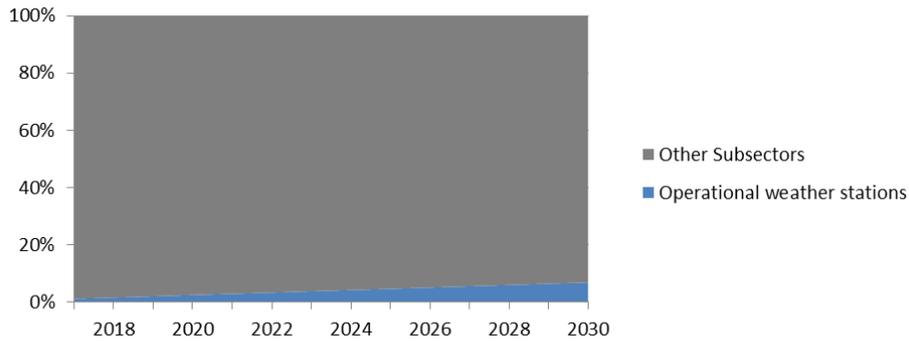
Under all scenarios, the subsector receives adequate funding to make significant progress towards the target given the existing network of weather stations. A slight dip in investment around 2017 may be related to an increase in the required replacement cost in water supply infrastructure in that year. That is when a large proportion of existing water supply infrastructure is scheduled to reach the end of its useful life.

FIGURE 3-30. METEOROLOGY SUBSECTOR INDICATOR FUNDING BY SCENARIO
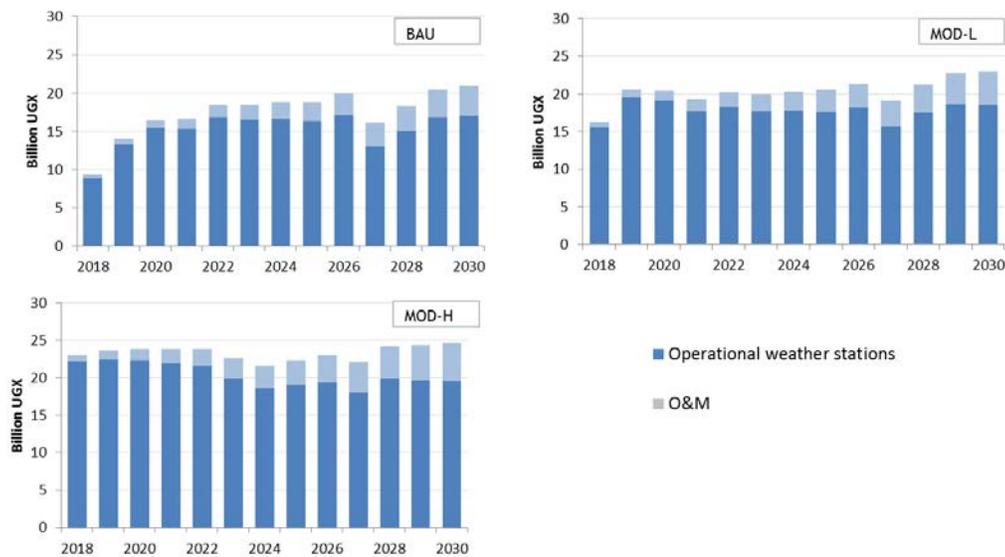
Note: Funding above does not include replacement costs for existing infrastructure.

FIGURE 3-31. METEOROLOGY INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
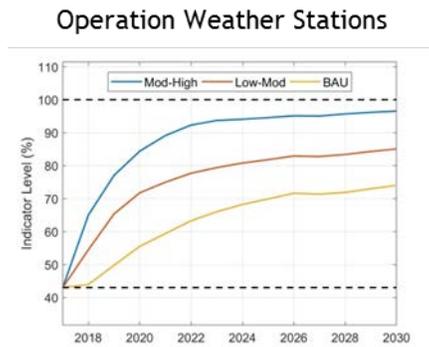
The spatial distribution of funds is assumed to be proportional to the existing distribution of monitoring stations. This applies to both O&M funds and new capital investment.

FIGURE 3-32. METEOROLOGY AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
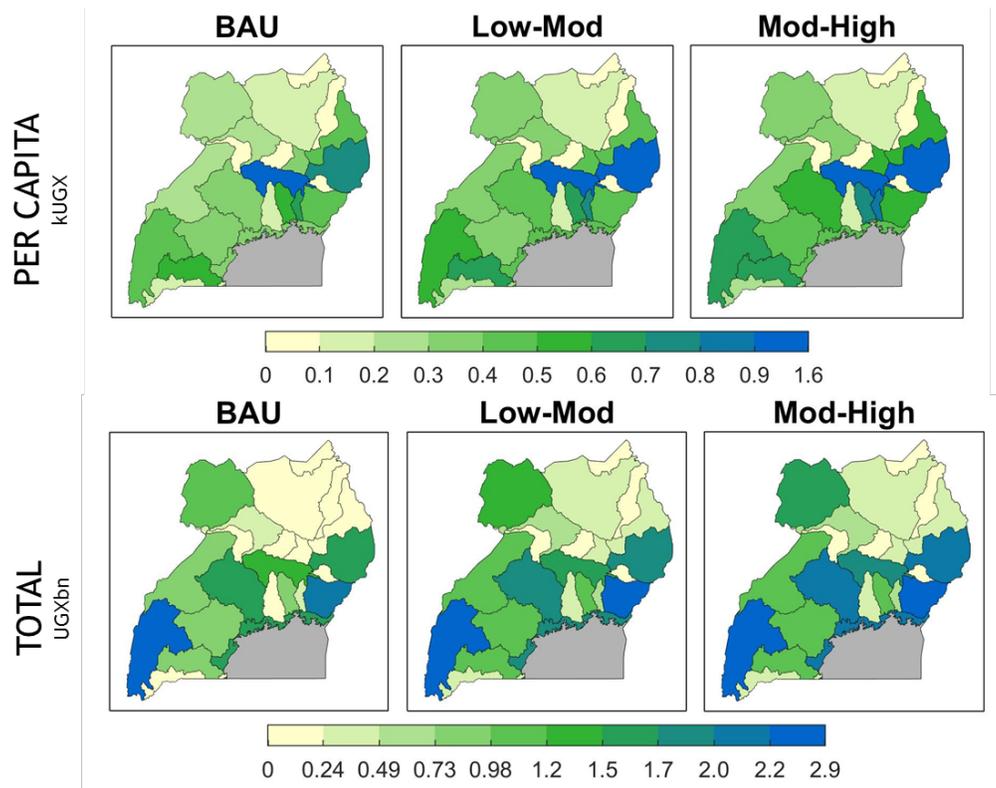
3.3.8.4. Subsector Planning Results Summary

The meteorology subsector is able to make significant progress towards the 2030 targets in all funding scenarios (closing the gap by nearly 50 percent in BAU and nearly reaching the target in Moderate-High).

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TABLE 3-25. METEOROLOGY INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
Operational weather stations	43%	44%	50%	56%	59%	63%	66%	68%	70%	74%	100%
Moderate Low Funding: 1200 UGXbn											
Operational weather stations	43%	54%	65%	72%	75%	78%	79%	81%	82%	85%	100%
Moderate High Funding: 2400 UGXbn											
Operational weather stations	43%	65%	77%	84%	89%	92%	94%	94%	95%	97%	100%

3.3.9. CLIMATE CHANGE

3.3.9.1. Introduction

Climate change is another cross-cutting subsector whose success will be seen across a number of development indicators. According to the Intergovernmental Panel on Climate Change (IPCC), the climate in Uganda is expected to be hotter on average in the next 20 to 30 years and have more uncertain precipitation. While some of the impacts of these changes may be seen in the same time period as this SSIP, it is also possible that the larger impacts will not be seen until beyond the time period of this study. A challenge for this subsector will be to justify funding to protect against impacts that may not be borne until beyond the typical time period of interest.

The climate change subsector is represented by two indicators in the model: greenhouse gas emission reduction and climate vulnerability index, the latter of which is a reporting indicator in the model, meaning no investments are specifically allocated to achieving the goal but the metric is tracked and reported. There is not currently an official climate vulnerability index designated for this indicator by the sector. This report uses the Notre Dame University Global Adaptation Initiative (ND-GAIN) index which incorporates metrics from the water sector and beyond. When reporting future results, all other sectors are assumed to hold performance constant.

The 22 percent target for greenhouse gas (GHG) emissions is a reduction in relation to a no-mitigation baseline (i.e. 2030 emissions, unmitigated). While there are many avenues for GHG emission reduction, this analysis considers only afforestation, as it falls under the domain of the Sector. Other efforts and policies to reduce household, vehicle, and industrial emissions are also important to reach this goal but are not modeled here.

TABLE 3-26. CLIMATE CHANGE INDICATORS

INDICATOR		GHG EMISSIONS	CLIMATE VULNERABILITY INDEX
BASELINE[1]		0%	50%
TARGET[1]		22%	100%
UNITS		tonnes CO2	ND-GAIN Index
2018 UNIT COST (KUGX)		251	
INVESTMENTS	CAPITAL	Forest Rehabilitation	*Reporting Variable*
	O&M	Forest Rehabilitation	
	REPLACEMENT	n/a	

INDICATOR		GHG EMISSIONS	CLIMATE VULNERABILITY INDEX
	SOFTWARE	n/a	

[1]Bold baselines and targets are official figures from the Sector. Non-bold figures are estimates.

3.3.9.2. Funding Requirements to Achieve Indicator Targets

Greenhouse gas emission reduction, as a product of Water and Environment sector investments, is mitigated through afforestation. Therefore this subsector shares an investment channel with the forestry subsector. The full funding requirements to meet this target are presented below, and include an assumed increase in per capita emissions, coupled with population growth, over time. Note that the funding requirements for the forest rehabilitation investment in the second panel are larger than the total funding requirement for the GHG Emissions indicator. This implies that if the forestry coverage indicator target is met (24% of Uganda's land area covered in forests) this will achieve the emissions reduction targets. This result is caveated by a note that the actual benefit of a forested hectare, in terms of emissions reduction, is dependent on the existing land use of the rehabilitated area.

TABLE 3-27. INDIVIDUAL INDICATOR FUNDING REQUIREMENTS (UGX BILLION)

Climate Change											Investment Type Mix			
	2018	2019	2020	2021	2022	2023	2024	2025	2030	Total	Capital	O&M	Replace	Software
GHG Emissions	77	112	150	192	237	287	342	401	777	4,872	91%	9%	0%	0%
Climate Vulnerability Index														
Note: These figures do not account for co-benefits between indicators														

3.3.9.3. Strategic Allocation of Resources under Limited Funding

The climate change sector, which receives minimal funding under the current budget allocation, sees a slight increase in relative preference weight by 2030 (from less than one percent to three percent), as seen in Figure 3-33.

FIGURE 3-33. PREFERENCE WEIGHTS ON CLIMATE CHANGE INDICATORS OVER TIME
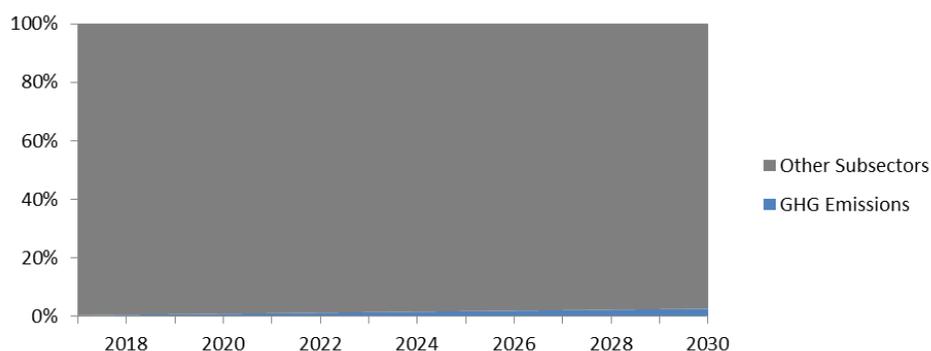
Funding under BAU and Moderate-Low scenarios increases over time due to the increasing preference weight on the subsector, and the growing emission potential—a result of both the growing population and increasing per capita emission rates. In the Moderate-High funding

scenario, the target is met before 2030. Once this occurs, the subsector receives funding for O&M but no additional capital investments. Note that the indicator achievement continues to grow even after additional funding is allocated to this indicator because of the shared benefits between this indicator and afforestation for the forestry coverage indicator.

FIGURE 3-34. CLIMATE CHANGE SUBSECTOR INDICATOR FUNDING BY SCENARIO
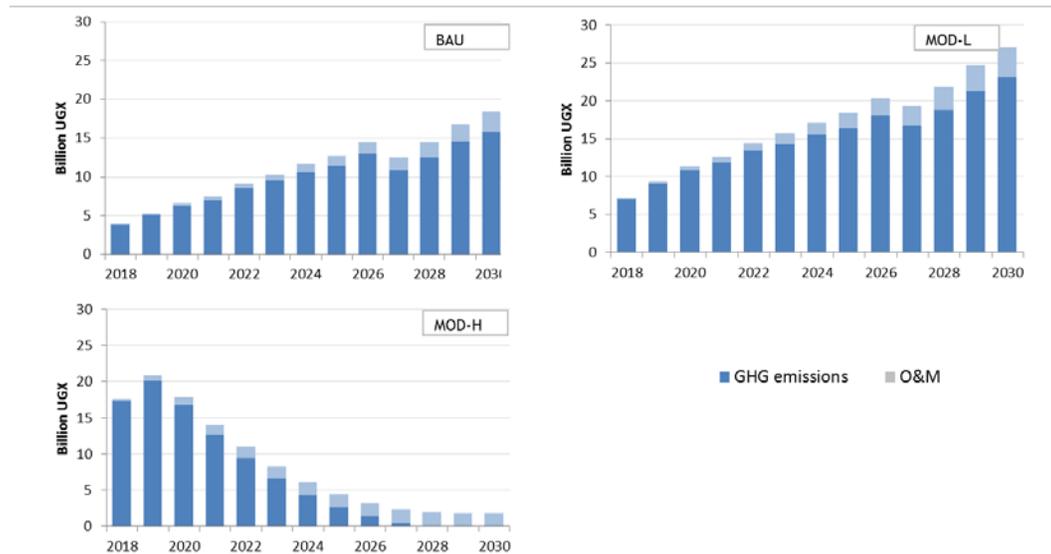
FIGURE 3-35. CLIMATE CHANGE SECTOR INDICATOR ACHIEVEMENT RELATIVE TO BASELINE AND TARGET LEVELS
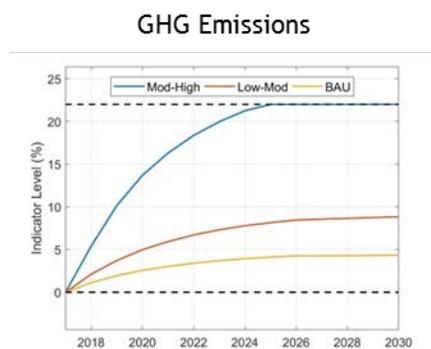
Climate change mitigation does not have a localized impact. Therefore the investment across catchments is equal on a per capita basis. The differences in total funding across catchments are a product of variation in population.

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FIGURE 3-36. CLIMATE CHANGE AVERAGE ANNUAL SUBSECTOR INVESTMENT BY CATCHMENT
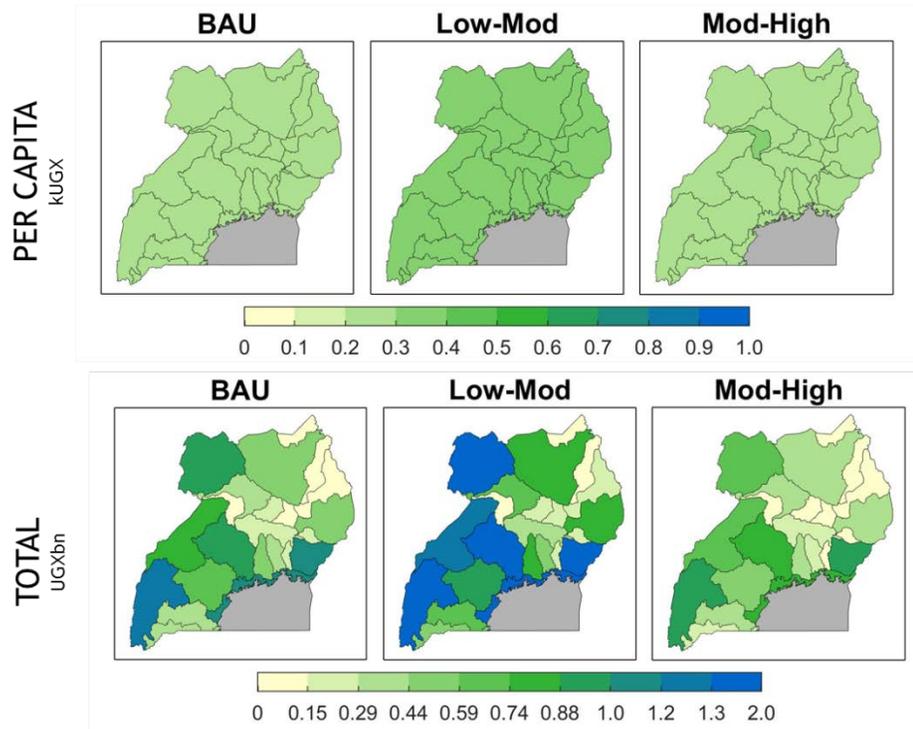
3.3.9.4. Subsector Planning Results Summary

The two climate change indicators are tied to investments across subsectors. In the case of greenhouse gas emissions, the large gap between the baseline and target in the forestry subsector draws in additional funds which provide benefits to the sector. The climate vulnerability score, while improved slightly in this each scenario, is relatively unchanged due to the small impact of Sector investments on the overall score.

TABLE 3-28. CLIMATE CHANGE INDICATOR ACHIEVEMENT BY SCENARIO

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	Target
Low Funding: 800 UGXbn											
GHG Emissions	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%	22%
Climate Vulnerability Index	34.39	34.55	34.70	34.81	34.88	34.94	34.98	35.00	35.01	34.90	
Moderate Low Funding: 1200 UGXbn											
GHG Emissions	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%	22%
Climate Vulnerability Index	34.39	34.73	35.00	35.19	35.32	35.41	35.47	35.51	35.53	35.46	
Moderate High Funding: 2400 UGXbn											
GHG Emissions	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	25.3%	22%
Climate Vulnerability Index	34.39	35.27	35.73	35.98	36.13	36.24	36.31	36.35	36.38	36.38	

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STRATEGIC INVESTMENT PLAN FOR THE WATER AND ENVIRONMENT SECTOR, UGANDA (2018-2030)

VOLUME 4: UGANDA WATER AND ENVIRONMENT SECTOR INVESTMENT MODEL

FINAL REPORT

prepared for:

Ministry of Water and Environment

Kampala, Uganda

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ACRONYM LIST

BAU   Business-As-Usual
MWE   Ministry of Water and Environment
O&M   Operations and Maintenance
SIM   Sector Investment Model
SSIP   Strategic Sector Investment Plan
UGX   Ugandan Shillings

ABSTRACT

The Sector Investment Model (SIM) is the engine of the Strategic Investment Plan for the Water and Environment Sector (SSIP), and is the collaborative product of both Sector and outside experts. Volumes 1 through 3 of this report describe the SSIP findings, and this volume focuses on the SIM itself. The SIM is a decision support tool that aids in annual investment planning over time and across the 23 catchments in Uganda.   The model is designed to work in two modes to accomplish its two main objectives. The first is the funding requirements mode which uses information on indicator costs and achievement gaps to estimate the total funding requirements to meet Sector goals (documented in Volume 1 and 3). The second is the strategic allocation mode (Volume 2 and 3). In this mode, distribution of funding is based on both the cost of improvement in each indicator and a prioritization algorithm. Priorities are defined in the SIM based on several factors, including current budget allocation, the remaining gap between indicator baselines and targets, and the Sector's preferences, as reporting during the stakeholder engagement process. The two modes of the SIM rely on the same databases of information that characterize the status, costs, preferences, and targets of the Sector indicators. SIM outputs are thus either a budget requirement, or an investment mix and subsequent indicator achievement trajectory. Of central importance, the model can be used flexibly, with several available options in the current version (e.g., budget or weights modification), and more that could be built into the tool in future versions (e.g., spatial resolution, period of analysis).

The SIM provides a logical, transparent rationale behind cross-subsector spending, and thus can be used to inform sector-wide budgeting beginning in 2019/2020. However, given the limited scope of this current study, there are several uncertainties in the SIM results that must be addressed before the tool can be used to inform budget allocations. The following are the priority SIM improvements:

- **Improve spending preference weights**. Sector spending preferences in the SIM have a huge effect on investment planning outcomes. A more in-depth workshop to elicit the spending preferences of the Sector is needed, involving a broad representation of decision-makers at the highest levels.

- **Enhance cost estimates across space and time.** Investment cost estimates and their indicators also have a pronounced effect on spending. Further refinement of these estimates by additional analysis and modeling, and by reaching out to regional experts for catchment level results would greatly improve the reliability of SIM results.

- **Improve indicator information**. Measurement of baseline indicator levels and target definitions could be refined, and the indicators can be enhanced through a process to identify the "best" list of investment indicators from the numerous options available.

- **Better characterize vulnerability to uncertainty**. Running the SIM across a wide range of future combinations of inputs would allow for a better characterization of which parameters are most sensitive to uncertainty.

4. VOLUME 4: UGANDA WATER AND ENVIRONMENT SECTOR INVESTMENT MODEL

The Sector Investment Model (SIM) is the engine of the Strategic Investment Plan for the Water and Environment Sector (SSIP), and is the collaborative product of both Sector and outside experts. Volumes 1 through 3 of this report describe the SSIP findings, and this volume focuses on the SIM itself. The SIM is a decision support tool that aids in investment planning over space and time. In the case of the current SSIP, the SIM focuses on the 2018 to 2030 period, analyzes results over 23 catchments, and considers three specific budget scenarios. The model, however, can be used more flexibly, with several available options in the current version (e.g., budget or weights modification), and more that could be built into the tool in future versions (e.g., spatial resolution, period).

4.1. INTRODUCTION AND PURPOSE

While the results presented in the SSIP and Subsector Investment Plans represent the current priorities of the sector, the SIM can be used to test other scenarios and to explore how changing the assumptions of the SSIP may lead to different investment priorities.

4.1.1 PURPOSE OF THE SIM

The SIM is designed to work in two modes to accomplish its two main objectives. The first is the funding requirements mode which uses information on indicator costs and achievement gaps to estimate the total funding requirements to meet Sector goals. The second is the strategic allocation mode. In this mode, distribution of funding is based on both the cost of improvement in each indicator and a prioritization algorithm. Priorities are defined in the SIM based on several factors, including current budget allocation, the remaining gap between indicator baselines and targets, and the Sector's preferences, as reporting during the stakeholder engagement process.

The SIM is built in Microsoft Excel and is intended to be accessible for all decision makers within the Sector. For more details on the technical aspects and use of the SIM, please see the SIM User Guidelines.

4.1.2 STRUCTURE OF THE SSIP DOCUMENTATION

The results and methodologies of the SSIP process are documented in four volumes. **Volume 1** is the **Funding Requirements to Meet National 2030 Targets for the Water and Environment Sector**. Volume 1 outlines the budget required to reach 2030 indicator targets, and the consequences of underfunding. **Volume 2** is the **Consolidated Strategic Sector Investment Plan**. This document provides the SSIP results in the context of the comprehensive water and environment sector. **Volume 3** contains the **Subsector Strategic Investment Plans**. Volume 2 provides more details about the SSIP findings that are particularly relevant to each subsector. **Volume 4** (the current document) and its associated annexes, describe the details of the **Sector Investment Model**, or SIM. Users of the SIM may also be interested in the **SIM User Guide**, which provide more technical direction on the

use of SIM Excel tool. Finally, the key findings of the SSIP are also presented in a four page **Popular SSIP**, which can be used to communicate the investment plan results to a broader audience.   The remainder of this volume is organized as follows. First, the methodology of the SIM is explained, next the key components of the SIM are described, and lastly, the key SIM caveats and a set of recommendations are provided.

4.2. SECTOR INVESTMENT MODELING METHODOLOGY

As a decision support tool, the SIM allocates budget resources to investments across time and space based on a set of Sector priorities. The model determines investments annually over the 2018 to 2030 period, and for each of 23 catchments. This section describes SIM's key methodological elements.

4.2.1 SIM FRAMEWORK

The two modes of the SIM rely on the same databases of information that characterize the status, costs, preferences, and targets of the Sector indicators. Figure 4-1 depicts how the SIM brings together these various pieces of information to output either a budget requirement or investment mix and subsequent indicator achievement trajectory. In the Strategic Allocation mode, the primary user input is the annual Sector budget. Other important inputs (seen across the top of Figure 4-1), such as preference and cost information, are stored within the SIM and may be updated as new information becomes available. The model processes this information through the allocation algorithm to provide annual investments and indicator achievements by catchment.

In the Budget Requirement mode, the problem is reversed, where indicator targets and unit investment costs drive investment decisions in order to estimate required funding levels annually. Each indicator may be affected by several investments, and each investment may affect multiple indicators. Unit investment costs vary by catchment, as costs and impacts may vary spatially.

FIGURE 4-1. SIM STRUCTURE
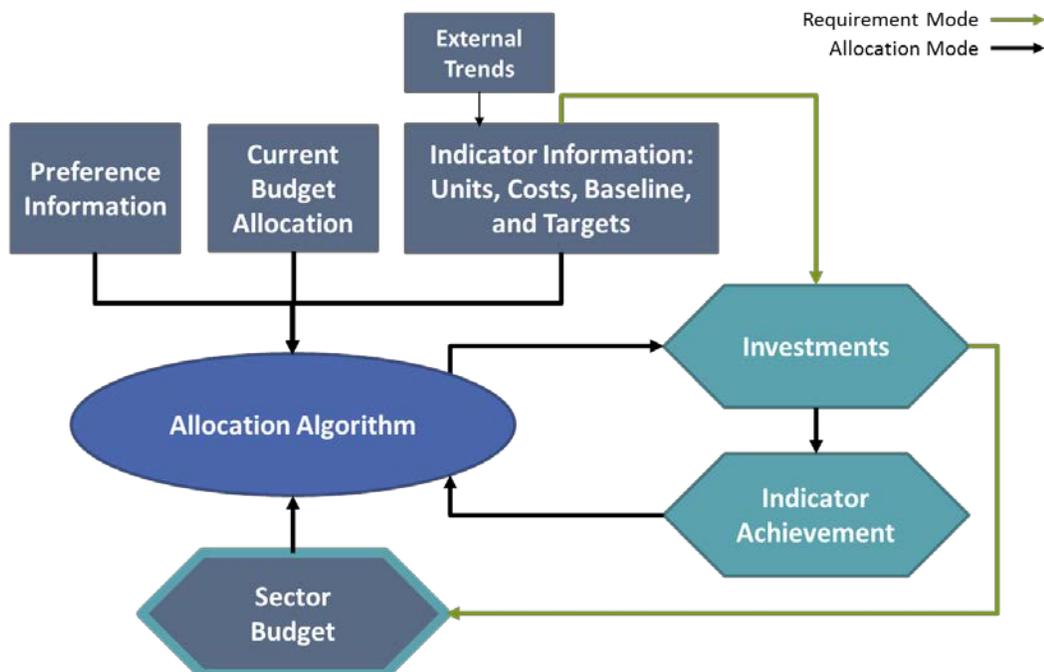
4.2.2 EXTERNAL TRENDS

As noted above a major driver of investing decisions is how external drivers change over time and across catchments. Between 2017 and 2030, population in Uganda is anticipated to increase from 37 million to 55 million people. This means that maintaining current indicator performance in areas such as clean water supply provision and wastewater treatment will already require major investments, and that making forward progress will require considerably more. Figure 4-2 shows the population distribution in each of the 23 catchments, in both 2017 and 2030.

FIGURE 4-2. POPULATION DENSITY IN 2017 AND 2030 (PEOPLE PER SQUARE KM)
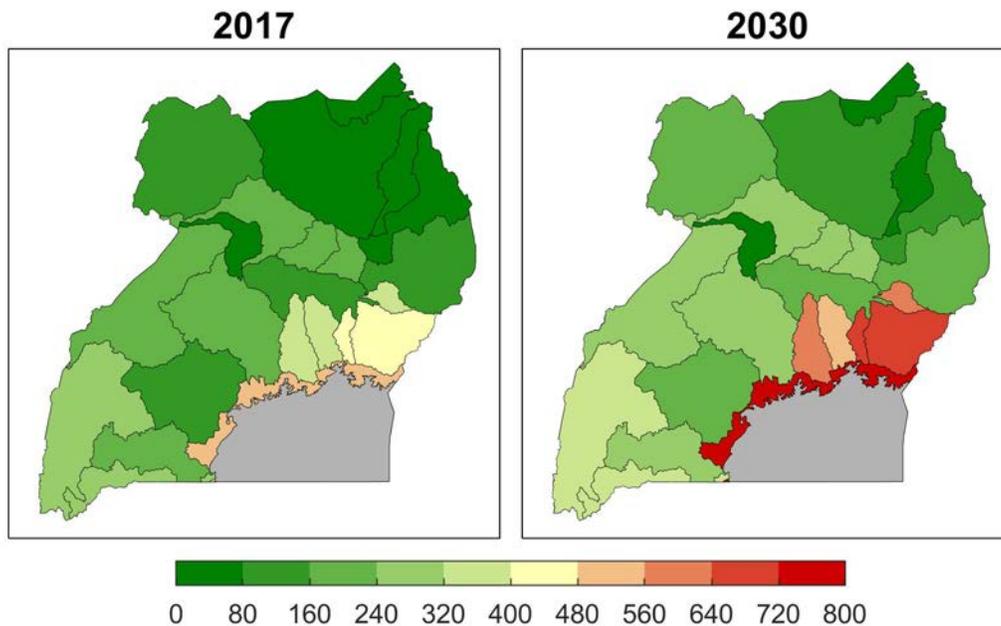
4.2.3 THE ALLOCATION ALGORITHM: SPENDING DRIVERS

Of notable importance, spending in the SIM is allocated across indicators based on two drivers: (1) "preferences" that are Sector-specified weights on indicators that externally drive investment choices; and (2) how far the indicator is from reaching its target (the "gap"), which is a weight that is determined within the SIM each year as indicator gaps are closed. All else equal, indicators receive higher levels of funding when they have higher preferences and larger gaps; the relative importance of these two drivers can be determined by the SIM user. Indicator performance gap is also the driver of budget allocations across catchments.

Sector preference weights are based on past budget allocation decisions that best reflect near term priorities, and the findings of a Workshop aimed at distilling longer term spending priorities. For the near term allocation, the SIM relies on the Water and Environment Sector Performance Report for fiscal years 2014/2015, 2015/2016, and 2016/2017, which provide the breakdown of the proposed budget across different investments within the Water and Environment sector (MWE 2015, 2016, and 2017). For each vote, containing different budget items, each funding category is labeled by first the relevant outcome in the SSIP and then by the most relevant indicators to that budget item. For example, in the 2017 Sector Performance Report, Vote 19, "V4:0902 Urban Water Supply and

Sanitation" is allocated evenly between the sanitation and public health and clean water supply indicators, with values of 0.2 for each indicator. Some budget items, such as hydropower and planning, are not included in the classification by outcome and indicator as they are not included in the SSIP.

For longer-term weights, the SIM employs weights based on preferences of a representative cross section of the sector that participated in the SIM capacity building program. These were informed by the findings of a prioritization workshop held in August 2017 with Sector experts and decisionmakers. During that workshop, there are two types of weights that were elicited:

- **Outcome ratings** represent the relative spending priority of each outcome to the overall goals of the sector. These weights are used in two ways. First, they are used to create outcome spending ratios which define the relative importance across outcomes.

- **Importance weights** define how each indicator contributes to the score for the outcome, and are interpreted as the spending priorities within an outcome. The total outcome score is the weighted sum of all related indicators. These weights are combined with the outcome ratings to define final spending weights for each indicator.

Values for each of these ratings and weights were elicited from sector stakeholders through both an in-person discussion and an online survey. The group of participants included MWE and GoU agency staff as well as development partner and non-governmental agency representatives. Detailed discussion and results of this process can be found in Annex 4A. The representative group used the information from this workshop, along with information about the relative costs of achieving each indicator to develop the final set of weights used in the model. The first and last columns of Table 4-1 report the starting and final indicator weights developed by the capacity building participants.

The most recent years of available budget allocations drive preferences in 2018, and these linearly move toward the sector preferences (Table 4-1). Note that while the results presented in the SSIP and Subsector Investment Plans represent the current priorities of the sector, the SIM can be used to test other scenarios and to explore how changing the assumptions of the SSIP may lead to different investment priorities.

TABLE 4-1. INDICATOR SPENDING PREFERENCES OVER TIME

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Village water supply	2%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%	4%
Functional rural water sources	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%
Improved drinking water	12%	11%	11%	10%	10%	9%	9%	8%	8%	7%	7%	6%	6%	5%
Safely managed drinking water	31%	30%	28%	26%	25%	23%	21%	20%	18%	16%	14%	13%	11%	9%
Urban water service functionality	10%	10%	9%	9%	9%	8%	8%	7%	7%	7%	6%	6%	5%	5%
Solid waste disposal	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Improved sanitation	4%	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%
Safely managed sanitation	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%	5%	5%
Handwashing at home	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Handwashing at school	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Irrigation	10%	10%	9%	9%	9%	9%	9%	8%	8%	8%	8%	7%	7%	7%
WfP functionality	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Storage Capacity	2%	3%	3%	4%	4%	4%	5%	5%	6%	6%	6%	7%	7%	8%
Compliance with water standards	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%
Permit compliance	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Wastewater treatment	1%	2%	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%
Ambient water quality	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	6%	6%
Wetlands coverage	1%	2%	2%	2%	3%	3%	4%	4%	4%	5%	5%	6%	6%	7%
Forest Coverage	6%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	8%	8%
GHG emissions	0.4%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	3%	3%
Operational weather stations	2%	2%	3%	3%	4%	4%	4%	5%	5%	5%	6%	6%	7%	7%

Note: Blue represents higher preferences and orange represents lower preferences relative to other indicators

4.2.4 BUDGET SCENARIOS IN THE CURRENT SIM

The SIM develops investment plans under three budget scenarios, all of which are currently assumed to escalate at 3% per year between 2018 and 2030. Starting points under the three scenarios are as follows:

- **Business-As-Usual (BAU).** Under the BAU scenario, the annual budget is assumed to remain similar to historical levels, and starts at roughly the allocation available during the 2017/2018 fiscal year of 800 billion UGX (for details, see Volume 4).

- **Moderate-Low.** A modest increase of 50% over the BAU scenario, to 1.2 trillion UGX per year.

- **Moderate-High.** A much more aggressive increase of 200% over the BAU scenario, to 2.4 trillion UGX per year.

Each of these budget scenarios is run through the SIM to evaluate how investment decisions are made, and what indicator levels result over time and across catchments. Both initial budget and escalation rate over time are user inputs, and can be easily adjusted in the SIM to evaluate other budget scenarios.

4.3. SECTOR INVESTMENT MODEL COMPONENTS

Several elements build the SIM investment framework. Each of these elements is discussed below.

4.3.1 INDICATORS AND OUTCOMES

In the SSIP, return on investment is measured by indicator progress. Twenty-four indicators, covering the primary functions of the sector, are included. The indicators are selected from the list of revised indicators developed in the 2016 Review of the Water and Environment Sector Performance

(Measurement) Monitoring Framework (MWE 2017) with stakeholder consultation at the beginning of the SSIP 2030 process. Some of the indicators are new this year (2017) and do not have baseline or target information available. In these instances a placeholder value has been estimated. Four of the 24 indicators are entered in the SIM only as reporting variables. Progress on these indicators is not explicitly valued in the SIM because it is either an indirect outcome of achieving other indicators, or the direction of progress is not clear.[1] Indicators and associated baseline and target information are presented in Volume 2 of this report.

The Sectors progress on indicators can be translated into achievement of the core functions of the Sector, namely the outcomes. Strategic investment planning requires making tradeoffs between objectives. The seven outcomes of the Sector are:

Clean Water Supply

Improved Sanitation and Public Health

Sufficient Water for Food Production

Sufficient Water for Economic Activity

Improved Water Quality and Quantity

Ecosystem Protection

Climate Change Adaptation and Mitigation

Achievement of an outcome is scored by aggregating the weighted achievement in related indicators. For example, as seen in Figure 4-3, the outcome "Clean Water Supply" is measured by six related indicators. The indicator weights are used to find a weighted sum of improvement in the outcome. The total improvement measure is used to track how closely investment in the indicator matches historic funding allocations and preferences.

FIGURE 4-3. EXAMPLE OF INDICATORS TO OUTCOMES

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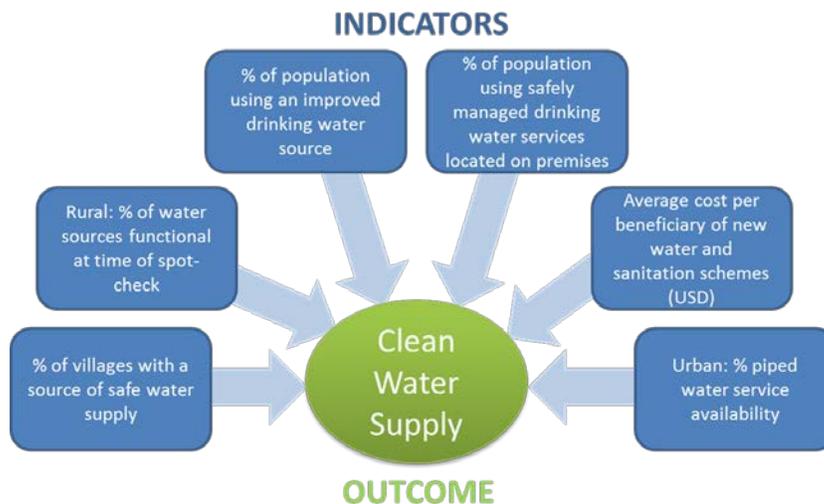
[1] These indicators are Per Capita Investment Cost, Water withdrawal as a proportion of available water resources, and Percent change in Uganda's climate change vulnerability index.

4.3.2 INVESTMENT TO INDICATOR MULTIPLIERS

Multipliers define the relationship between indicators and investments in the SIM. They define the amount of shillings in a specific investment that are needed to move the indicator forward by one unit. So for example, the cost to deliver clean water supply to one person. The model consists of a matrix of indicators by investments for each region. Each cell in the matrix contains a multiplier which relates the given investment to indicator achievement. Many cells in the matrix are zeros, as not all investments impact all indicators. However, certain investments, such as expanded water storage, are important for a variety of indicators and have multipliers that reflect this role.

The multipliers were defined by first identifying all likely linkages and then identifying the few key links that are 1) quantifiable and 2) primary drivers of indicator achievement. In some cases, the relationship between investment and indicator is clear and well-studied, and therefore there is a high degree of confidence in the stated relationship. These values may come from academic literature, historical performance data, or biophysical models. In other cases, while it is understood that a relationship exists, documentation in support of any specific value is not available. In those cases, a team of experts from the consultant team utilized the information that is available to define this relationship. These values may always be refined as more information becomes available by future users of the SIM. Table 4-2 defines each cell in the matrix where the relationship was strong enough to include in the SIM. The structure of the SIM is such that as additional information becomes available, or new linkages are discovered, the user can input new multipliers by following steps laid out in the User Guidelines. Annex 4B describes biophysical models used to develop multipliers.

TABLE 4-2. MULTIPLIER MATRIX: INCLUSION IN SIM

Investment	1.VillH2O	2.Rfunct	3.ImpH2O	4.SafeH2O	5.CostCapita	6.Ufunct	7.SldWaste	8.Bsan	9.SafeSan	10.HomeHand	11.SchlHands	12.Irr	13.WfPFunct	14.StorageCapacity	15.DrinkSamples	16.PermitCompliance	17.WWT	18.AmbWQ	19.H2OStress	20.WetInds	21.Forest	22.GHG	23.CliVuln	24.WeatherSt
Water Supply Basic	L		L																					
Water Supply Piped	L		L	D																				
Solid Waste Disposal							D																	
Sewerage								L	D															
Irrigation												D												
Storage														D										
Wastewater Treatment																	D	L						
Wetlands Restoration																		D		D				
Forest Rehabilitation																		L			D	D		
Weather Stations																								D
Water Source Repair-Rural		D																						
Water Source Repair-Urban						D																		
WfP Source Repair													D											
Drinking water samples															D									
Basic Sanitation CB								D																
Safe Sanitation CB									D															
Home Handwashing CB										D														
School Handwashing CB											D													
WfP Source CB													D											
Permit Compliance CB																D								
Water Supply Basic O&M	D		D																					
Water Supply Piped O&M	L		L	D																				
Sewerage O&M								L	D															
Irrigation O&M																								
Storage O&M														D										
Wastewater Treatment O&M																	D	L						
Wetlands Regulation O&M																		D		D				
Forest Regulation O&M																					D	D		
Weather Station O&M																								D

Note: Dark green boxes represent primary linkages. Light green boxes represent secondary linkages.

Multiplier values may vary by catchment based on hydrologic, geographic, or population variation. For example, irrigation costs are higher in dryer catchments, particularly those far from commercial centers, making materials more expensive. Further details on the values and methods of determination for each multiplier in the SIM can be found in Annex 4C.

4.3.3 INVESTMENTS

Achievement in each indicator is influenced by funding channeled through investments. The investments represent the types of projects that would need to be implemented to improve the indicator scores. There are three general categories of investment: capital, annual operations and maintenance (O&M), and software. Investments by category are listed in Table 4-3 below.

TABLE 4-3. INVESTMENTS MODELED IN THE SIM

Category	Capital Investments	Annual O&M	Software Investment
Water Supply	Water Supply-Basic* Water Supply-Piped* Water Source Repair-Rural Water Source Repair-Urban	Water Supply-Basic O&M Water Supply-Piped O&M	
Sanitation	Solid Waste Disposal Wastewater Treatment* Fecal Sludge Management	Sewerage O&M Wastewater Treatment O&M	Basic Sanitation Campaigns Safe Sanitation Campaigns Home Handwashing Campaigns School Handwashing Campaigns
Water for Production	Off-Farm Irrigation* Water Storage* Water for Production Source Repair	Irrigation O&M Water storage O&M	Water for Production Local Training
Water Resource Management		Drinking water samples	Permit Compliance Monitoring
Ecosystem Protection	Wetlands Restoration Forest Rehabilitation	Wetlands Management Forest Management	
Meteorology	Weather Stations*	Weather Station O&M	

*Star notates capital investment also requires replacement

Capital and software investments are assumed to be one-time, upfront costs, whereas annual O&M costs occur each year going forward. The SIM assumes that O&M expenditures for both existing infrastructure and all future investments come out of the available spending under each budget scenario. The existing stock of water supply, sanitation, storage, and other infrastructure is estimated to cost 137 billion UGX to maintain (i.e., roughly 17% of the 2018 BAU budget); spending this sum each year is assumed to maintain existing infrastructure in functioning condition, and means that only 663 billion UGX is available. Costs of future O&M are in addition to this 137 billion UGX figure. Implications for future O&M expenditures are explored in Volume 2.Replacement costs for existing infrastructure set for replacement based on a screening level lifecycle analysis, is also included as a

mandatory cost before new spending can occur. Replacement costs are estimated to be 137 billion UGX in 2018 (i.e. 17% of the 2018 BAU budget). After O&M and replacement, the sector has 526 billion UGX out of the original 800 billion UGX budget for spending on new investments in 2018.

4.3.4   REGIONS

Investments in the SSIP are reported nationally and regionally. Multipliers, or returns on investment as discussed above, may vary by catchment based on factors such as land use patterns, populations, baseline indicator status, and water availability (where data are available). National level results are generated using the weighted average (weighted by either population or land area, depending on the measure) of the catchment values.

 The SSIP Regions were defined to:
1. Be specific enough to provide meaningful detail to the investment plan without requiring an unreasonable amount of data collection and without inferring localized results from non-localized data;
2. Align with existing MWE and Government of Uganda planning and administrative regions; and
3. Map to hydrological features, demographic trends, and land use patterns that may influence investment needs.

With these objectives in mind, the SIM has been built for the 23 catchments outlined in a 2010 MWE report, "Operationalisation of Catchment-based Water Resources Management" (MWE, 2010). These 23 catchments are based on hydrologic features and are used for catchment management planning in the Sector. A map of the 23 regions is shown in Figure 4-4.

FIGURE 4-4. TWENTY THREE SSIP CATCHMENTS OF UGANDA

4.4.2 RECOMMENDATIONS AND NEXT STEPS

The SIM provides a logical, transparent rationale behind cross-subsector spending, and thus can be used to inform sector-wide budgeting beginning in 2019/2020. However, given the limited scope of this current study, there are several uncertainties in the SIM results that must be addressed before the tool can be used to inform budget allocations. The following are the priority SIM 'upgrades':

- **Improve spending preference weights**. As described above, spending is allocated within the SIM based on (1) the spending preferences of the Ministry in the short term (2017/2018 budgets) and long term (elicited through the August 2017 workshop). The Sector spending preferences have a major impact on how resources are allocated, and although the process to generate these preferences was a large step forward from the prior SSIP, it was very preliminary. A more in-depth workshop to elicit the spending preferences of the Sector is needed, involving a broad representation of decision-makers, including ideally the Permanent Secretary and Minister of Water and Environment.

- **Enhance cost estimates across space and time.** The investment cost estimates and their impact on indicators (i.e., the "multipliers") within the current SIM are the product of collaboration between the consulting team and Sector experts, and represent a big step forward relative to earlier estimates. There is still considerable room for improvement in these estimates, however; the investment plans are highly sensitive to the magnitudes of both cost estimates and multipliers and many of the estimates were very rough due to the scope of this study. Further refinement of these estimates by additional analysis and modeling, and by reaching out to regional experts for catchment level results would greatly improve the reliability of SIM results.

- **Improve indicator information**. Several items related to the indicators can be improved. First, measurement of baseline indicator levels within the catchments should be enhanced to ensure that spatial allocation of resources is occurring properly. Several indicators currently have the same level of baseline performance across all catchments. Next, target definitions for many of the indicators could be specified more clearly, and perhaps refined to accommodate greater flexibility. For example, reaching the wastewater treatment target in the SIM is exceptionally costly; reducing this goal would allow for more rapid achievement of less expensive indicators. Lastly, although the indicators used in this study were selected as part of a workshop with Sector representatives, there may be room for a more inclusive and comprehensive process to identify the "best" list of indicators from the numerous options available.

- **Better characterize vulnerability to uncertainty**. Because the SIM is a deterministic tool, running a Monte Carlo analysis on the inputs would be a relatively straightforward exercise, given assumed statistical distributions of the uncertain input parameters (e.g., population growth rate, indicator preference level, total budget). Running the SIM across a wide range of future combinations of inputs would allow for a better characterization of which parameters are most sensitive.

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ANNEX 4A. AUGUST 2017 PRIORITIZATION WORKSHOP

As an optimization tool, without any constraints on the distribution of investment, the SIM would allocate all funds to the indictor and related investment with the largest return on investment. While economically efficient, this does not reflect the reality of the budgeting process, nor would it result in an outcome that reflects the mission of the sector. Growth across all indicators is important for success in the sector.

The balance between economic efficiency and concurrent growth across subsectors is operationalized in the SIM via prioritization weights. These weights, which were developed based on stakeholder consultation, reflect the relative importance of each indicator tracked in the SIM.

This annex discusses the stakeholder consultation undertaken to develop the weights and the process by which the weights are used to incentivize distributed investment in the SIM.

PRIORITIZATION WEIGHT STAKEHOLDER CONSULTATION

The weights used in the SIM were set in consultation with water and environment sector stakeholders. Preferences were elicited through both an in-person group activity and discussion, and an online survey.

- The online survey was disseminated by MWE to members of the sector including MWE staff, development partners, and NGO staff. A total of 53 responses were received.

- The in-person group activity took place during an interim workshop for the SSIP project. Approximately 40 participants formed five groups, and within each group, they filled out one modified version of the original online survey.

Respondents were encouraged to participate in both versions of the survey. The responses were ultimately combined to create a weighted average (75% group results and 25% survey responses). The heavier weight on the group results acknowledges that the group results reflect a partial consensus, and are closer to the overall preferences of the sector.

In both formats respondents were first asked to rank the seven outcomes. The results of these rankings are shown in Figure 4A-1. There are more unique responses to the online survey that did not undergo the same compromising activity as was done in the group setting which explains the larger variation in results.

FIGURE 4A-1. OUTCOME RANKING RESULTS BY RESPONDENT GROUP
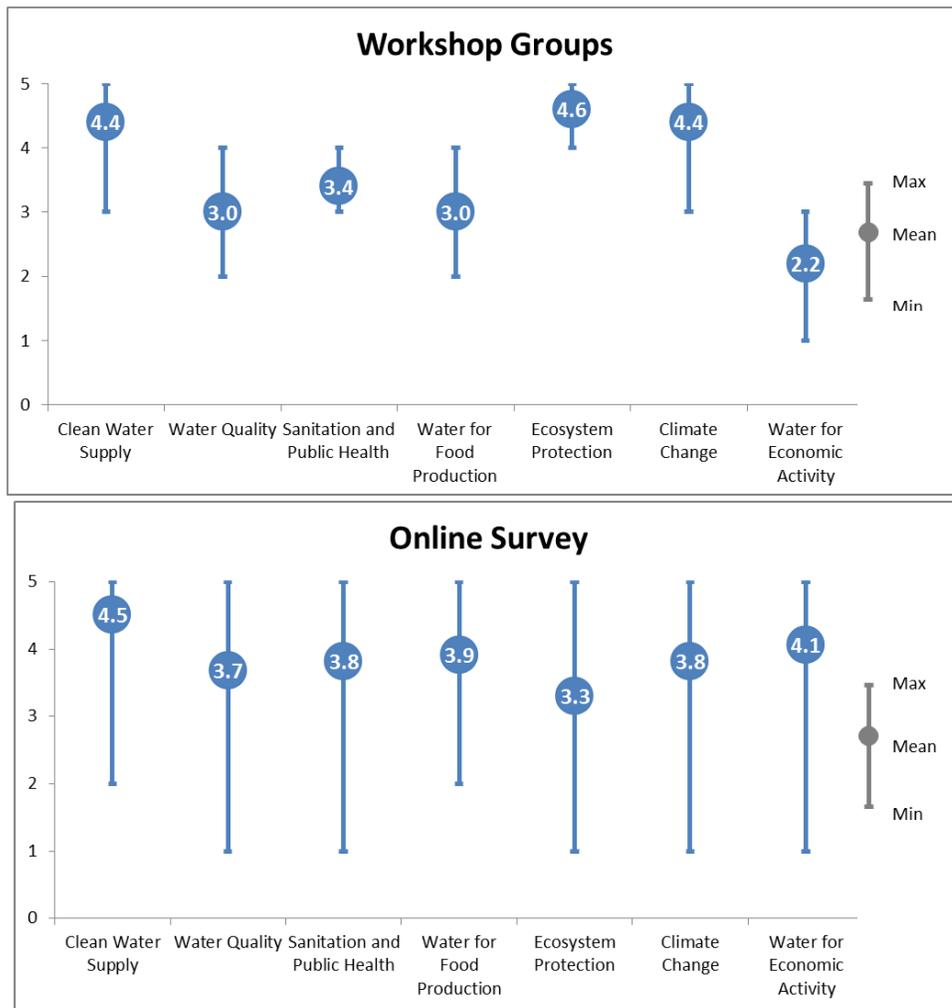
Next, respondents were asked to either rank (online version) or distribute weight amongst (in-person version) the indicators associated with each outcome. Figure 4A-2 shows the average ranking decisions by affiliation from the online survey.

FIGURE 4A-2. ONLINE SURVEY RESPONDENT CLEAN WATER INDICATOR IMPORTANCE RATINGS BY AFFILIATION

Clean Water Supply
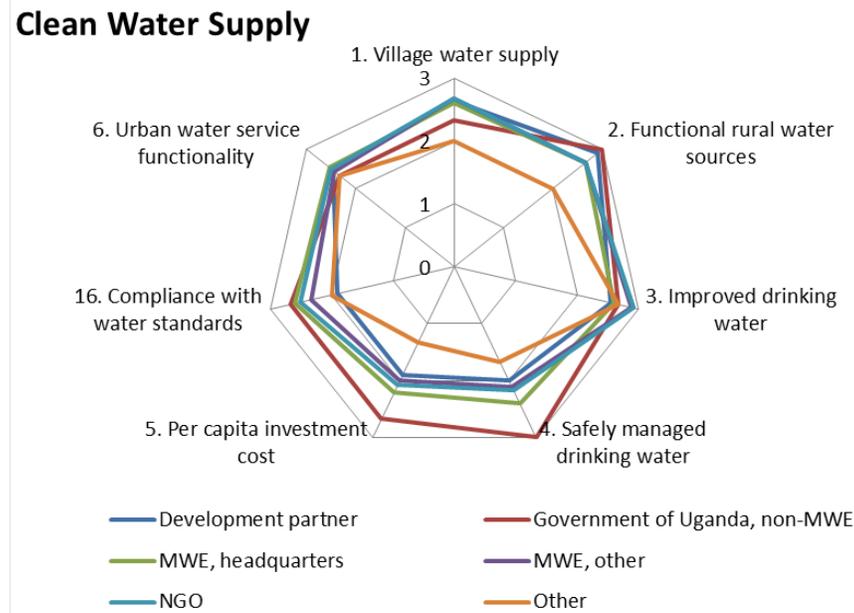
Improved drinking water was consistently the highest ranked across all groups. Respondents from outside MWE but within the Government ranked per capita investment cost and safely managed drinking water fairly high compared to other groups. Respondents from other affiliations not covered in the survey gave the lowest importance rankings overall compared to other groups, particularly in per capita investment cost and functional rural water sources.

The respondents to the online survey spanned a wide variety of affiliations and years of experience, as seen in Figure 4A-3. This is important, as the purpose of the survey was to gather data from as many stakeholders, with as many opinions and preferences, as possible to ensure the final results reflect the sector's priorities.

FIGURE 4A-3 ONLINE SURVEY RESPONDENT CHARACTERISTICS
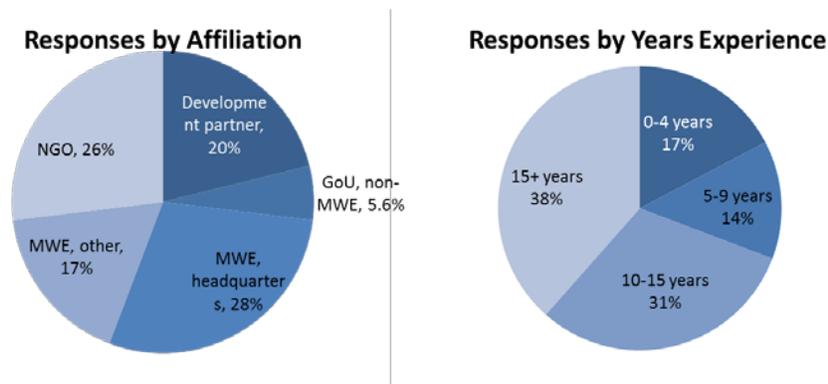
The rankings and ratings collected through online survey and group activities were combined to create the final set of weights discussed in Volume 3, Sector Investment Model.

ANNEX 4B. BIOPHYSICAL MODELS

This annex provides technical details on the biophysical models used in the SSIP analysis.

4.B.1 LAKE-BASIN WATER QUALITY TOOL

The Lake-Basin Water Quality (LBWQ) tool generates water quality and availability implications of land use changes, population increases, and climate changes for a user-specified lake and basin. As shown in Figure 4B-1, the tool takes monthly meteorological time series as inputs – along with user inputs on land use, basin and lake characteristics, and planning scenarios – to generate time series of lake inflows, temperature, nutrient levels, and dissolved oxygen, among others. The purpose of the tool is to provide an understanding of the possible implications of expected changes in land use and climate. For the current study, the LBWQ tool was used to evaluate water quality implications of land use and management changes in the four major lakes of Uganda: Victoria, Edwards, Kyoga, and Albert.

FIGURE 4B-1 SCHEMATIC OF THE LAKE BASIN WATER QUALITY TOOL
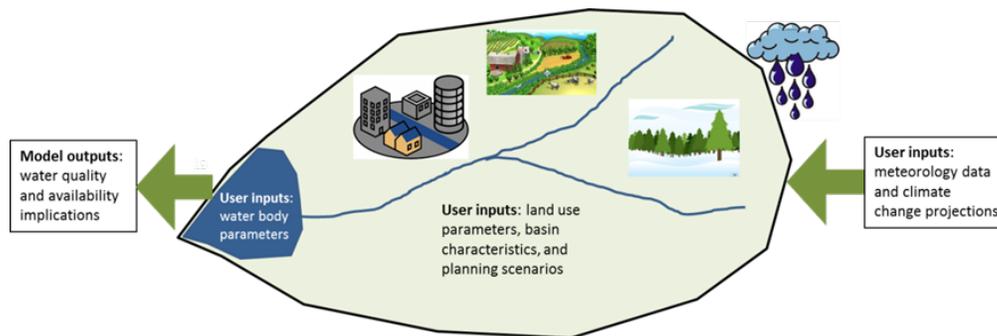
The remainder of this document is divided into four parts: (1) the methodologies used in modeling water quality and rainfall runoff, (2) a case study example using meteorological data and climate projections from Tbilisi, Georgia, and (3) summary of the approach and results of the Uganda analysis. Part 2 also provides explanations of model inputs and assumptions.

PART 1. MODELING METHODOLOGY

The purpose of this section is to provide an overview of the physical relationships that are modeled in this tool. These include river runoff, temperature balancing, and nutrient/dissolved oxygen (DO) balancing. The organization of the modeled elements is as follows:

Rainfall runoff model
- Runoff (mm/day)
- Basin PET (mm/day)
- Soil moisture (mm)
- Shallow groundwater (mm)

Heat balance model
- Lake water temperature (°C)
- Total heat flux (cal/cm2/day)
- Daily mean solar radiation (cal/cm2/day)

- Atmospheric longwave flux (cal/cm2/day)
- Longwave back radiation (cal/cm2/day)
- Conduction/convection flux (cal/cm2/day)
- Evaporation/condensation flux (cal/cm2/day)
- Daily max solar radiation (cal/cm2/day)
- Photoperiod (hours)
- Lake evaporation (mm/day)

Nutrient and dissolved oxygen models

- Phosphorus concentration (µg/L)
- Nitrogen concentration (µg/L)
- Dissolved oxygen concentration (mg/L)

1a. Rainfall runoff

River runoff entering the lake can either be calculated using a rainfall runoff model that is built into LBWQ, or be estimated outside of the tool and entered directly. The built in model is a one-dimensional model that apportions rainfall into one of several categories: (1) runoff to the lake, (2) soil moisture, (3) losses to PET (calculation approach discussed below), or (4) shallow groundwater. It is the "Runoff" module within the VBA code of this tool.

The initial allocation of rainfall is driven by the runoff coefficient, which is driven by land use and relative magnitude of the precipitation event.

$$f_{GW} = 1 - 0.5 \frac{(P_{max} + P_t)}{P_{max}} c_r$$

The variable f_{GW} is the fraction of water that is available for soil moisture, groundwater, or to be evapotranspired. $1-f_{GW}$ is therefore the volume of water that enters the stream directly. P_{max} is the maximum precipitation in the record, P_t is the precipitation during this period, and c_r is the runoff coefficient. The purpose of the fraction in front of the runoff coefficient is to let more runoff enter the stream directly during high runoff events. Next, $f_{GW}P_t$ is available for entry into either soil moisture or shallow groundwater, but only if PET_t does not exceed the soil moisture content. Define a temporary soil moisture variable:

$$SM_{temp} = SM_{t-1} + f_{GW}P_t - f_{PET}PET_t$$

Where SM is soil moisture, f_{PET} is the fraction of PET that can be removed from soil moisture in any period (user-specified), and PET_t is the PET during this time period. If $SM_{temp} < 0$, then $SM_t = 0$ and $GW_t = GW_{t-1}$. If SMtemp is greater than the maximum allowable soil moisture (SM_{max}), then $SM_t = SM_{max}$, and $GW_t = GW_{t-1} + SM_{temp} - SM_{max}$. That is, surplus water enters the shallow groundwater system. Lastly, if neither are true, then $SM_t = SM_{temp}$, and $GW_t = GW_{t-1}$.

At elevations higher than a "preferred" groundwater level, the groundwater system will be increasingly forced to release water. Groundwater is also released in response to exceptionally low precipitation availability. Thus, the additional flow generated by groundwater is:

$$Q_t^{GW} = \left[\frac{GW_t}{GW_s}\right]^3 + \left[1.2 - \left(1.2\frac{P_t}{P_{max}}\right)\right]^6$$

Where GWs is a stable groundwater elevation (in the example presented in Part 3, this is 50 mm). The coefficient of 1.2 in the precipitation driver was chosen based on reasonableness of model results. If Q_t^{GW} exceeds current groundwater availability, then $GW_t = GW_{t-1}$ and $Q_t = (1-f_{GW})P_t$. Otherwise, this value is removed from groundwater and added to streamflow.

1b. Heat balance model

The differential equation for the heat balance, recognizing a constant volume and that the density and specific heat of water are unit, is as follows:

$$\frac{dT}{dt} = QT_t^{in} - (Q - Q^E)T + A_sJ$$

For simplicity, the inflow water temperature is assumed to be the same as the air temperature. The outflow temperature is the variable of interest, and Q^E is the flow removed through lake evaporation. The total heat flux, J, is defined as:

$$J = J_{sn} + J_{an} - (J_{br} + J_c + J_e)$$

J_{sn} is estimated using methodologies outlined by FAO (1998). The tool generates extraterrestrial solar radiation, which is then translated to net solar shortwave radiation using percentage of cloud cover. Inputs to the extraterrestrial solar radiation calculation are simply latitude and day of year. The tool also calculates PET using the Modified Hargreaves approach (Allen et al. 2002), as well as photoperiod, in hours.

The remaining terms in the flux balance are calculated following methodologies documented in Chapra (1997). These use the Stefan-Boltzmann law for atmospheric longwave radiation and back radiation, and wind speed for the conduction/convection and evaporation/condensation terms.

1c. Phosphorus model

The phosphorus model is based on the budgeting approach reviewed by Chapra (1997). This approach is best suited to longer time-scale modeling efforts, and ignores the specific mechanisms that circulate phosphorus though the lake system (such as uptake and release by organisms). Because the lake is assumed to be relatively large and operate at a monthly time step, this is reasonable.

$$\frac{dp}{dt} = \frac{W_{pl} + W_{pa}}{V} - \frac{(Q - Q^E)p}{V} - v_p A_s p$$

Where vp is a first order settling loss, assumed to be 10 meters per year. The loading is a constant value per month based on export coefficients and per capita loadings. Wpl and Wpa are the loadings from land surface runoff and from air deposition on the lake surface.

1d. Nitrogen model

The purpose of the nitrogen model is twofold. One goal is to track total nitrogen in the system. For this reduced form process, nitrogen is treated as a conserved substance with a certain "settling" rate (assumed to be 5 meters per year). The assumption that nitrogen is conserved is a simplification, but approximates the true system on longer time scales. As such, nitrogen is treated in an identical fashion to phosphorus. The second purpose of nitrogen modeling is to evaluate the implications of nitrification on dissolved oxygen concentrations.

$$\frac{dn}{dt} = \frac{W_{nl} + W_{na}}{V} - \frac{(Q - Q^E)n}{V} - v_n A_s n$$

1e. Dissolved oxygen model

The three driving forces of dissolved oxygen evaluated in this model are nitrification, oxidation of carbonaceous biochemical oxygen demand (BOD), and reaeration.[2] The oxygen model is therefore:

$$\frac{do}{dt} = K_l A_s (o_{sat} - o) - r_{oc} CBOD - r_{on} n_{IO}$$

Where K_l is the oxygen mass transfer coefficient (from Chapra 1997) and driven by windspeed. O_{sat}, or oxygen saturation, is adjusted automatically for temperature and elevation, and r_{oc} and r_{on} are the stoichiometric coefficients for the oxidation of CBOD and nitrification (2.67 and 4.57, respectively). n_{IO} is the inorganic nitrogen provided by export coefficients (Chapra 1997), assumed to be entirely made up of ammonia. CBOD is also provided in the form of per capita loadings of sewage.

PART 2. LAKE KYOGA EXAMPLE: INPUT PARAMETERS AND MODEL OUTPUTS

For the current study, the LBWQ tool was applied to evaluate water quality implications of land use and management interventions on the four major lakes of Uganda: Victoria, Edwards, Kyoga, and Albert (Figure 4B-2).   This section provides an overview of the input parameters and model outputs for the Uganda LBWQ model. For each of the four lakes, there are three investment scenarios and two future years (2020 and 2040), for 24 future models in total. There is also one 2015 run per lake. Each of these 28 runs is processed for a total of 10 representative years with a common set of climate data for each lake, to allow steady state conditions to develop.

FIGURE 4B-2   MAJOR LAKES OF UGANDA[3]

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[2] The effects of photosynthesis and respiration are not evaluated in this model. As a result, a eutrophic lake will have no effect on oxygen concentrations.

[3] Source: Accessed on May 5, 2016 from
https://upload.wikimedia.org/wikipedia/commons/thumb/d/df/Rivers_and_lakes_of_Uganda.png/473px-Rivers_and_lakes_of_Uganda.png

2a. Modeling inputs and assumptions

The next several tables provide the model inputs and outputs used for Lake Kyoga.

TABLE 4B-1 PARAMETER INPUTS

PARAMETER	VALUE	UNITS
Volume (V)	7,900	millions of m^3
Surface area (A)	1,820	km^2
Initial water temperature (TW0)	24.13	degC
Initial phos. concentration (cp0)	200	ug/L
Initial nitr. concentration (cn0)	4,000	ug/L
Initial DO concentration (do0)	5.00	mg/L
Settling rate for P (vsp)	10.0	m/yr
Settling rate for N (vsn)	5.0	m/yr
Latitude of basin centroid (lat)	0.5	deg
Elevation of basin centroid (elev)	618.00	m

Table 4B-2 provides export coefficients for loading of nitrogen and phosphorus in kilograms per hectare per year.   In the model, it is assumed that all of this loading reaches the lake (i.e., no reduction in loading during transport). For the purposes of the Uganda model, agriculture was assumed to be evenly divided between maize and small grain.

TABLE 4B-2   EXPORT COEFFICIENTS

CONSTITUENT	LAND USE										
	FOREST	CORN	COTTON	SOYBEANS	SMALL GRAIN	PASTURE	FEEDLOT DAIRY	IDLE	RESIDENTIAL	BUSINESS	INDUSTRIAL
Nitrogen	1.8	11.1	10	12.5	5.3	3.1	2,900	3.4	7.5	13.8	4.4
Phosphorus	0.1	2.0	4.3	4.6	1.5	0.1	220	0.1	1.2	3.0	3.8

Source: NCSU

Table 4B-3 shows the export coefficients of the atmosphere on the lake. Although atmospheric deposition of nitrogen and phosphorus also occurs on land, it was assumed that these were included in the export coefficients presented above.

TABLE 4B-3   EXPORT COEFFICIENTS AND LOADINGS OF ATMOSPHERE ON LAKE

PARAMETER	N	P
ATMOSPHERIC (KG/HA/YR)	24.0	1.0
W$_{ATM}$ (KG/YR)	1,200	50

Source: Chapra 1997

Per capita loading estimates are provided in Table 4B-4. Note that inorganic nitrogen is conservatively assumed to be entirely ammonia, which consumes oxygen through nitrification.

CBOD is also assumed to deplete oxygen when it enters the lake. Both scenarios draw on population projections stating that 32,126,000 people live within the basin by 2040.

TABLE 4B-4   PER CAPITA LOADING AND RATES

NUTRIENT	RATE (KG/CAP/YR)
Nitrogen-O	3.1
Nitrogen-IO	5.2
P with det	1.6
CBOD (dev.)	21.9

Source of rates: Chapra 1997

Table 4B-5 displays the land use characteristics under scenarios 1 and 2. The high investment scenario has higher nitrogen and phosphorus concentrations than the BAU growth scenario because the overall amount of other land uses is projected to remain unchanged. Note that the approximately 80 percent of both nitrogen and phosphorus loading are attributable to sewage.

TABLE 4B-5   LAND CHARACTERISTICS

LAND USE	SCENARIO 1: BAU GROWTH 2040					SCENARIO 2: HIGH INVESTMENT 2040				
	AREA (HA)	WN (KG/YR)	% OF N LOAD	WP (KG/YR)	% OF P LOAD	AREA (HA)	WN (KG/YR)	% OF N LOAD	WP (KG/YR)	% OF P LOAD
TOTAL	4,567,559	132,700	100%	26,500	100%	5,548,345	134,100	100%	26,600	100%
Forest	419,103	700	0.6%	46.1	0.2%	1,186,234	2,100	1.6%	130	0.5%
Corn	1,394,471	15,500	11.7%	2,800	10.5%	1,394,471	15,500	11.5%	2,800	10.5%
Small Grain	1,394,471	7,400	5.6%	2,100	7.9%	1,394,471	7,400	5.5%	2,100	7.9%
Sewage	0	109,100	82.2%	21,600	81.4%	0	109,100	81.4%	21,600	81.2%

Changes in wetland and forest cover will affect the removal efficiency of BOD, and as a result affect DO concentrations in the lakes. According to Karathanasis et al. (2003), unplanted wetlands remove approximately 10 g/m2/day of BOD. To be conservative, we assume 1 percent of this removal efficiency, and that forests remove one-quarter of what wetlands remove. Removal is assumed to be applied to any increases or decreases in cover relative to historical conditions. In addition to changes in land use, supplying livestock with water will keep the animals out of lake tributaries, and as a result, reduce the introduction of BOD. In the high 2040 scenario, 73 percent of livestock are supplied with piped water, whereas in the BAU growth 2040 scenario, only 52 percent are on piped water. The effect of this is fairly limited, however, as BOD contribution of animals that use rivers and streams directly for water supply is only 10 percent higher.

Table 4B-6 shows the breakdown of BOD reduction and total BOD loading across the two scenarios. Not considering removal of BOD by wetlands and forests, total loading is 499,000 tons/yr under the BAU growth 2040 scenario, and 491,000 tons/yr under the High 2040 scenario. The difference between these is the effect of supplying water to livestock. Removal by wetlands and forests produces a much higher effect, reducing total loadings down to 496,000 tons/ha in BAU growth 2040, and 343,000 tons/ha in High 2040.

IEc

TABLE 4B-6   TOTAL BOD CONTRIBUTION, WITH BREAKDOWN INTO FORESTS/WETLANDS

CHARACTERISTIC	BAU 2040		HIGH 2040	
	WETLANDS	FORESTS	WETLANDS	FORESTS
Additional cover (km2)	393	-1,246	2,529	6,425
BOD removal (ton/kg/yr)	36	9	36	9
Removal (tons)	14,040	-11,140	90,470	57,460
Total removal (tons)		**2,900**		**147,930**
BOD loading w/o removal (tons/yr)		**499,000**		**491,000**
TOTAL BOD loading (tons/yr)		**496,000**		**343,000**

4.B.2 STORAGE YIELD CURVES

The reliability of storage is captured in the concept of storage yield, which is a measure of the annually reliable water supply from a reservoir. Much of the water available in a river basin during a given year is lost if not stored, so storage in a basin can greatly increase its reliable supply, or yield. Storage yield is a useful broad indicator of the climate risk to basin-level water resources. In the context of this study, these curves are used to determine the volume of storage yield needed to supply villages with sustainable yield in each of the 23 Ugandan catchments.

The storage yield curve has been developed as a means of relating yield to storage, and is a measure of the volume of storage needed to achieve a given level of reliable yield. Figure 4B-3 provides an example of a storage yield curve for the Nile River at Aswan, and illustrates the information that the curve provides. The maximum yield on the curve indicates the mean annual runoff in the basin upstream of the reservoir, and the minimum yield indicates the lowest flow in the runoff time series for the basin in question. That is, in a basin with no storage, the basin yield is assumed to be the lowest recorded annual flow. The shape of the storage yield curve is determined by the historical variability of basin runoff, where a steeper curve indicates a more stable system and a flatter curve a more variable one. So all else equal, a basin with more variable flows would require more storage to achieve the same level of reliable yield.

FIGURE 4B-3   STORAGE YIELD CURVE FOR THE NILE RIVER AT ASWAN
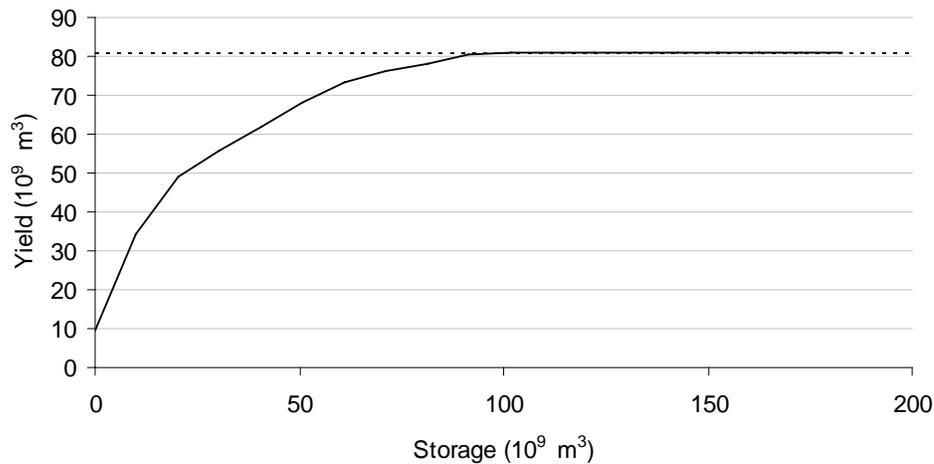
Source: Strzepek et al. (2011)

To construct storage yield curves, a standard approach is the sequent peak algorithm (Wiberg and Strzepek 2005, modified from Thomas and Fiering 1962), which is an iterative procedure that identifies the minimum storage volume needed to generate various levels of reliable yield, given a basin inflow time series. In this formulation, the elements include reservoir storage, releases, evaporation and precipitation over the reservoir, and inflow, all at a monthly time step. For small reservoirs and associated drainage basins, a daily time series of runoff data may be more appropriate.

$$S_t = \{R_t + E_{t-1} - P_{t-1} - Q_t + S_{t-1} \mid \text{if positive; otherwise, } S_t = 0\}$$

Where:
St = reservoir storage requirement
Rt = releases
Et = evaporation above the reservoir
Pt = precipitation above the reservoir
Qt = inflow
t = time step

In the case of Uganda, given a known amount of reliable water supply yield that is needed for a village, the above procedure can be used to estimate upstream storage requirements.

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ANNEX 4C. INDICATOR DETAILS

This annex provides further information about each of the 24 indicators. Details include key assumptions, unit estimation methods, and cost estimation methods.

1. VILLAGE WATER SUPPLY

INDICATOR INTERPRETATION ASSUMPTIONS

- Only one water source per village is required for coverage under this indicator
  - Source can be any type (i.e. Shallow well, deep borehole, rainwater tank, piped system, and to some extent protected springs—although these are phased out)
  - Each improved source (i.e. not a piped scheme) is assumed to cover 300 people
- Each piped system is assumed to cover 500 people

TABLE 4C-1. VILLAGE WATER SUPPLY UNIT ESTIMATION

Units	Village
Base Year National Estimate	2017 National number of villages from 2017 SPR
Base Year Catchment Estimates	Base year National estimate is divided into catchments using the proportion of small towns per catchment[4]
Projection to 2030	Number of villages assumed to increase at rate of population growth (3.05%)

TABLE 4C-2. VILLAGE WATER SUPPLY INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Water Supply-Basic	Average cost of water source (per capita costs from SSIP 2009 inflated to 2017 dollars) provision assuming a changing mix of sources over time
O&M: Water Supply-Basic	2% of capital cost annually
Replacement: Water Supply-Basic	Replacement of existing infrastructure assumed lifespan of 25 years. Follows replacement schedule for sample of piped water supply (see Figure A-1). Replacement cost is equal to capital cost.
Capital: Water Supply-Piped	Average cost of piped water (per capita costs from SSIP 2009[5] inflated to 2017 dollars)

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[4] Small town locations from a GIS file provided by Aurecon.

[5] SSIP 2009

Investment	Cost Description
O&M: Water Supply-Piped	2% of capital cost annually
Replacement: Water Supply-Piped	Replacement of existing infrastructure assumed lifespan of 25 years. See replacement schedule in Figure A-1[6]. Replacement cost is equal to capital cost.

FIGURE A-1.   PERCENT OF EXISTING WATER SUPPLY INFRASTRUCTURE REPLACED BY YEAR
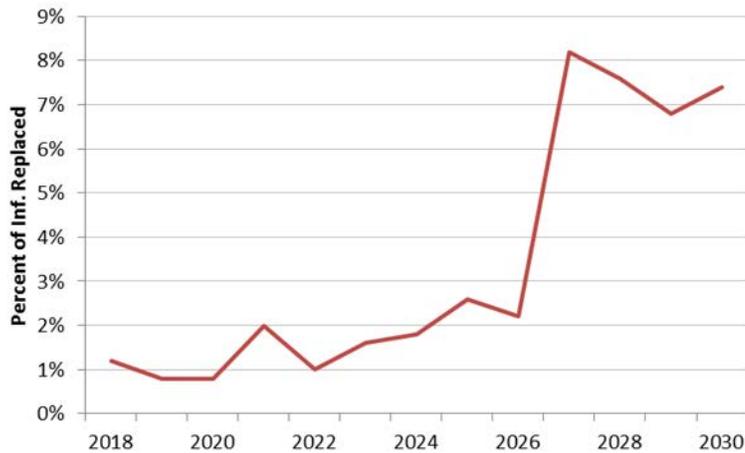
2. FUNCTIONAL RURAL WATER SOURCES

INDICATOR INTERPRETATION ASSUMPTIONS

- For water sources to be designated as functional, they should be inspected annually.

- A proportion of facilities inspected each year will need repair (beyond normal O&M) to remain functional

TABLE 4C-3.   FUNCTIONAL RURAL WATER SOURCES UNIT ESTIMATION

Units	Village
Base Year National Estimate	Rural water sources from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments
Projection to 2030	Number of sources is assumed to increase at rate of population growth (3.05%)[7]

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[6] Replacement schedule information provided by MWE.

[7] UBOS 2014 Population Projections

TABLE 4C-4.   FUNCTIONAL RURAL WATER SOURCES INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Source Repair	Cost per repair facility that includes field staff time, training, and travel expenses; and the cost of repairing 1/6 of facilities checked

3. IMPROVED DRINKING WATER

INDICATOR INTERPRETATION ASSUMPTIONS

- Improved drinking water sources include: protected springs, shallow wells, deep boreholes, rainwater harvesting tasks, kiosks, as well as the tap stands and household connections

- New investment focuses on shallow wells, boreholes, and rainwater harvesting tanks (i.e. reduced protected spring investment)

- Piped water is not required to meet this target but it does contribute to overall water coverage.

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TABLE 4C-5.   IMPROVED DRINKING WATER UNIT ESTIMATION

Units	People
Base Year National Estimate	Total population from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments
Projection to 2030	Population increased by UBOS expected population growth rate (3.05%)

TABLE 4C-6.   IMPROVED DRINKING WATER INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Water Supply-Basic	Average cost of water source (per capita costs from SSIP 2009 inflated to 2017 dollars) provision assuming a changing mix of sources over time
O&M: Water Supply-Basic	2% of capital cost annually
Replacement: Water Supply-Basic	Replacement of existing infrastructure assumed lifespan of 25 years. Follows replacement schedule for sample of piped water supply (see Figure A-1). Replacement cost is equal to capital cost.
Capital: Water Supply-Piped	Average cost of piped water (per capita costs from SSIP 2009 inflated to 2017 dollars)

Investment	Cost Description
O&M: Water Supply-Piped	2% of capital cost annually
Replacement: Water Supply-Piped	Replacement of existing infrastructure assumed lifespan of 25 years. See replacement schedule in Figure A-1. Replacement cost is equal to capital cost.

4. SAFELY MANAGED WATER

INDICATOR INTERPRETATION ASSUMPTIONS
- Safely managed drinking water is defined as piped water supply

TABLE 4C-7. SAFELY MANAGED WATER UNIT ESTIMATION

Units	People
Base Year National Estimate	Total population from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments
Projection to 2030	Population increased by UBOS expected population growth rate (3.05%)

TABLE 4C-8. SAFELY MANAGED WATER INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Water Supply-Piped	Average cost of piped water (per capita costs from SSIP 2009 inflated to 2017 dollars)
O&M: Water Supply-Piped	2% of capital cost annually
Replacement: Water Supply-Piped	Replacement of existing infrastructure assumed lifespan of 25 years. See replacement schedule in Figure A-1. Replacement cost is equal to capital cost.

5. COST PER CAPITA
- This indicator is only used for reporting purposes. It is calculated based on the costs used in the improved water coverage indicator and will vary over time as supply investments trend towards more expensive supply technologies.

6. URBAN WATER SERVICE FUNCTIONALITY

INDICATOR INTERPRETATION ASSUMPTIONS

- For water sources to be designated as functional, they should be inspected annually.

- A proportion of facilities inspected each year will need repair (beyond normal O&M) to remain functional

TABLE 4C-9.   FUNCTIONAL URBAN WATER SOURCES UNIT ESTIMATION

Units	Sources
Base Year National Estimate	Urban water sources from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments
Projection to 2030	Number of sources is assumed to increase at rate of population growth (3.05%)

TABLE 4C-10. FUNCTIONAL URBAN WATER SOURCES INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Source Repair	Cost per repair facility that includes field staff time, training, and travel expenses; and the cost of repairing 1/6 of facilities checked

7. SOLID WASTE DISPOSAL

INDICATOR INTERPRETATION ASSUMPTIONS

- Indicator covers the waste generated by residents of the twelve largest cities and towns in Uganda, as stated in the 2014 Census (UBOS 2014).

TABLE 4C-11. SOLID WASTE DISPOSAL UNIT ESTIMATION

Units	Tonnes of solid waste
Base Year National Estimate	Population of twelve largest towns (UBOS 2014) multiplied by the per capita waste generation estimate from the KCCA Project Teaser solid waste management pamphlet[8]
Base Year Catchment Estimates	Same as above, with catchment-specific large town population estimates.
Projection to 2030	Large town population increased by UBOS population growth rate (3.05%) and per capita waste generation increased linearly from

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[8] KCCA Project Teaser (2017): https://www.kcca.go.ug/uDocs/kampala-waste-treatment-and-disposal-ppp.pdf

	current KCCA estimates to World Bank estimate for average middle income country in 2030[9]

TABLE 4C-12. SOLID WASTE DISPOSAL INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Solid waste disposal	Costs per tonne of solid waste annually are estimated in a 2012 World Bank report (Hoornweg and Bhada-Tata, 2012)[10]. This figure includes the costs of solid waste collection and landfilling.

8. IMRPROVED SANITATION

INDICATOR INTERPRETATION ASSUMPTIONS

- Improved sanitation refers to access to sanitation facilities not shared with other households

- Household education is the only required investment for this indicator, although coverage with a faecal sludge management system (for Indicator 9. Safely Managed Sanitation) will also achieve this goal.

TABLE 4C-13. IMPROVED SANITATION UNIT ESTIMATION

Units	People
Base Year National Estimate	Total population from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments
Projection to 2030	Population increased by UBOS expected population growth rate (3.05%)

TABLE 4C-14. IMPROVED SANITATION INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Faecal Sludge Management	Costs of fecal sludge management per capita were drawn from the MWE's 2015 draft report, "Concept Note of Uganda´s Proposal to Finance Uganda Small Towns and Rural Growth Centres Faecal Sludge and Sanitation Project". Includes some software components.
O&M: Faecal Sludge Management	2% of capital costs

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[9] What A Waste: https://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1334852610766/What_a_Waste2012_Final.pdf

[10] Ibid.

Software: Household education campaigns	Assumes a ten day intervention reaching 100 people (both directly and through training community members). Effectiveness of the intervention is assumed to be 85%.

9. SAFELY MANAGED SANITATION

INDICATOR INTERPRETATION ASSUMPTIONS

- Safely managed sanitation refers to proper maintenance and treatment of sanitation facilities and waste, either in situ or offsite.

- This investment requires both a capital investment and a training component.

TABLE 4C-15. IMPROVED SANITATION UNIT ESTIMATION

Units	People
Base Year National Estimate	Total population from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments
Projection to 2030	Population increased by UBOS expected population growth rate (3.05%)

TABLE 4C-16. IMPROVED SANITATION INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Faecal Sludge Management	Costs of fecal sludge management per capita were drawn from the MWE's 2015 draft report, "Concept Note of Uganda´s Proposal to Finance Uganda Small Towns and Rural Growth Centres Faecal Sludge and Sanitation Project". Includes some software components.
O&M: Faecal Sludge Management	2% of capital costs
Software: Household education campaigns	Assumes a 21 day intervention reaching 100 people (both directly and through training community members). Effectiveness of the intervention is assumed to be 85%.

10. HANDWASHING AT HOME

INDICATOR INTERPRETATION ASSUMPTIONS

- The Sector's contribution to this indicator is assumed to include only household education campaigns.

TABLE 4C-17. HANDWASHING AT HOME UNIT ESTIMATION

Units	People
Base Year National Estimate	Total population from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments
Projection to 2030	Population increased by UBOS expected population growth rate (3.05%)

TABLE 4C-18. HANDWASHING AT HOME INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Software: Household education campaigns	Assumes a 14 day intervention reaching 100 people (both directly and through training community members). Effectiveness of the intervention is assumed to be 85%.

11. HANDWASHING AT SCHOOL

INDICATOR INTERPRETATION ASSUMPTIONS

- The Sector's contribution to this indicator is assumed to include only school education campaigns. Ministry of Sports and Education is assumed to be responsible for providing soap and other handwashing supplies.

- The indicator is assumed to apply to primary and secondary schools.

TABLE 4C-19. HANDWASHING AT SCHOOL UNIT ESTIMATION

Units	Students
Base Year National Estimate	Total population from the 2016 Water Supply Atlas multiplied by the percent of population in school. This second estimate comes from the 2014 Uganda Census (population age 5-19) and a 2014 Education Policy Data Center report (percentage of ages 6-18 in school).
Base Year Catchment Estimates	Water Supply Atlas provides district level population information which is spatially aggregated to the 23 catchments. School attendance rates are calculated separately by urban and rural areas but assumed otherwise constant across space.
Projection to 2030	Population increased by UBOS expected population growth rate (3.05%)

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Investment	Cost Description
Software: School education campaigns	Assumes a 14 day intervention reaching 100 people (both directly and through training community members). Effectiveness of the intervention is assumed to be 85%.

12. IRRIGATION

INDICATOR INTERPRETATION ASSUMPTIONS

- Irrigation O&M costs are assumed to be borne by the farmers benefiting from the irrigation projects

- Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is assumed to contribute to on farm infrastructure

TABLE 4C-21. IRRIGATION UNIT ESTIMATION

Units	Potentially irrigable hectares
Base Year National Estimate	From the report "Assessment of the Irrigation Potential in Burundi, Eastern DRC, Kenya, Rwanda, Southern Sudan, Tanzania and Uganda: Uganda Report Phase 2"
Base Year Catchment Estimates	The report came with an associated shapefile that allowed for catchment disaggregation
Projection to 2030	Potentially irrigable area assumed to remain constant over time

TABLE 4C-22. IRRIGATION INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Irrigation	Includes the cost headworks, primary canals from river to secondary system (concrete lined), secondary canals, and the cost of setting up a management system.
Replacement: Irrigation	Replacement cost is equal to initial capital cost. Replacement schedule assumes even age distribution with an expected useful life of 20 years.

13. WATER FOR PRODUCTION FUNCTIONALITY

INDICATOR INTERPRETATION ASSUMPTIONS
- For water sources to be designated as functional, they should be inspected annually.

- A proportion of facilities inspected each year will need repair (beyond normal O&M) to remain functional

TABLE 4C-23.   FUNCTIONAL WATER FOR PRODUCTION SOURCES UNIT ESTIMATION

Units	Sources
Base Year National Estimate	Reported in 2017 Sector Performance Report
Base Year Catchment Estimates	Sources are distributed to catchments based on total population share.
Projection to 2030	Number of sources is assumed to increase at rate of population growth (3.05%)

TABLE 4C-24.   FUNCTIONAL WATER FOR PRODUCTION SOURCES INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Source Repair	Cost per repair facility that includes field staff time, training, and travel expenses; and the cost of repair, assuming a 20% failure rate
Software: Management Planning	Software costs cover the expenses of revitalizing one Water User Committee (WUC)

14. STORAGE CAPACITY

INDICATOR INTERPRETATION ASSUMPTIONS
- Includes the total volume of water storage

TABLE 4C-25.   FUNCTIONAL URBAN WATER SOURCES UNIT ESTIMATION

Units	Million cubic meters (MCM)
Base Year National Estimate	Reported in 2017 Sector Performance Report
Base Year Catchment Estimates	Sources are distributed to catchments based on total population share.
Projection to 2030	Base units represent the target storage volume, which remains constant over time.

TABLE 4C-26.   FUNCTIONAL URBAN WATER SOURCES INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Storage	Includes the cost of either communal valley tank or earth dam storage (including management) or individual facility cost, weighted by prevalence of each storage type nationally.

	Catchment costs are differentiated based on the relative costs derived using average basin slope and the volume of a typical small scale reservoir. These are routed through the Wiberg and Strzepek formulation (see Annex 3C on storage yield curves for details).
O&M: Storage	2% of capital costs

15. COMPLIANCE WITH DRINKING WATER STANDARDS

INDICATOR INTERPRETATION ASSUMPTIONS

- Assumed to only pertain to drinking water samples

- Growth in samples taken may be an underestimate in the future as more sampling efforts are undertaken

TABLE 4C-27. COMPLIANCE WITH DRINKING WATER STANDARDS UNIT ESTIMATION

Units	Number of drinking water source samples per year
Base Year National Estimate	Reported in 2017 Sector Performance Report
Base Year Catchment Estimates	Sources are distributed to catchments based on total population share.
Projection to 2030	Number of sources is assumed to increase at rate of population growth (3.05%)

TABLE 4C-28. COMPLIANCE WITH DRINKING WATER STANDARDS COST ESTIMATION

Investment	Cost Description
Capital: Drinking water samples	• For rural samples, a weighted average of source replacement and repair is used to estimate the cost to get one source into compliance. This is then divided by the sampling rate (# samples/# sources) and multiplied by the inverse of the compliance rate to get the cost of bringing a probabilistic sample into compliance. • For urban samples, a sample is assumed to represent one facility day, where the number of facilities is estimated based on typical daily capacities and daily water use rates. Costs are generated on a m3 basis. The cost per m3 of wastewater treatment is found in Dore et al. (2013) and is used a proxy cost for getting that unit of water in compliance, which is then multiplied by the inverse of the compliance rate. • The final multiplier is a weighted average of the urban and rural multiplier values, weighted by the number of samples taken from each source category.

16. PERMIT COMPLIANCE

INDICATOR INTERPRETATION ASSUMPTIONS

- The estimated number of permits may be an underestimate of future permits processed as the Sector continues to bring illegal operators under permit

- The permit cycle is five years; therefore the average permit would run through two cycles within the timeframe of the SSIP. Therefore costs per permit are estimated to cover two issuances.

TABLE 4C-29. PERMIT COMPLIANCE UNIT ESTIMATION

Units	Permits
Base Year National Estimate	Reported in 2017 Sector Performance Report
Base Year Catchment Estimates	Permits are distributed to catchments based on total population share.
Projection to 2030	Number of permits is assumed to increase at rate of population growth (3.05%)

TABLE 4C-30. PERMIT COMPLIANCE INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Software: Permit Compliance	Software costs cover the expenses of an initial permit assessment, printing of the permit and advertising it in a newspaper, monitoring for compliance (field work, labor, and supplies), as well as a shared portion of monitoring equipment

17. WASTEWATER TREATMENT

INDICATOR INTERPRETATION ASSUMPTIONS

- Treatment is assumed to include conventional treatment plant methods.

TABLE 4C-31. WASTEWATER TREATMENT UNIT ESTIMATION

Units	People
Base Year National Estimate	Total population from the 2016 Water Supply Atlas
Base Year Catchment Estimates	Water Supply Atlas provides district level information which is spatially aggregated to the 23 catchments

Projection to 2030	Population increased by UBOS expected population growth rate (3.05%)

TABLE 4C-32. WASTEWATER TREATMENT INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Wastewater treatment	Capital costs are based on the recent construction of a 800,000 hectoliters per year treatment plant in Uganda[11]
O&M: Wastewater treatment	2% of capital costs
Replacement: Wastewater treatment	Replacement cost is assumed to be equal to capital costs. Replacement schedule is based on an assumed even age distribution of existing infrastructure, assuming a 50 year useful life.[12]

18. AMBIENT WATER QUALITY

INDICATOR INTERPRETATION ASSUMPTIONS

- BOD concentration less than 2 ppm is assumed to be a proxy for indicator definition ("proportion of water bodies with good ambient water quality")

- BOD is removed via wetlands (1073 kg/HA/year) and forest (268 kg/HA/year) restoration and increased wastewater treatment (21.66 kg/cap/year for moving to treated wastewater)

TABLE 4C-33. AMBIENT WATER QUALITY UNIT ESTIMATION

Units	Tonnes of BOD (to be removed to meet standard)
Base Year National Estimate	Base loadings are based on total population and livestock by catchment and associated loadings rate. Base concentration is calculated by dividing these loadings by the volume of water in Uganda (note: only half of the volume of Lake Victoria is considered). The total BOD loading representing a 2 ppm concentration is subtracted from this estimate to define the base

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[11] https://ugandabreweries.com/uganda-breweries-limiteds-shs20b-water-treatment-plant-saving-lake-victoria/

[12] US EPA. 2002. The Clean Water and Drinking Water Infrastructure Gap Analysis.
https://nepis.epa.gov/Exe/ZyNET.exe/901R0200.txt?ZyActionD=ZyDocument&Client=EPA&Index=2000%20Thru%202005&Docs=&Query=&Time
=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp
=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C00THRU05%5CTXT%5C00000011%5C901R0200.txt&User=ANONYMO
US&Password=anonymous&SortMethod=h%7C-
&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyAction
L&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=2#

	year unit estimate.
Base Year Catchment Estimates	Tonnes of BOD are split between catchments based on the surface area of water in each catchment (Census 2014)
Projection to 2030	BOD level is assumed to stay constant over time.

TABLE 4C-34. AMBIENT WATER QUALITY INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Wetlands rehabilitation	Conversion-specific estimates of wetland rehabilitation costs plus demarcation costs
O&M: Wetlands rehabilitation	2% of capital costs (includes monitoring and enforcement)
Capital: Forest rehabilitation	Ecosystem-specific rehabilitation costs
O&M: Forest rehabilitation	2% of capital costs (includes monitoring and enforcement)
Capital: Wastewater treatment	Capital costs are based on the recent construction of a 800,000 hectoliters per year treatment plant in Uganda[13]
O&M: Wastewater treatment	2% of capital costs
Replacement: Wastewater treatment	Replacement cost is assumed to be equal to capital costs. Replacement schedule is based on an assumed even age distribution of existing infrastructure, assuming a 50 year useful life.[14]

19. WETLANDS COVERAGE

INDICATOR INTERPRETATION ASSUMPTIONS
- Wetlands are assumed to degrade over time in absence of any investment (2.5% per year)

TABLE 4C-35. WETLANDS UNIT ESTIMATION

Units	Hectares of Wetland (to be restored)
Base Year National Estimate	Target number of hectares minus existing number of hectares of

[13] https://ugandabreweries.com/uganda-breweries-limiteds-shs20b-water-treatment-plant-saving-lake-victoria/

[14] US EPA. 2002. The Clean Water and Drinking Water Infrastructure Gap Analysis. https://nepis.epa.gov/Exe/ZyNET.exe/901R0200.txt?ZyActionD=ZyDocument&Client=EPA&Index=2000%20Thru%202005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C00THRU05%5CTXT%5C00000011%5C901R0200.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=2#

	wetlands
Base Year Catchment Estimates	Distribution of existing hectares by catchment is known and targets are assumed to be proportional to existing hectares by catchment
Projection to 2030	The number of hectares to be restored is assumed to grow at 2.5% per year, signifying a base case degradation of 2.5% per year.

TABLE 4C-36. WETLANDS INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Wetlands rehabilitation	Conversion-specific estimates of wetland rehabilitation costs plus demarcation costs
O&M: Wetlands rehabilitation	2% of capital costs (includes monitoring and enforcement)

20. FOREST COVERAGE

INDICATOR INTERPRETATION ASSUMPTIONS
• Wetlands are assumed to degrade over time in absence of any investment (2.5% per year)

TABLE 4C-37. FOREST UNIT ESTIMATION

Units	Hectares of Forest(to be restored)
Base Year National Estimate	Target number of hectares minus existing number of hectares of forest
Base Year Catchment Estimates	Distribution of existing hectares by catchment is known and targets are assumed to be proportional to existing hectares by catchment
Projection to 2030	The number of hectares to be restored is assumed to grow at 2.5% per year, signifying a base case degradation of 2.5% per year.

TABLE 4C-38. FOREST INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Forest rehabilitation	Ecosystem-specific rehabilitation costs
O&M: Forest rehabilitation	2% of capital costs (includes monitoring and enforcement)

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21. GREENHOUSE GAS EMISSIONS

INDICATOR INTERPRETATION ASSUMPTIONS

- The Sector is assumed to improve GHG emissions by reforestation

- Each hectare of forest is assumed to reduce GHG emissions by 26 tonnes per year[15]

TABLE 4C-39. GREENHOUSE GAS UNIT ESTIMATION

Units	Tonnes of CO_2
Base Year National Estimate	Current population multiplied by the per capita emissions rate for Uganda from the World Bank database[16]
Base Year Catchment Estimates	Catchment populations multiplied by the per capita emissions rate for Uganda from the World Bank database
Projection to 2030	Population, grown at 3.05% annually, multiplied by a trajectory of per capita emissions from current Uganda levels to average low-middle income country levels by 2030.[17]

TABLE 4C-40. GREENHOUSE GAS INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Forest rehabilitation	Ecosystem-specific rehabilitation costs
O&M: Forest rehabilitation	2% of capital costs (includes monitoring and enforcement)

22. CLIMATE VULERNABILITY INDEX

- This indicator is a reporting indicator only, meaning no investments are made to specifically improve the indicator performance; however the index is improved by investments in water supply, sanitation, water storage, and irrigation. The index used in ND-GAIN (https://gain.nd.edu/).

23. OPERATIONAL WEATHER STATIONS

INDICATOR INTERPRETATION ASSUMPTIONS

- Weather stations is assumed to include synoptic, agromet, hydromet, rainfall, upper air, RADARs, and automatic weather stations (AWS).

- Each hectare of forest is assumed to reduce GHG emissions by 26 tonnes per year[18]

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[15] IPCC: http://www.ipcc.ch/ipccreports/sres/land_use/index.php?idp=253

[16] Source: https://data.worldbank.org/indicator/EN.ATM.CO2E.PC

[17] Ibid.

TABLE 4C-41. WEATHER STATAION UNIT ESTIMATION

Units	Weather Stations
Base Year National Estimate	Base number of weather stations (by type) provided by UNMA.
Base Year Catchment Estimates	Spatial distribution of weather stations by catchment proportional to the distribution of weather stations in GIS shapefile[19]
Projection to 2030	Target number of stations in 2030 provided by UNMA. Assumes a linear growth from current levels to 2030.

TABLE 4C-42. WEATHER STATION INVESTMENTS AND COST ESTIMATION

Investment	Cost Description
Capital: Weather Station	Ecosystem-specific rehabilitation costs
O&M: Weather Station	2% of capital costs (includes monitoring and enforcement)
Replacement: Weather Station	Replacement cost is assumed to be equal to capital costs. The replacement schedule assumes an even age distribution and a 15 year useful life.

[18] IPCC: http://www.ipcc.ch/ipccreports/sres/land_use/index.php?idp=253

[19] Weather station shapefile provided by Aurecon.

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ANNEX 4D. DETAILED INDICATOR PERFORMANCE TABLES

FIGURE 4D-1   INDICATOR PERFORMANCE TOWARD TARGETS:BAU

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Village water supply	0	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	1	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	2	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	3	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	4	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	5	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	6	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	7	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	8	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	9	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	10	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	11	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	12	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	13	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	14	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	15	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	16	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	17	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	18	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	19	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	20	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	21	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	22	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
	23	66.0%	73.0%	78.8%	83.1%	86.0%	88.3%	89.9%	91.0%	91.6%	89.9%
rural water sources	0	85.0%	88.9%	90.7%	91.5%	91.7%	91.8%	91.7%	91.5%	91.1%	87.9%
	1	80.3%	86.3%	89.2%	90.6%	91.1%	91.5%	91.5%	91.3%	91.0%	87.9%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	2	85.0%	88.9%	90.7%	91.5%	91.7%	91.8%	91.7%	91.5%	91.1%	87.9%
	3	82.4%	87.4%	89.9%	91.0%	91.4%	91.6%	91.6%	91.4%	91.1%	87.9%
	4	73.3%	82.5%	87.0%	89.3%	90.3%	90.9%	91.1%	91.1%	90.9%	87.9%
	5	86.5%	89.7%	91.1%	91.8%	91.8%	91.9%	91.8%	91.5%	91.2%	87.9%
	6	82.9%	87.7%	90.0%	91.1%	91.4%	91.7%	91.6%	91.4%	91.1%	87.9%
	7	89.5%	91.3%	92.1%	92.3%	92.2%	92.1%	91.9%	91.6%	91.2%	88.0%
	8	81.0%	86.7%	89.4%	90.8%	91.2%	91.5%	91.5%	91.3%	91.0%	87.9%
	9	68.9%	80.1%	85.7%	88.5%	89.8%	90.6%	90.9%	91.0%	90.8%	87.8%
	10	81.2%	86.8%	89.5%	90.8%	91.2%	91.5%	91.5%	91.4%	91.0%	87.9%
	11	83.8%	88.2%	90.3%	91.3%	91.5%	91.7%	91.6%	91.4%	91.1%	87.9%
	12	83.7%	88.2%	90.3%	91.3%	91.5%	91.7%	91.6%	91.4%	91.1%	87.9%
	13	88.8%	90.9%	91.9%	92.2%	92.1%	92.1%	91.9%	91.6%	91.2%	88.0%
	14	93.0%	93.2%	93.2%	93.0%	92.6%	92.4%	92.1%	91.7%	91.3%	88.0%
	15	89.6%	91.4%	92.1%	92.4%	92.2%	92.1%	91.9%	91.6%	91.2%	88.0%
	16	91.0%	92.1%	92.6%	92.6%	92.4%	92.2%	92.0%	91.7%	91.3%	88.0%
	17	79.0%	85.6%	88.8%	90.4%	91.0%	91.4%	91.4%	91.3%	91.0%	87.9%
	18	67.2%	79.2%	85.2%	88.2%	89.6%	90.5%	90.8%	90.9%	90.7%	87.8%
	19	89.3%	91.2%	92.0%	92.3%	92.2%	92.1%	91.9%	91.6%	91.2%	88.0%
	20	86.1%	89.4%	91.0%	91.7%	91.8%	91.9%	91.7%	91.5%	91.2%	87.9%
	21	82.3%	87.4%	89.8%	91.0%	91.4%	91.6%	91.6%	91.4%	91.1%	87.9%
	22	86.4%	89.6%	91.1%	91.8%	91.8%	91.9%	91.8%	91.5%	91.2%	87.9%
	23	81.1%	86.7%	89.5%	90.8%	91.2%	91.5%	91.5%	91.3%	91.0%	87.9%
Improved drinking water	0	70.0%	72.3%	74.1%	75.2%	75.7%	76.0%	76.0%	75.7%	75.2%	70.7%
	1	75.6%	76.9%	77.9%	78.5%	78.5%	78.4%	78.1%	77.6%	76.9%	71.8%
	2	82.2%	82.4%	82.4%	82.3%	81.8%	81.3%	80.6%	79.8%	78.9%	73.1%
	3	78.8%	79.6%	80.1%	80.3%	80.1%	79.8%	79.3%	78.7%	77.9%	72.5%
	4	92.4%	90.8%	89.4%	88.1%	86.8%	85.6%	84.4%	83.2%	82.0%	75.2%
	5	73.6%	75.3%	76.5%	77.3%	77.5%	77.6%	77.3%	76.9%	76.3%	71.4%
	6	64.0%	67.4%	70.0%	71.8%	72.8%	73.5%	73.7%	73.7%	73.4%	69.5%
	7	65.4%	68.5%	70.9%	72.6%	73.4%	74.0%	74.2%	74.2%	73.8%	69.8%

Indicator	Catch	Year
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	8	59.0%	63.2%	66.5%	68.9%	70.3%	71.3%	71.8%	72.0%	71.9%	68.5%
	9	86.4%	85.8%	85.3%	84.7%	83.9%	83.1%	82.2%	81.2%	80.2%	74.0%
	10	73.1%	74.8%	76.2%	77.0%	77.2%	77.3%	77.1%	76.7%	76.1%	71.3%
	11	66.2%	69.2%	71.5%	73.0%	73.8%	74.4%	74.5%	74.4%	74.1%	69.9%
	12	61.5%	65.3%	68.3%	70.4%	71.5%	72.4%	72.8%	72.9%	72.7%	69.0%
	13	70.8%	73.0%	74.7%	75.7%	76.2%	76.4%	76.3%	76.0%	75.5%	70.9%
	14	72.4%	74.3%	75.7%	76.6%	76.9%	77.0%	76.9%	76.5%	75.9%	71.2%
	15	72.4%	74.2%	75.7%	76.6%	76.9%	77.0%	76.9%	76.5%	75.9%	71.2%
	16	69.1%	71.6%	73.5%	74.7%	75.3%	75.6%	75.6%	75.4%	74.9%	70.5%
	17	82.1%	82.3%	82.3%	82.2%	81.7%	81.2%	80.5%	79.8%	78.9%	73.1%
	18	77.6%	78.5%	79.3%	79.6%	79.5%	79.3%	78.8%	78.2%	77.5%	72.2%
	19	58.6%	62.9%	66.3%	68.7%	70.1%	71.2%	71.7%	71.9%	71.8%	68.4%
	20	68.5%	71.1%	73.1%	74.4%	75.0%	75.4%	75.4%	75.2%	74.8%	70.4%
	21	65.8%	68.8%	71.2%	72.8%	73.6%	74.2%	74.4%	74.3%	73.9%	69.8%
	22	71.1%	73.2%	74.8%	75.9%	76.3%	76.5%	76.4%	76.1%	75.5%	70.9%
	23	80.3%	80.8%	81.1%	81.1%	80.8%	80.4%	79.8%	79.1%	78.3%	72.7%
Safely managed drinking water	0	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	1	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	2	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	3	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	4	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	5	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	6	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	7	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	8	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	9	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	10	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	11	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	12	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	13	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	14	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	15	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	16	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	17	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	18	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	19	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	20	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	21	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	22	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
	23	6.6%	7.0%	7.4%	7.8%	8.2%	8.6%	8.9%	9.2%	9.5%	10.1%
Cost per Capita	0	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	4	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	5	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	7	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	8	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	9	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	13	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	14	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	16	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	17	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	18	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year				
	20	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	21	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	22	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Urban water service functionality	0	92.0%	94.6%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.7%
	1	94.1%	95.2%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.6%
	2	30.0%	75.4%	93.4%	97.4%	97.8%	98.4%	98.6%	99.0%	99.1%	100.0%
	3	84.4%	92.2%	95.9%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	99.0%
	4	87.9%	93.3%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.9%
	5	87.6%	93.2%	96.0%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.9%
	6	97.7%	96.3%	96.5%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.5%
	7	98.8%	96.7%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.5%
	8	84.5%	92.3%	95.9%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	99.0%
	9	89.4%	93.8%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.8%
	10	100.0%	100.0%	97.0%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.0%
	11	100.0%	99.1%	96.9%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.1%
	12	91.1%	94.3%	96.2%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.8%
	13	95.3%	95.6%	96.4%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.6%
	14	100.0%	100.0%	98.5%	97.1%	97.9%	98.3%	98.7%	98.9%	99.2%	97.2%
	15	100.0%	97.5%	96.7%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.4%
	16	100.0%	97.1%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.4%
	17	74.1%	89.0%	95.4%	97.3%	97.9%	98.3%	98.7%	98.9%	99.1%	99.4%
	18	83.3%	91.9%	95.8%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	99.1%
	19	94.0%	95.2%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.6%
	20	99.4%	96.9%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.4%
	21	82.7%	91.7%	95.8%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	99.1%
	22	92.7%	94.8%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.7%
	23	88.0%	93.3%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.9%
Solid waste disposal	0	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	4	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	6	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	8	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	11	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	12	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	13	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	16	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	17	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	20	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	21	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
	22	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	23	67.5%	63.6%	62.6%	62.3%	62.8%	64.0%	65.5%	67.3%	68.9%	74.5%
Improved sanitation	0	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	1	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	2	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	3	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	4	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	5	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	6	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	7	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	8	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	9	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	10	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	11	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	12	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	13	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	14	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	15	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	16	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	17	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	18	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	19	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	20	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	21	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	22	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
	23	19.2%	25.4%	31.2%	36.2%	40.0%	43.3%	45.8%	47.7%	49.2%	50.4%
Safely managed sanitation	0	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	1	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	2	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	3	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	4	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	5	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	6	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	7	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	8	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	9	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	10	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	11	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	12	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	13	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	14	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	15	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	16	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	17	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	18	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	19	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	20	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	21	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	22	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
	23	9.6%	10.0%	10.4%	10.8%	11.2%	11.5%	11.9%	12.2%	12.4%	12.7%
Handwashing at home	0	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	1	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	2	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	3	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	4	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	5	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	6	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	7	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	8	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	9	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	10	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	11	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	12	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	13	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	14	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	15	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	16	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	17	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	18	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	19	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	20	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	21	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	22	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
	23	37.0%	36.2%	35.6%	35.1%	34.9%	34.9%	35.0%	35.3%	35.7%	38.2%
Handwashing at school	0	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	1	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	2	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	3	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	4	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	5	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	6	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	7	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	8	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	9	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	10	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	11	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	12	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	13	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	14	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	15	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	16	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	17	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	18	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	19	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	20	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	21	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	22	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
	23	35.0%	34.5%	34.6%	35.4%	36.6%	38.3%	40.3%	42.6%	44.8%	53.4%
Irrigation	0	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	1	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	2	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	3	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	4	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	5	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	6	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	7	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	8	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	9	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	10	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	11	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	12	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	13	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	14	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	15	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	16	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	17	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	18	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	19	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	20	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	21	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	22	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
	23	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.8%
WfP functionality	0	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	1	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	2	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	3	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	4	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	5	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	6	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	7	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	8	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	9	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	10	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	11	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	12	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	13	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	14	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	15	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	16	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	17	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	18	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	19	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	20	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	21	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	22	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
	23	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.4%	98.5%	98.5%	98.5%
Storage Capacity	0	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	1	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	2	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	3	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	4	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	5	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	6	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	7	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	8	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	9	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	10	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	11	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	12	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	13	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	14	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	15	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	16	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	17	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	18	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	19	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	20	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	21	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	22	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
	23	23.7%	24.0%	24.4%	24.9%	25.6%	26.4%	27.4%	28.5%	29.7%	36.4%
Compliance with water standards	0	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	1	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	2	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	3	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	4	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	5	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	6	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	7	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	8	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	9	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	10	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	11	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	12	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	13	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	14	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	15	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	16	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	17	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	18	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	19	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	20	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	21	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	22	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
	23	64.4%	63.9%	64.0%	64.7%	65.6%	66.8%	68.1%	69.3%	70.3%	73.4%
Permit compliance	0	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	1	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	2	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	3	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	4	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	5	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	6	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	7	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	8	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	9	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	10	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	11	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	12	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	13	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	14	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	15	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	16	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	17	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	18	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	19	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	20	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	21	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	22	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
	23	71.0%	79.5%	84.1%	85.8%	86.2%	86.7%	87.0%	87.2%	87.3%	87.7%
Wastewater treatment	0	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	1	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	2	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	3	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	4	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	5	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	6	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	7	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	8	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	9	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	10	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	11	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	12	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	13	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	14	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	15	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	16	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	17	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	18	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	19	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	20	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	21	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	22	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
	23	20.0%	19.5%	19.1%	18.7%	18.3%	17.9%	17.6%	17.2%	16.9%	15.5%
Ambient water quality	0	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	1	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	2	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	3	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	4	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	5	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	6	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	7	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	8	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	10	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	11	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	12	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	13	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	14	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	15	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	16	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	17	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	20	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	21	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	22	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
	23	0.0%	0.4%	0.9%	1.4%	1.9%	2.4%	3.0%	3.7%	4.3%	7.6%
Water Stress	0	2.4%	2.5%	2.6%	2.7%	2.8%	2.9%	3.0%	3.1%	3.2%	3.6%
	1	34.1%	35.7%	37.3%	38.9%	40.5%	42.1%	43.6%	45.2%	46.7%	53.5%
	2	39.2%	40.9%	42.6%	44.4%	46.1%	47.8%	49.5%	51.2%	52.9%	60.2%
	3	3.4%	3.5%	3.6%	3.8%	3.9%	4.0%	4.1%	4.2%	4.3%	4.9%
	4	2.7%	2.8%	2.9%	3.0%	3.1%	3.3%	3.4%	3.5%	3.6%	4.1%
	5	4.4%	4.6%	4.8%	5.1%	5.3%	5.5%	5.7%	5.9%	6.1%	7.0%
	6	5.6%	5.8%	6.0%	6.2%	6.5%	6.7%	6.9%	7.2%	7.4%	8.5%
	7	4.8%	4.9%	5.1%	5.2%	5.4%	5.5%	5.7%	5.8%	6.0%	6.7%
	8	29.7%	30.7%	31.7%	32.7%	33.7%	34.6%	35.6%	36.6%	37.6%	42.2%
	9	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.4%	0.5%
	11	7.4%	7.9%	8.3%	8.7%	9.2%	9.6%	10.0%	10.4%	10.8%	12.5%
	12	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%	0.8%
	13	0.8%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.1%	1.2%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	14	12.3%	12.7%	13.1%	13.6%	14.0%	14.4%	14.8%	15.2%	15.6%	17.5%
	15	79.1%	81.4%	83.8%	86.3%	88.7%	91.1%	93.5%	95.9%	98.3%	100.0%
	16	7.3%	7.5%	7.8%	8.0%	8.3%	8.5%	8.8%	9.0%	9.3%	10.4%
	17	10.2%	10.8%	11.4%	12.1%	12.7%	13.4%	14.0%	14.6%	15.2%	17.7%
	18	8.4%	8.8%	9.3%	9.8%	10.3%	10.7%	11.2%	11.6%	12.1%	14.0%
	19	9.0%	9.3%	9.6%	9.9%	10.3%	10.6%	10.9%	11.3%	11.6%	13.2%
	20	3.2%	3.4%	3.5%	3.6%	3.7%	3.8%	4.0%	4.1%	4.2%	4.8%
	21	16.1%	16.6%	17.2%	17.8%	18.5%	19.1%	19.7%	20.3%	21.0%	24.1%
	22	6.5%	6.7%	6.9%	7.2%	7.4%	7.6%	7.9%	8.1%	8.3%	9.4%
	23	7.2%	7.4%	7.7%	7.9%	8.2%	8.4%	8.7%	9.0%	9.2%	10.4%
Wetlands coverage	0	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	1	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	2	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	3	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	4	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	5	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	6	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	7	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	8	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	9	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	10	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	11	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	12	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	13	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	14	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	15	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	16	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	17	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	18	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	19	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	20	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	21	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	22	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
	23	0.0%	0.6%	1.2%	1.9%	2.5%	3.2%	3.8%	4.5%	5.2%	8.1%
Forest Coverage	0	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	1	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	2	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	3	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	4	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	5	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	6	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	7	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	8	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	9	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	10	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	11	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	12	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	13	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	14	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	15	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	16	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	17	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	18	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	19	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	20	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	21	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	22	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
	23	0.0%	0.3%	0.5%	0.8%	1.1%	1.4%	1.7%	2.0%	2.3%	3.5%
GHG emissions	0	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	1	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	2	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	3	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	4	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	5	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	6	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	7	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	8	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	9	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	10	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	11	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	12	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	13	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	14	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	15	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	16	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	17	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	18	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	19	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	20	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	21	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	22	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
	23	0.0%	1.1%	1.9%	2.6%	3.0%	3.4%	3.7%	3.9%	4.1%	4.3%
Climate Change Vulnerability	0	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	7	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	8	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	9	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	13	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	14	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	16	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	17	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	18	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	20	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	21	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	22	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Operational weather stations	0	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	3	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	4	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	5	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	6	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	7	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	8	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	11	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	12	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	13	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	14	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	16	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	17	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	20	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	21	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	22	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%
	23	43.0%	43.9%	49.8%	55.5%	59.4%	63.3%	66.0%	68.2%	69.9%	74.0%

FIGURE 4D-2   INDICATOR PERFORMANCE TOWARD TARGETS: LOW-MODERATE

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Village water supply	0	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	97.6%	99.2%
	4	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	98.5%	100.0%
	5	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	97.3%	100.0%
	7	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	8	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	98.9%	100.0%	100.0%
	9	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	99.3%	100.0%	100.0%
	13	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	97.8%	100.0%	99.4%
	14	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	97.2%
	16	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	99.8%	98.5%	100.0%
	17	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	98.3%
	18	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	97.9%	97.6%
	20	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	21	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	99.9%	100.0%	100.0%	100.0%
	22	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	66.0%	79.9%	89.3%	95.4%	99.2%	100.0%	100.0%	100.0%	98.9%	100.0%
Functional rural water sources	0	85.0%	91.2%	94.4%	95.0%	95.1%	95.1%	95.0%	94.8%	94.6%	92.6%
	1	80.3%	89.4%	93.9%	94.8%	95.0%	95.1%	95.0%	94.8%	94.6%	92.6%
	2	85.0%	91.3%	94.4%	95.0%	95.1%	95.1%	95.0%	94.8%	94.6%	92.6%
	3	82.4%	90.2%	94.1%	94.9%	95.1%	95.1%	95.0%	94.8%	94.6%	92.6%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	4	73.3%	86.7%	93.0%	94.5%	94.9%	95.1%	95.0%	94.8%	94.6%	92.6%
	5	86.5%	91.8%	94.6%	95.1%	95.1%	95.2%	95.0%	94.8%	94.6%	92.6%
	6	82.9%	90.4%	94.2%	94.9%	95.1%	95.1%	95.0%	94.8%	94.6%	92.6%
	7	89.5%	93.0%	94.9%	95.2%	95.2%	95.2%	95.0%	94.9%	94.6%	92.6%
	8	81.0%	89.7%	93.9%	94.9%	95.0%	95.1%	95.0%	94.8%	94.6%	92.6%
	9	68.9%	85.0%	92.5%	94.4%	94.8%	95.0%	95.0%	94.8%	94.6%	92.6%
	10	81.2%	89.8%	94.0%	94.9%	95.0%	95.1%	95.0%	94.8%	94.6%	92.6%
	11	83.8%	90.8%	94.3%	95.0%	95.1%	95.1%	95.0%	94.8%	94.6%	92.6%
	12	83.7%	90.7%	94.3%	95.0%	95.1%	95.1%	95.0%	94.8%	94.6%	92.6%
	13	88.8%	92.7%	94.8%	95.2%	95.2%	95.2%	95.0%	94.9%	94.6%	92.6%
	14	93.0%	94.3%	95.3%	95.4%	95.2%	95.2%	95.0%	94.9%	94.6%	92.6%
	15	89.6%	93.0%	94.9%	95.2%	95.2%	95.2%	95.0%	94.9%	94.6%	92.6%
	16	91.0%	93.6%	95.1%	95.3%	95.2%	95.2%	95.0%	94.9%	94.6%	92.6%
	17	79.0%	88.9%	93.7%	94.8%	95.0%	95.1%	95.0%	94.8%	94.6%	92.6%
	18	67.2%	84.4%	92.3%	94.3%	94.8%	95.0%	95.0%	94.8%	94.6%	92.6%
	19	89.3%	92.9%	94.9%	95.2%	95.2%	95.2%	95.0%	94.9%	94.6%	92.6%
	20	86.1%	91.7%	94.5%	95.1%	95.1%	95.2%	95.0%	94.8%	94.6%	92.6%
	21	82.3%	90.2%	94.1%	94.9%	95.1%	95.1%	95.0%	94.8%	94.6%	92.6%
	22	86.4%	91.8%	94.6%	95.1%	95.1%	95.2%	95.0%	94.8%	94.6%	92.6%
	23	81.1%	89.7%	94.0%	94.9%	95.0%	95.1%	95.0%	94.8%	94.6%	92.6%
Improved drinking water	0	70.0%	75.7%	79.3%	81.6%	82.8%	83.5%	83.8%	83.9%	83.7%	80.3%
	1	75.6%	79.7%	82.2%	83.7%	84.4%	84.8%	84.9%	84.7%	84.4%	80.7%
	2	82.2%	84.4%	85.7%	86.3%	86.4%	86.4%	86.1%	85.8%	85.2%	81.1%
	3	78.8%	81.9%	83.9%	85.0%	85.4%	85.6%	85.5%	85.2%	84.8%	80.9%
	4	92.4%	91.6%	91.0%	90.3%	89.5%	88.8%	88.1%	87.3%	86.5%	81.7%
	5	73.6%	78.2%	81.2%	83.0%	83.8%	84.4%	84.5%	84.4%	84.1%	80.6%
	6	64.0%	71.4%	76.2%	79.3%	81.0%	82.1%	82.7%	83.0%	82.9%	80.0%
	7	65.4%	72.4%	76.9%	79.8%	81.4%	82.4%	83.0%	83.2%	83.1%	80.0%
	8	59.0%	67.8%	73.6%	77.3%	79.4%	80.9%	81.7%	82.2%	82.3%	79.6%
	9	86.4%	87.4%	87.8%	87.9%	87.7%	87.4%	86.9%	86.4%	85.8%	81.4%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	10	73.1%	77.8%	80.9%	82.7%	83.7%	84.2%	84.4%	84.3%	84.1%	80.5%
	11	66.2%	72.9%	77.3%	80.1%	81.6%	82.6%	83.1%	83.3%	83.2%	80.1%
	12	61.5%	69.6%	74.9%	78.3%	80.2%	81.5%	82.2%	82.6%	82.6%	79.8%
	13	70.8%	76.3%	79.8%	81.9%	83.0%	83.7%	84.0%	84.0%	83.8%	80.4%
	14	72.4%	77.3%	80.6%	82.5%	83.5%	84.1%	84.3%	84.2%	84.0%	80.5%
	15	72.4%	77.3%	80.6%	82.5%	83.5%	84.1%	84.3%	84.2%	84.0%	80.5%
	16	69.1%	75.0%	78.9%	81.2%	82.5%	83.3%	83.7%	83.7%	83.6%	80.3%
	17	82.1%	84.3%	85.6%	86.3%	86.4%	86.4%	86.1%	85.7%	85.2%	81.1%
	18	77.6%	81.1%	83.3%	84.5%	85.0%	85.3%	85.3%	85.0%	84.6%	80.8%
	19	58.6%	67.6%	73.4%	77.2%	79.3%	80.8%	81.7%	82.1%	82.2%	79.6%
	20	68.5%	74.6%	78.6%	81.0%	82.3%	83.2%	83.6%	83.6%	83.5%	80.2%
	21	65.8%	72.6%	77.1%	79.9%	81.5%	82.5%	83.0%	83.2%	83.1%	80.1%
	22	71.1%	76.4%	79.9%	82.0%	83.1%	83.8%	84.0%	84.0%	83.8%	80.4%
	23	80.3%	83.0%	84.7%	85.6%	85.9%	85.9%	85.8%	85.5%	85.0%	81.0%
Safely managed drinking water	0	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	1	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	2	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	3	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	4	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	5	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	6	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	7	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	8	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	9	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	10	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	11	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	12	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	13	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	14	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	15	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	17	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	18	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	19	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	20	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	21	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	22	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
	23	6.6%	7.4%	8.4%	9.4%	10.4%	11.3%	12.2%	13.0%	13.7%	15.8%
Cost per Capita	0	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	4	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	5	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	7	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	8	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	9	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	13	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	14	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	16	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	17	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	18	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	20	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	21	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Urban water service functionality	0	92.0%	94.6%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	1	94.1%	95.2%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	97.4%
	2	30.0%	75.4%	93.4%	97.4%	97.8%	98.4%	98.6%	99.0%	99.1%	99.2%
	3	84.4%	92.2%	95.9%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	4	87.9%	93.3%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	5	87.6%	93.2%	96.0%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	6	97.7%	96.3%	96.5%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.9%
	7	98.8%	96.7%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	99.4%
	8	84.5%	92.3%	95.9%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	9	89.4%	93.8%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	10	100.0%	100.0%	97.0%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	11	100.0%	99.1%	96.9%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	12	91.1%	94.3%	96.2%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	13	95.3%	95.6%	96.4%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	97.5%
	14	100.0%	100.0%	98.5%	97.1%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	15	100.0%	97.5%	96.7%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	16	100.0%	97.1%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	17	74.1%	89.0%	95.4%	97.3%	97.9%	98.3%	98.7%	98.9%	99.1%	100.0%
	18	83.3%	91.9%	95.8%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	19	94.0%	95.2%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	97.4%
	20	99.4%	96.9%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	99.7%
	21	82.7%	91.7%	95.8%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	22	92.7%	94.8%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.8%
	23	88.0%	93.3%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
Solid waste disposal	0	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	4	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	6	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	8	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	11	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	12	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	13	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	16	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	17	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	20	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	21	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
	22	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	23	67.5%	63.9%	63.7%	64.9%	67.0%	69.7%	72.2%	74.5%	76.3%	81.2%
Improved sanitation	0	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	1	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	2	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	3	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	4	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	5	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	6	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	7	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	8	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	9	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	10	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	11	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	12	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	13	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	14	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	15	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	16	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	17	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	18	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	19	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	20	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	21	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	22	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
	23	19.2%	30.6%	40.8%	48.8%	54.6%	59.0%	62.3%	64.7%	66.3%	68.2%
Safely managed sanitation	0	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	1	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	2	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	3	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	4	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	5	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	6	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	7	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	8	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	9	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	10	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	11	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	12	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	13	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	14	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	15	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	16	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	17	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	18	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	19	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	20	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	21	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	22	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
	23	9.6%	10.5%	11.5%	12.6%	13.6%	14.6%	15.5%	16.3%	17.0%	19.0%
Handwashing at home	0	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	1	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	2	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	3	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	4	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	5	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	6	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	7	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	8	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	9	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	10	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	11	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	12	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	13	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	14	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	15	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	16	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	17	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	18	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	19	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	20	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	21	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%

Indicator	Catch	Year
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
	23	37.0%	36.4%	36.2%	36.4%	36.9%	37.7%	38.9%	40.2%	41.6%	48.9%
Handwashing at school	0	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	1	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	2	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	3	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	4	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	5	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	6	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	7	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	8	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	9	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	10	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	11	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	12	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	13	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	14	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	15	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	16	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	17	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	18	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	19	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	20	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	21	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	22	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
	23	35.0%	35.0%	36.1%	38.4%	41.4%	45.1%	48.8%	52.4%	55.7%	66.4%
Irrigation	0	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	1	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	2	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	3	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	4	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	5	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	6	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	7	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	8	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	9	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	10	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	11	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	12	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	13	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	14	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	15	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	16	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	17	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	18	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	19	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	20	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	21	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	22	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
	23	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	1.2%
WfP functionality	0	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	1	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	2	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	3	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	4	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	5	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	6	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	7	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	8	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	9	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	10	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	11	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	12	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	13	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	14	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	15	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	16	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	17	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	18	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	19	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	20	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	21	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	22	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	23	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
Storage Capacity	0	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	1	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	2	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	3	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	4	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	5	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	6	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	7	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	8	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	9	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	10	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	11	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	12	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	13	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	14	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	15	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	16	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	17	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	18	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	19	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	20	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	21	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	22	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
	23	23.7%	24.2%	24.9%	26.0%	27.3%	29.0%	30.9%	33.0%	35.3%	47.7%
Compliance with water standards	0	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	1	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	2	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	3	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	4	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	5	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	6	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	7	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	8	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	9	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	10	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	11	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	12	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	13	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	14	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	15	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	16	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	17	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	18	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	19	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	20	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	21	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
	23	64.4%	64.9%	66.6%	68.9%	71.0%	73.1%	74.8%	76.2%	77.3%	80.2%
Permit compliance	0	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	1	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	2	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	3	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	4	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	5	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	6	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	7	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	8	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	9	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	10	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	11	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	12	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	13	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	14	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	15	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	16	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	17	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	18	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	19	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	20	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	21	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	22	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
	23	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.1%	89.5%
Wastewater treatment	0	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	1	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	2	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	3	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	4	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	5	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	6	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	7	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	8	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	9	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	10	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	11	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	12	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	13	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	14	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	15	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	16	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	17	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	18	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	19	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	20	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	21	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	22	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
	23	20.0%	19.6%	19.3%	19.0%	18.8%	18.6%	18.4%	18.3%	18.2%	17.7%
Ambient water quality	0	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	1	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	2	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	3	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	4	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	5	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	6	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	7	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	8	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	10	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	11	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	12	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	13	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	14	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	15	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	16	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	17	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	20	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	21	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	22	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
	23	0.0%	0.8%	1.7%	2.7%	3.7%	4.9%	6.1%	7.4%	8.7%	15.7%
Water Stress	0	2.4%	2.5%	2.6%	2.7%	2.8%	2.9%	3.0%	3.1%	3.2%	3.6%
	1	34.1%	35.7%	37.3%	38.9%	40.5%	42.1%	43.6%	45.2%	46.7%	53.5%
	2	39.2%	40.9%	42.6%	44.4%	46.1%	47.8%	49.5%	51.2%	52.9%	60.2%
	3	3.4%	3.5%	3.6%	3.8%	3.9%	4.0%	4.1%	4.2%	4.3%	4.9%
	4	2.7%	2.8%	2.9%	3.0%	3.1%	3.3%	3.4%	3.5%	3.6%	4.1%
	5	4.4%	4.6%	4.8%	5.1%	5.3%	5.5%	5.7%	5.9%	6.1%	7.0%
	6	5.6%	5.8%	6.0%	6.2%	6.5%	6.7%	6.9%	7.2%	7.4%	8.5%
	7	4.8%	4.9%	5.1%	5.2%	5.4%	5.5%	5.7%	5.8%	6.0%	6.7%
	8	29.7%	30.7%	31.7%	32.7%	33.7%	34.6%	35.6%	36.6%	37.6%	42.2%
	9	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.4%	0.5%
	11	7.4%	7.9%	8.3%	8.7%	9.2%	9.6%	10.0%	10.4%	10.8%	12.5%
	12	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%	0.8%
	13	0.8%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.1%	1.2%
	14	12.3%	12.7%	13.1%	13.6%	14.0%	14.4%	14.8%	15.2%	15.6%	17.5%
	15	79.1%	81.4%	83.8%	86.3%	88.7%	91.1%	93.5%	95.9%	98.3%	100.0%

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Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	7.3%	7.5%	7.8%	8.0%	8.3%	8.5%	8.8%	9.0%	9.3%	10.4%
	17	10.2%	10.8%	11.4%	12.1%	12.7%	13.4%	14.0%	14.6%	15.2%	17.7%
	18	8.4%	8.8%	9.3%	9.8%	10.3%	10.7%	11.2%	11.6%	12.1%	14.0%
	19	9.0%	9.3%	9.6%	9.9%	10.3%	10.6%	10.9%	11.3%	11.6%	13.2%
	20	3.2%	3.4%	3.5%	3.6%	3.7%	3.8%	4.0%	4.1%	4.2%	4.8%
	21	16.1%	16.6%	17.2%	17.8%	18.5%	19.1%	19.7%	20.3%	21.0%	24.1%
	22	6.5%	6.7%	6.9%	7.2%	7.4%	7.6%	7.9%	8.1%	8.3%	9.4%
	23	7.2%	7.4%	7.7%	7.9%	8.2%	8.4%	8.7%	9.0%	9.2%	10.4%
Wetlands coverage	0	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	1	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	2	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	3	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	4	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	5	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	6	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	7	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	8	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	9	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	10	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	11	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	12	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	13	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	14	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	15	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	16	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	17	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	18	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	19	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	20	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	21	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
	23	0.0%	1.2%	2.4%	3.7%	5.0%	6.3%	7.7%	9.1%	10.4%	16.6%
Forest Coverage	0	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	1	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	2	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	3	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	4	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	5	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	6	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	7	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	8	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	9	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	10	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	11	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	12	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	13	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	14	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	15	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	16	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	17	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	18	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	19	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	20	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	21	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	22	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
	23	0.0%	0.5%	1.0%	1.6%	2.2%	2.8%	3.3%	3.9%	4.5%	7.1%
GHG emissions	0	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	1	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	2	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	3	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	4	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	5	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	6	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	7	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	8	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	9	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	10	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	11	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	12	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	13	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	14	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	15	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	16	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	17	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	18	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	19	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	20	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	21	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	22	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
	23	0.0%	2.1%	3.7%	5.0%	5.9%	6.7%	7.3%	7.8%	8.1%	8.8%
Climate Change Vulnerability	0	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	7	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	8	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	9	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	10	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	13	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	14	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	16	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	17	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	18	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	20	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	21	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	22	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Operational weather stations	0	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	3	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	4	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	5	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	6	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	7	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	8	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	11	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	12	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	13	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	14	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	17	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	20	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	21	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	22	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%
	23	43.0%	54.5%	65.4%	71.8%	75.0%	77.7%	79.4%	80.8%	81.8%	85.1%

FIGURE 4D-3   INDICATOR PERFORMANCE TOWARD TARGETS: MODERATE-HIGH

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Village water supply	0	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	97.6%	100.0%	100.0%	100.0%
	4	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	97.1%	100.0%	100.0%
	5	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	66.0%	100.0%	100.0%	100.0%	100.0%	99.9%	98.6%	100.0%	100.0%	100.0%
	7	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.5%	100.0%
	8	66.0%	100.0%	100.0%	100.0%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%
	9	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	66.0%	100.0%	100.0%	100.0%	100.0%	97.3%	100.0%	100.0%	100.0%	100.0%
	13	66.0%	100.0%	100.0%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	14	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	16	66.0%	100.0%	100.0%	100.0%	100.0%	98.7%	100.0%	100.0%	100.0%	98.2%
	17	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	18	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.4%	100.0%	100.0%	100.0%
	20	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.4%	100.0%
	21	66.0%	100.0%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.9%
	22	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	66.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	97.9%	100.0%	100.0%
Functional rural water sources	0	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	1	80.3%	89.4%	94.3%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	2	85.0%	91.3%	94.8%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	3	82.4%	90.2%	94.5%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
	4	73.3%	86.7%	93.6%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	5	86.5%	91.8%	94.9%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	6	82.9%	90.4%	94.5%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	7	89.5%	93.0%	95.2%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	8	81.0%	89.7%	94.3%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	9	68.9%	85.0%	93.1%	96.5%	97.7%	98.2%	98.5%	98.4%	98.4%	97.8%
	10	81.2%	89.8%	94.4%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	11	83.8%	90.8%	94.6%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	12	83.7%	90.7%	94.6%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	13	88.8%	92.7%	95.1%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	14	93.0%	94.3%	95.6%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	15	89.6%	93.0%	95.2%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	16	91.0%	93.6%	95.4%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	17	79.0%	88.9%	94.1%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	18	67.2%	84.4%	93.0%	96.5%	97.7%	98.2%	98.5%	98.4%	98.4%	97.8%
	19	89.3%	92.9%	95.2%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	20	86.1%	91.7%	94.9%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	21	82.3%	90.2%	94.5%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	22	86.4%	91.8%	94.9%	96.7%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
	23	81.1%	89.7%	94.4%	96.6%	97.7%	98.3%	98.5%	98.4%	98.4%	97.8%
Improved drinking water	0	70.0%	85.7%	90.9%	93.9%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	1	75.6%	87.9%	91.8%	94.2%	95.8%	96.9%	97.7%	98.1%	98.3%	97.2%
	2	82.2%	90.3%	92.9%	94.6%	95.9%	96.9%	97.7%	98.1%	98.3%	97.2%
	3	78.8%	89.1%	92.3%	94.4%	95.8%	96.9%	97.7%	98.1%	98.3%	97.2%
	4	92.4%	94.2%	94.5%	95.2%	96.0%	96.9%	97.7%	98.1%	98.3%	97.2%
	5	73.6%	87.1%	91.5%	94.1%	95.8%	96.9%	97.7%	98.1%	98.3%	97.2%
	6	64.0%	83.5%	89.9%	93.6%	95.6%	96.9%	97.7%	98.1%	98.3%	97.2%
	7	65.4%	84.0%	90.1%	93.6%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	8	59.0%	81.6%	89.1%	93.3%	95.6%	96.9%	97.7%	98.1%	98.3%	97.2%
	9	86.4%	91.9%	93.5%	94.8%	95.9%	96.9%	97.7%	98.1%	98.3%	97.2%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	10	73.1%	86.9%	91.4%	94.1%	95.8%	96.9%	97.7%	98.1%	98.3%	97.2%
	11	66.2%	84.3%	90.2%	93.7%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	12	61.5%	82.6%	89.5%	93.4%	95.6%	96.9%	97.7%	98.1%	98.3%	97.2%
	13	70.8%	86.1%	91.0%	93.9%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	14	72.4%	86.6%	91.3%	94.0%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	15	72.4%	86.6%	91.2%	94.0%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	16	69.1%	85.4%	90.7%	93.8%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	17	82.1%	90.3%	92.8%	94.6%	95.9%	96.9%	97.7%	98.1%	98.3%	97.2%
	18	77.6%	88.6%	92.1%	94.3%	95.8%	96.9%	97.7%	98.1%	98.3%	97.2%
	19	58.6%	81.5%	89.0%	93.3%	95.6%	96.9%	97.7%	98.1%	98.3%	97.2%
	20	68.5%	85.2%	90.6%	93.8%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	21	65.8%	84.2%	90.2%	93.7%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	22	71.1%	86.2%	91.0%	94.0%	95.7%	96.9%	97.7%	98.1%	98.3%	97.2%
	23	80.3%	89.6%	92.5%	94.5%	95.8%	96.9%	97.7%	98.1%	98.3%	97.2%
Safely managed drinking water	0	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	1	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	2	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	3	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	4	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	5	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	6	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	7	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	8	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	9	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	10	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	11	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	12	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	13	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	14	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	15	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	17	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	18	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	19	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	20	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	21	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	22	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
	23	6.6%	8.9%	11.9%	15.0%	17.9%	20.7%	23.2%	25.4%	27.5%	35.2%
Cost per Capita	0	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	4	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	5	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	7	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	8	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	9	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	13	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	14	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	16	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	17	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	18	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	20	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	21	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	22	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Urban water service functionality	0	92.0%	94.6%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	1	94.1%	95.2%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	97.4%
	2	30.0%	75.4%	93.4%	97.4%	97.8%	98.4%	98.6%	99.0%	99.1%	99.2%
	3	84.4%	92.2%	95.9%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	4	87.9%	93.3%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	5	87.6%	93.2%	96.0%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	6	97.7%	96.3%	96.5%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	98.9%
	7	98.8%	96.7%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	99.4%
	8	84.5%	92.3%	95.9%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	9	89.4%	93.8%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	10	100.0%	100.0%	97.0%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	11	100.0%	99.1%	96.9%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	12	91.1%	94.3%	96.2%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	13	95.3%	95.6%	96.4%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	97.5%
	14	100.0%	100.0%	98.5%	97.1%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	15	100.0%	97.5%	96.7%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	16	100.0%	97.1%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	17	74.1%	89.0%	95.4%	97.3%	97.9%	98.3%	98.7%	98.9%	99.1%	100.0%
	18	83.3%	91.9%	95.8%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	19	94.0%	95.2%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	97.4%
	20	99.4%	96.9%	96.6%	97.2%	97.9%	98.3%	98.7%	98.9%	99.2%	99.7%
	21	82.7%	91.7%	95.8%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
	22	92.7%	94.8%	96.3%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	98.8%
	23	88.0%	93.3%	96.1%	97.3%	97.9%	98.3%	98.7%	98.9%	99.2%	100.0%
Solid waste disposal	0	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	4	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	6	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	8	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	11	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	12	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	13	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	16	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	17	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	20	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	21	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
	22	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	23	67.5%	64.7%	67.4%	72.3%	76.7%	80.0%	82.1%	83.6%	84.6%	87.4%
Improved sanitation	0	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	1	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	2	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	3	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	4	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	5	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	6	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	7	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	8	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	9	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	10	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	11	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	12	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	13	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	14	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	15	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	16	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	17	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	18	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	19	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	20	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	21	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	22	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
	23	19.2%	46.2%	65.3%	75.8%	82.1%	86.4%	89.4%	91.5%	93.0%	95.5%
Safely managed sanitation	0	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	1	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	2	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	3	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	4	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	5	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	6	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	7	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	8	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	9	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	10	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	11	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	12	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	13	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	14	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	15	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	17	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	18	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	19	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	20	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	21	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	22	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
	23	9.6%	12.1%	15.4%	18.8%	21.9%	24.8%	27.4%	29.7%	31.8%	39.2%
Handwashing at home	0	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	1	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	2	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	3	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	4	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	5	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	6	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	7	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	8	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	9	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	10	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	11	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	12	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	13	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	14	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	15	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	16	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	17	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	18	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	19	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	20	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	21	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
	23	37.0%	37.1%	38.4%	40.6%	43.5%	46.9%	50.5%	54.1%	57.5%	70.0%
Handwashing at school	0	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	1	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	2	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	3	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	4	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	5	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	6	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	7	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	8	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	9	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	10	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	11	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	12	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	13	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	14	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	15	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	16	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	17	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	18	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	19	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	20	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	21	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	22	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
	23	35.0%	36.3%	40.9%	47.8%	55.0%	61.5%	66.7%	70.7%	73.7%	81.2%
Irrigation	0	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	1	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	2	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	3	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	4	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	5	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	6	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	7	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	8	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	9	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	10	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	11	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	12	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	13	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	14	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	15	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	16	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	17	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	18	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	19	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	20	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	21	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	22	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
	23	0.5%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.2%	1.4%	2.2%
WfP functionality	0	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	1	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	2	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	3	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	4	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	5	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	6	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	7	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	8	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	9	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	10	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	11	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	12	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	13	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	14	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	15	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	16	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	17	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	18	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	19	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	20	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	21	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	22	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
	23	85.0%	91.2%	94.8%	96.6%	97.7%	98.3%	98.6%	98.9%	99.2%	100.0%
Storage Capacity	0	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	1	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	2	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	3	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	4	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	5	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	6	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	7	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	8	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	9	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	10	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	11	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	12	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	13	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	14	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	15	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	16	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	17	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	18	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	19	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	20	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	21	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	22	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
	23	23.7%	24.9%	27.0%	29.9%	33.5%	37.8%	42.4%	47.4%	52.4%	73.7%
Compliance with water standards	0	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	1	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	2	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	3	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	4	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	5	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	6	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	7	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	8	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	9	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	10	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	11	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	12	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	13	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	14	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	15	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	16	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	17	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	18	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	19	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	20	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	21	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
	23	64.4%	68.1%	73.8%	78.0%	80.5%	82.2%	83.4%	84.2%	84.8%	87.0%
Permit compliance	0	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	1	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	2	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	3	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	4	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	5	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	6	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	7	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	8	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	9	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	10	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	11	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	12	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	13	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	14	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	15	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	16	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	17	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	18	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	19	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	20	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	21	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	22	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
	23	71.0%	79.5%	84.1%	86.5%	87.7%	88.4%	88.8%	89.0%	89.3%	90.0%
Wastewater treatment	0	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	1	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	2	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	3	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	4	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	5	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	6	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	7	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	8	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	9	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	10	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	11	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	12	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	13	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	14	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	15	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	16	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	17	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	18	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	19	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	20	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	21	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	22	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
	23	20.0%	20.0%	20.1%	20.4%	20.7%	21.2%	21.6%	22.2%	22.7%	26.2%
Ambient water quality	0	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	1	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	2	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	3	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	4	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	5	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	6	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	7	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	8	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	10	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	11	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	12	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	13	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	14	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	15	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	16	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	17	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	20	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	21	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	22	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
	23	0.0%	2.1%	4.7%	7.5%	10.4%	13.6%	16.8%	20.2%	23.8%	43.3%
Water Stress	0	2.4%	2.5%	2.6%	2.7%	2.8%	2.9%	3.0%	3.1%	3.2%	3.6%
	1	34.1%	35.7%	37.3%	38.9%	40.5%	42.1%	43.6%	45.2%	46.7%	53.5%
	2	39.2%	40.9%	42.6%	44.4%	46.1%	47.8%	49.5%	51.2%	52.9%	60.2%
	3	3.4%	3.5%	3.6%	3.8%	3.9%	4.0%	4.1%	4.2%	4.3%	4.9%
	4	2.7%	2.8%	2.9%	3.0%	3.1%	3.3%	3.4%	3.5%	3.6%	4.1%
	5	4.4%	4.6%	4.8%	5.1%	5.3%	5.5%	5.7%	5.9%	6.1%	7.0%
	6	5.6%	5.8%	6.0%	6.2%	6.5%	6.7%	6.9%	7.2%	7.4%	8.5%
	7	4.8%	4.9%	5.1%	5.2%	5.4%	5.5%	5.7%	5.8%	6.0%	6.7%
	8	29.7%	30.7%	31.7%	32.7%	33.7%	34.6%	35.6%	36.6%	37.6%	42.2%
	9	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	10	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.4%	0.5%
	11	7.4%	7.9%	8.3%	8.7%	9.2%	9.6%	10.0%	10.4%	10.8%	12.5%
	12	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%	0.8%
	13	0.8%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.1%	1.2%
	14	12.3%	12.7%	13.1%	13.6%	14.0%	14.4%	14.8%	15.2%	15.6%	17.5%
	15	79.1%	81.4%	83.8%	86.3%	88.7%	91.1%	93.5%	95.9%	98.3%	100.0%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	7.3%	7.5%	7.8%	8.0%	8.3%	8.5%	8.8%	9.0%	9.3%	10.4%
	17	10.2%	10.8%	11.4%	12.1%	12.7%	13.4%	14.0%	14.6%	15.2%	17.7%
	18	8.4%	8.8%	9.3%	9.8%	10.3%	10.7%	11.2%	11.6%	12.1%	14.0%
	19	9.0%	9.3%	9.6%	9.9%	10.3%	10.6%	10.9%	11.3%	11.6%	13.2%
	20	3.2%	3.4%	3.5%	3.6%	3.7%	3.8%	4.0%	4.1%	4.2%	4.8%
	21	16.1%	16.6%	17.2%	17.8%	18.5%	19.1%	19.7%	20.3%	21.0%	24.1%
	22	6.5%	6.7%	6.9%	7.2%	7.4%	7.6%	7.9%	8.1%	8.3%	9.4%
	23	7.2%	7.4%	7.7%	7.9%	8.2%	8.4%	8.7%	9.0%	9.2%	10.4%
Wetlands coverage	0	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	1	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	2	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	3	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	4	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	5	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	6	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	7	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	8	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	9	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	10	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	11	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	12	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	13	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	14	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	15	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	16	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	17	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	18	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	19	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	20	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	21	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
	23	0.0%	3.2%	6.8%	10.5%	14.1%	17.7%	21.3%	24.8%	28.2%	43.6%
Forest Coverage	0	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	1	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	2	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	3	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	4	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	5	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	6	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	7	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	8	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	9	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	10	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	11	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	12	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	13	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	14	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	15	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	16	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	17	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	18	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	19	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	20	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	21	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	22	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
	23	0.0%	1.3%	2.8%	4.4%	6.0%	7.5%	9.1%	10.7%	12.3%	20.3%
GHG emissions	0	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	25.3%
	1	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	20.3%
	2	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	20.9%
	3	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	29.6%

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	4	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	22.3%
	5	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	21.9%
	6	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	24.8%
	7	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	32.3%
	8	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	24.9%
	9	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	88.7%
	10	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	100.0%
	11	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	23.5%
	12	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	23.3%
	13	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	20.3%
	14	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	26.6%
	15	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	22.8%
	16	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	26.5%
	17	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	21.4%
	18	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	26.7%
	19	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	23.9%
	20	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	21.7%
	21	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	32.8%
	22	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	24.7%
	23	0.0%	5.4%	10.2%	13.7%	16.3%	18.4%	20.0%	21.3%	22.3%	23.4%
Climate Change Vulnerability	0	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	7	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	8	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	9	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

IEc

Indicator	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
						Year					
	10	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	11	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	12	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	13	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	14	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	15	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	16	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	17	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	18	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	19	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	20	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	21	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	22	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	23	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Operational weather stations	0	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	3	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	4	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	5	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	6	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	7	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	8	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	11	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	12	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	13	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	14	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Indicator	Catch	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	17	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	19	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	20	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	21	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	22	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%
	23	43.0%	65.0%	77.1%	84.4%	89.1%	92.3%	93.7%	94.1%	94.6%	96.5%

ANNEX 4E. DETAILED SIM INPUT TABLES

TABLE 4E-1. COST PER UNIT (MILLION UGX)

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Village water supply	Water Supply Basic	0	23.1	24.6	26.1	27.7	29.2	30.7	32.2	33.7	35.2	35.2
		1	25.8	26.7	27.7	28.7	29.6	30.6	31.5	32.5	33.5	33.5
		2	29.4	29.9	30.5	31.0	31.6	32.2	32.7	33.3	33.8	33.8
		3	26.0	27.1	28.3	29.4	30.6	31.7	32.9	34.0	35.2	35.2
		4	31.7	32.1	32.6	33.0	33.4	33.8	34.2	34.7	35.1	35.1
		5	23.2	24.6	26.0	27.4	28.8	30.2	31.6	33.0	34.4	34.4
		6	21.9	23.2	24.5	25.8	27.1	28.4	29.7	31.0	32.2	32.2
		7	29.3	31.6	33.9	36.1	38.4	40.7	42.9	45.2	47.4	47.4
		8	23.6	24.9	26.2	27.6	28.9	30.2	31.6	32.9	34.2	34.2
		9	35.7	35.8	35.9	36.0	36.0	36.1	36.2	36.2	36.3	36.3
		10	21.1	22.4	23.7	25.0	26.3	27.6	29.0	30.3	31.6	31.6
		11	32.5	32.8	33.1	33.4	33.8	34.1	34.4	34.7	35.0	35.0
		12	18.3	20.0	21.6	23.3	24.9	26.5	28.2	29.8	31.5	31.5
		13	14.9	17.6	20.4	23.1	25.8	28.6	31.3	34.1	36.8	36.8
		14	26.6	27.4	28.2	28.9	29.7	30.5	31.3	32.1	32.8	32.8
		15	25.0	26.1	27.2	28.3	29.4	30.5	31.6	32.7	33.8	33.8
		16	25.8	26.9	28.1	29.3	30.4	31.6	32.7	33.9	35.1	35.1
		17	33.6	33.8	34.0	34.2	34.4	34.6	34.7	34.9	35.1	35.1
		18	35.0	35.1	35.2	35.3	35.4	35.4	35.5	35.6	35.7	35.7
		19	39.9	41.7	43.4	45.2	47.0	48.8	50.6	52.4	54.2	54.2
		20	21.0	22.5	24.0	25.5	27.0	28.5	30.0	31.5	33.1	33.1
		21	19.8	21.4	23.0	24.6	26.3	27.9	29.5	31.1	32.7	32.7
		22	24.8	25.7	26.6	27.5	28.4	29.4	30.3	31.2	32.1	32.1
		23	25.2	26.2	27.2	28.3	29.3	30.3	31.3	32.3	33.4	33.4

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Village water supply	Water Supply Piped	0	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		1	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		2	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		3	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		4	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		6	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		7	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		8	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		9	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		10	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		11	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		12	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		13	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		14	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		15	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		16	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		17	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		18	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		19	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		20	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		21	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		22	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
		23	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5	189.5
Village water supply	Water Supply Basic	0	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7
		1	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
		2	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
		3	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
		4	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
		5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7
		6	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
		7	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9
		8	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7
		9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
		10	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
		11	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
		12	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6
		13	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7
		14	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7
		15	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7
		16	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
		17	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
		18	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
		19	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1
		20	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7
		21	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7
		22	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
		23	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7
Village water supply	Water Supply Piped	0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		1	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		2	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		3	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		5	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		6	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		10	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		11	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		12	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		13	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		14	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		15	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		16	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		17	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		18	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		19	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		20	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		21	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		22	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		23	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Functional rural water sources	Water Source Repair-Rural	0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		1	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		2	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		3	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		4	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		6	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		7	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		8	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		9	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		10	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		11	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		12	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		13	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		14	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		15	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		16	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		17	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		18	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		19	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		20	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		21	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		22	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		23	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Improved drinking water	Water Supply Basic	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
		8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		9	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		13	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		14	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		16	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		17	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		18	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		19	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2

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Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		20	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		21	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		22	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		23	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Improved drinking water	Water Supply Piped	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		10	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		11	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		12	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		13	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		14	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		15	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		16	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		17	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		18	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		19	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		20	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		21	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		22	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		23	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
water	Supply Basic	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Improved drinking water	Water Supply Piped	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year										
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Safely managed drinking water	Water Supply Piped	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		10	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
		11	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		12	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		13	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		14	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		15	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		16	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		17	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		18	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		19	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		20	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		21	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		22	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		23	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Safely managed drinking water	Water Supply Piped	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Urban water service functionality	Water Source Repair-Urban	0	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		1	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		2	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		4	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		5	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		6	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		7	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		8	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		9	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		10	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		11	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		12	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		13	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		14	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		15	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		16	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		17	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		18	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		19	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		20	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		21	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		22	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
		23	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Solid waste disposal	Solid Waste Disposal	0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		8	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		9	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		10	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		11	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		12	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		13	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		14	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		15	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		16	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		17	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		18	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		19	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		20	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		21	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		22	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		23	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Improved sanitation	Sewerage	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

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Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		9	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		11	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		13	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		14	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		15	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		16	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		17	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		18	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		19	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		20	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		21	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		22	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		23	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Improved sanitation	Sewerage	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Improved sanitation	Basic Sanitation CB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

IEc

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Safely managed sanitation	Safe Sanitation CB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Safely managed sanitation	Sewerage	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		9	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		11	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		13	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		14	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		15	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		16	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		17	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		18	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		19	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		20	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		21	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		22	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		23	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Safely managed sanitation	Sewerage	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Handwashing at home	Home Handwashing CB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
								Year					
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Handwashing at school	School Handwashing CB	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

IEc

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation	Irrigation	0	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		1	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		2	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		3	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		4	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		6	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		7	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		8	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		9	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		10	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		11	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		12	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		13	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		14	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		15	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		16	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		17	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		18	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		19	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		20	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		21	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		22	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
		23	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Irrigation	Irrigation O&M	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WfP functionality	WfP Source Repair	0	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		2	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		3	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		4	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		5	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		6	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		7	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		8	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		9	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		10	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		11	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		12	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		13	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		14	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		15	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		16	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		17	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		18	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		19	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		20	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		21	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
		22	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		23	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
WfP functionality	WfP Source CB	0	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		1	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		2	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		3	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		4	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		5	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		6	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		7	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		9	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		10	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		11	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		12	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		13	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		14	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		15	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		16	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		17	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		18	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		19	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		20	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		21	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		22	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		23	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
Storage Capacity	Storage	0	19194.8	19194.8	19194.8	19194.8	19194.8	19194.8	19194.8	19194.8	19194.8	19194.8
		1	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4
		2	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4
		3	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
		4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4
		5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5
		6	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7
		7	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9
		8	22342.0	22342.0	22342.0	22342.0	22342.0	22342.0	22342.0	22342.0	22342.0	22342.0
		9	36842.5	36842.5	36842.5	36842.5	36842.5	36842.5	36842.5	36842.5	36842.5	36842.5
		10	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4
		11	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4
		12	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7
		13	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4
		14	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5
		15	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5
		16	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5
		17	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7	18598.7
		18	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9	31463.9
		19	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4	26630.4
		20	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5
		21	8058.7	8058.7	8058.7	8058.7	8058.7	8058.7	8058.7	8058.7	8058.7	8058.7
		22	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4	12747.4
		23	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5	15400.5
Storage Capacity	Storage O&M	0	383.9	383.9	383.9	383.9	383.9	383.9	383.9	383.9	383.9	383.9
		1	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9
		2	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9
		3	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6
		4	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6
		5	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0
		6	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0
		7	629.3	629.3	629.3	629.3	629.3	629.3	629.3	629.3	629.3	629.3
		8	446.8	446.8	446.8	446.8	446.8	446.8	446.8	446.8	446.8	446.8

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		9	736.9	736.9	736.9	736.9	736.9	736.9	736.9	736.9	736.9	736.9
		10	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9
		11	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9
		12	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0
		13	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6
		14	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0
		15	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0
		16	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0
		17	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0	372.0
		18	629.3	629.3	629.3	629.3	629.3	629.3	629.3	629.3	629.3	629.3
		19	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6	532.6
		20	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0
		21	161.2	161.2	161.2	161.2	161.2	161.2	161.2	161.2	161.2	161.2
		22	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9	254.9
		23	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0	308.0
Compliance with water standards	Drinking water samples	0	495.9	495.9	495.9	495.9	495.9	495.9	495.9	495.9	495.9	495.9
		1	366.3	366.3	366.3	366.3	366.3	366.3	366.3	366.3	366.3	366.3
		2	202.7	202.7	202.7	202.7	202.7	202.7	202.7	202.7	202.7	202.7
		3	437.0	437.0	437.0	437.0	437.0	437.0	437.0	437.0	437.0	437.0
		4	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0
		5	594.5	594.5	594.5	594.5	594.5	594.5	594.5	594.5	594.5	594.5
		6	408.4	408.4	408.4	408.4	408.4	408.4	408.4	408.4	408.4	408.4
		7	598.7	598.7	598.7	598.7	598.7	598.7	598.7	598.7	598.7	598.7
		8	609.5	609.5	609.5	609.5	609.5	609.5	609.5	609.5	609.5	609.5
		9	295.5	295.5	295.5	295.5	295.5	295.5	295.5	295.5	295.5	295.5
		10	307.8	307.8	307.8	307.8	307.8	307.8	307.8	307.8	307.8	307.8
		11	457.1	457.1	457.1	457.1	457.1	457.1	457.1	457.1	457.1	457.1
		12	434.6	434.6	434.6	434.6	434.6	434.6	434.6	434.6	434.6	434.6
		13	641.7	641.7	641.7	641.7	641.7	641.7	641.7	641.7	641.7	641.7

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		14	405.9	405.9	405.9	405.9	405.9	405.9	405.9	405.9	405.9	405.9
		15	476.3	476.3	476.3	476.3	476.3	476.3	476.3	476.3	476.3	476.3
		16	507.3	507.3	507.3	507.3	507.3	507.3	507.3	507.3	507.3	507.3
		17	219.4	219.4	219.4	219.4	219.4	219.4	219.4	219.4	219.4	219.4
		18	488.3	488.3	488.3	488.3	488.3	488.3	488.3	488.3	488.3	488.3
		19	631.8	631.8	631.8	631.8	631.8	631.8	631.8	631.8	631.8	631.8
		20	414.9	414.9	414.9	414.9	414.9	414.9	414.9	414.9	414.9	414.9
		21	380.5	380.5	380.5	380.5	380.5	380.5	380.5	380.5	380.5	380.5
		22	617.7	617.7	617.7	617.7	617.7	617.7	617.7	617.7	617.7	617.7
		23	251.7	251.7	251.7	251.7	251.7	251.7	251.7	251.7	251.7	251.7
Permit compliance	Permit Compliance CB	0	32.7	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		1	64.4	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		3	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		4	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		5	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		6	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		7	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		8	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		9	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		10	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		11	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		12	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		13	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		14	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		15	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		16	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		17	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		18	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
		19	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		20	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		21	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		22	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
		23	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
Wastewater treatment	Wastewater Treatment	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		10	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		11	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		12	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		13	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		14	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		15	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		16	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		17	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		18	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		19	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		20	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		21	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		22	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		23	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Wastewater treatment	Wastewater Treatment O&M	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ambient water quality	Wetlands Restoration	0	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
		1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
		2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
		3	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
		4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
		6	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
		7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
		8	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1
		9	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
		10	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
		11	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
		12	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
		13	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
		14	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
		15	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
		16	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
		17	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
		18	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
		19	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
		20	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7
		21	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
		22	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
		23	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Ambient water quality	Forest Rehabilitation	0	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2
		1	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9
		2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
		3	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2
		4	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1
		5	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
		6	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
		7	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6
		8	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
		9	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		10	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
		11	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6
		12	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
		13	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
		14	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
		15	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
		16	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
		17	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
		18	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
		19	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6
		20	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4
		21	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
		22	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
		23	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Ambient water quality	Wetlands Regulation O&M	0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		18	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		19	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		20	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		21	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		22	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		23	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Ambient water quality	Forest Rehabilitation	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		10	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		12	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		13	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		14	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		15	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		16	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		17	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		18	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		19	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
		20	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		21	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		22	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		23	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Ambient water quality	Wastewater Treatment	0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		1	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		2	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		3	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		4	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		6	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		7	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		8	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		9	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		10	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		11	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		12	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		13	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		14	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		15	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		16	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		17	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		18	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		19	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		20	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		22	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
		23	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
quality	er Treatment	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
		1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		10	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		11	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		12	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		13	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		14	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		15	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		16	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		17	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		18	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		19	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		20	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		21	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		22	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		23	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Wetlands coverage	Wetlands Restoration	0	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
		1	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
		2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
		3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
		4	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
		5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		6	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
		7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
		8	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4
		9	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
		10	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		11	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
		12	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		13	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
		14	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
		15	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
		16	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
		17	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
		18	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
		19	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
		20	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
		21	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
		22	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
		23	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Wetlands coverage	Wetlands Regulation O&M	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
							Year					
		11	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		18	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		19	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		20	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		21	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		22	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		23	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Forest Coverage	Forest Rehabilitation	0	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
		1	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
		2	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
		3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
		4	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
		5	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
		6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
		7	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
		9	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
		10	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
		11	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
		13	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
		14	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
		15	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4

| Ind | Inv | Catch | Year |
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		16	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
		17	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
		18	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
		19	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
		20	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
		21	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
		22	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
		23	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Forest Coverage	Forest Rehabilitation	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		9	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		14	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		16	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		17	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		18	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		19	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		20	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		21	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		22	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		23	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
GHG emissions	Forest Rehabilitation	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		10	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		11	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		12	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		13	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		14	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		15	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		16	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		17	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		18	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		19	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		20	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		21	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		22	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		23	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
GHG emissions	Forest Rehabilitation	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Ind	Inv	Catch	Year									
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Operational weather stations	Weather Stations	0	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		2	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		3	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		4	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		5	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		6	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
								Year				
		7	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		8	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		9	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		10	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		11	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		12	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		13	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		14	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		15	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		16	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		17	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		18	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		19	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		20	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		21	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		22	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
		23	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1	215.1
Operational weather stations	Weather Stations	0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		1	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		2	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		3	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		5	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		6	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		10	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		11	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8

Ind	Inv	Catch	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
		12	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		13	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		14	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		15	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		16	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		17	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		18	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		19	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		20	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		21	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		22	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
		23	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8

FIGURE 4E-2   LEVEL OF UNITS FOR EACH INDICATOR OVER TIME

Ind	Cat	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Village water supply	0	57950	59715	61534	63408	65339	67330	69380	71494	73671	85596
	1	1001	1031	1062	1095	1128	1163	1198	1234	1272	1478
	2	772	795	820	845	870	897	924	952	981	1140
	3	2745	2828	2914	3003	3095	3189	3286	3386	3489	4054
	4	2259	2327	2398	2471	2547	2624	2704	2786	2871	3336
	5	1258	1296	1336	1376	1418	1462	1506	1552	1599	1858
	6	2916	3005	3096	3191	3288	3388	3491	3598	3707	4307
	7	1687	1738	1791	1846	1902	1960	2019	2081	2144	2491
	8	4403	4537	4675	4817	4964	5115	5271	5432	5597	6503
	9	57	59	61	63	64	66	68	71	73	84
	10	172	177	182	188	193	199	205	212	218	253

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Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	11	1401	1444	1487	1533	1579	1628	1677	1728	1781	2069
	12	3860	3977	4098	4223	4352	4484	4621	4762	4907	5701
	13	7347	7571	7802	8039	8284	8537	8797	9065	9341	10853
	14	686	707	729	751	774	797	821	846	872	1013
	15	600	619	637	657	677	698	719	741	763	887
	16	3288	3388	3491	3597	3707	3820	3936	4056	4180	4856
	17	972	1002	1032	1064	1096	1129	1164	1199	1236	1436
	18	314	324	334	344	355	365	377	388	400	465
	19	2573	2651	2732	2815	2901	2989	3081	3174	3271	3800
	20	1601	1650	1700	1752	1805	1860	1917	1975	2035	2365
	21	14781	15231	15695	16173	16665	17173	17696	18235	18790	21832
	22	1144	1178	1214	1251	1289	1329	1369	1411	1454	1689
	23	2116	2180	2246	2315	2385	2458	2533	2610	2690	3125
Functional rural water sources	0	109695	113036	116479	120027	123683	127450	131332	135332	139454	162026
	1	1667	1718	1770	1824	1880	1937	1996	2057	2119	2462
	2	1430	1473	1518	1564	1612	1661	1712	1764	1818	2112
	3	9552	9843	10143	10452	10771	11099	11437	11785	12144	14110
	4	7007	7221	7441	7667	7901	8142	8389	8645	8908	10350
	5	5296	5457	5624	5795	5971	6153	6341	6534	6733	7823
	6	6074	6259	6449	6646	6848	7057	7272	7493	7721	8971
	7	5842	6019	6203	6392	6586	6787	6994	7207	7426	8628
	8	6057	6242	6432	6628	6830	7038	7252	7473	7701	8947
	9	193	199	205	211	217	224	231	238	245	285
	10	79	81	84	86	89	92	94	97	100	117
	11	2037	2099	2163	2229	2297	2367	2439	2513	2590	3009
	12	6833	7041	7255	7476	7704	7939	8181	8430	8687	10093
	13	18385	18945	19522	20117	20730	21361	22012	22682	23373	27156
	14	1445	1488	1534	1581	1629	1678	1729	1782	1836	2134
	15	1434	1478	1523	1569	1617	1666	1717	1769	1823	2118
	16	9726	10022	10327	10642	10966	11300	11644	11999	12364	14365

Ind	Cat	Year									
		2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2030**
	17	1326	1366	1408	1450	1495	1540	1587	1635	1685	1958
	18	711	732	754	777	801	826	851	877	903	1050
	19	7805	8042	8287	8540	8800	9068	9344	9629	9922	11528
	20	3163	3259	3359	3461	3566	3675	3787	3902	4021	4672
	21	6556	6756	6961	7173	7392	7617	7849	8088	8334	9683
	22	3023	3115	3210	3308	3409	3512	3619	3730	3843	4465
	23	4055	4179	4306	4437	4572	4711	4855	5003	5155	5990
Improved drinking water	0	37037781	38165903	39328386	40526276	41760653	43032627	44343344	45693983	47085762	54706950
	1	527696	543769	560332	577399	594985	613108	631782	651025	670855	779438
	2	485488	500275	515513	531215	547395	564068	581249	598953	617196	717094
	3	3147370	3243234	3342019	3443812	3548706	3656795	3768176	3882950	4001220	4648847
	4	1703313	1755193	1808654	1863743	1920510	1979007	2039284	2101398	2165404	2515891
	5	1646528	1696679	1748358	1801610	1856485	1913031	1971300	2031343	2093215	2432017
	6	3273639	3373350	3476098	3581975	3691077	3803502	3919352	4038730	4161745	4835355
	7	1011250	1042052	1073791	1106497	1140200	1174929	1210716	1247592	1285592	1493675
	8	2145069	2210405	2277731	2347107	2418597	2492264	2568175	2646398	2727004	3168391
	9	46292	47702	49155	50653	52195	53785	55423	57112	58851	68377
	10	24644	25395	26168	26965	27786	28633	29505	30404	31330	36401
	11	829135	854390	880413	907229	934862	963337	992679	1022915	1054071	1224681
	12	2695474	2777575	2862176	2949354	3039187	3131757	3227146	3325441	3426729	3981371
	13	4303636	4434719	4569794	4708984	4852414	5000212	5152512	5309450	5471169	6356719
	14	601492	619813	638691	658145	678191	698848	720134	742068	764671	888439
	15	564908	582115	599845	618116	636943	656343	676334	696935	718162	834402
	16	3921729	4041180	4164269	4291107	4421808	4556491	4695275	4838287	4985655	5792621
	17	453292	467098	481326	495986	511093	526660	542702	559232	576265	669538
	18	266618	274738	283107	291730	300615	309772	319207	328930	338948	393810
	19	1418976	1462196	1506732	1552626	1599916	1648648	1698863	1750609	1803930	2095909
	20	1631417	1681107	1732312	1785076	1839447	1895474	1953207	2012699	2074004	2409697
	21	3659647	3771115	3885978	4004340	4126307	4251989	4381499	4514953	4652473	5405511

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	1256740	1295019	1334463	1375109	1416993	1460153	1504627	1550456	1597681	1856278
	23	1423430	1466785	1511462	1557499	1604938	1653823	1704196	1756103	1809592	2102488
Safely managed drinking water	0	37037781	38165903	39328386	40526276	41760653	43032627	44343344	45693983	47085762	54706950
	1	527696	543769	560332	577399	594985	613108	631782	651025	670855	779438
	2	485488	500275	515513	531215	547395	564068	581249	598953	617196	717094
	3	3147370	3243234	3342019	3443812	3548706	3656795	3768176	3882950	4001220	4648847
	4	1703313	1755193	1808654	1863743	1920510	1979007	2039284	2101398	2165404	2515891
	5	1646528	1696679	1748358	1801610	1856485	1913031	1971300	2031343	2093215	2432017
	6	3273639	3373350	3476098	3581975	3691077	3803502	3919352	4038730	4161745	4835355
	7	1011250	1042052	1073791	1106497	1140200	1174929	1210716	1247592	1285592	1493675
	8	2145069	2210405	2277731	2347107	2418597	2492264	2568175	2646398	2727004	3168391
	9	46292	47702	49155	50653	52195	53785	55423	57112	58851	68377
	10	24644	25395	26168	26965	27786	28633	29505	30404	31330	36401
	11	829135	854390	880413	907229	934862	963337	992679	1022915	1054071	1224681
	12	2695474	2777575	2862176	2949354	3039187	3131757	3227146	3325441	3426729	3981371
	13	4303636	4434719	4569794	4708984	4852414	5000212	5152512	5309450	5471169	6356719
	14	601492	619813	638691	658145	678191	698848	720134	742068	764671	888439
	15	564908	582115	599845	618116	636943	656343	676334	696935	718162	834402
	16	3921729	4041180	4164269	4291107	4421808	4556491	4695275	4838287	4985655	5792621
	17	453292	467098	481326	495986	511093	526660	542702	559232	576265	669538
	18	266618	274738	283107	291730	300615	309772	319207	328930	338948	393810
	19	1418976	1462196	1506732	1552626	1599916	1648648	1698863	1750609	1803930	2095909
	20	1631417	1681107	1732312	1785076	1839447	1895474	1953207	2012699	2074004	2409697
	21	3659647	3771115	3885978	4004340	4126307	4251989	4381499	4514953	4652473	5405511
	22	1256740	1295019	1334463	1375109	1416993	1460153	1504627	1550456	1597681	1856278
	23	1423430	1466785	1511462	1557499	1604938	1653823	1704196	1756103	1809592	2102488
Cost per Capita	0	37037781	38165903	39328386	40526276	41760653	43032627	44343344	45693983	47085762	54706950
	1	527696	543769	560332	577399	594985	613108	631782	651025	670855	779438
	2	485488	500275	515513	531215	547395	564068	581249	598953	617196	717094

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	3	3147370	3243234	3342019	3443812	3548706	3656795	3768176	3882950	4001220	4648847
	4	1703313	1755193	1808654	1863743	1920510	1979007	2039284	2101398	2165404	2515891
	5	1646528	1696679	1748358	1801610	1856485	1913031	1971300	2031343	2093215	2432017
	6	3273639	3373350	3476098	3581975	3691077	3803502	3919352	4038730	4161745	4835355
	7	1011250	1042052	1073791	1106497	1140200	1174929	1210716	1247592	1285592	1493675
	8	2145069	2210405	2277731	2347107	2418597	2492264	2568175	2646398	2727004	3168391
	9	46292	47702	49155	50653	52195	53785	55423	57112	58851	68377
	10	24644	25395	26168	26965	27786	28633	29505	30404	31330	36401
	11	829135	854390	880413	907229	934862	963337	992679	1022915	1054071	1224681
	12	2695474	2777575	2862176	2949354	3039187	3131757	3227146	3325441	3426729	3981371
	13	4303636	4434719	4569794	4708984	4852414	5000212	5152512	5309450	5471169	6356719
	14	601492	619813	638691	658145	678191	698848	720134	742068	764671	888439
	15	564908	582115	599845	618116	636943	656343	676334	696935	718162	834402
	16	3921729	4041180	4164269	4291107	4421808	4556491	4695275	4838287	4985655	5792621
	17	453292	467098	481326	495986	511093	526660	542702	559232	576265	669538
	18	266618	274738	283107	291730	300615	309772	319207	328930	338948	393810
	19	1418976	1462196	1506732	1552626	1599916	1648648	1698863	1750609	1803930	2095909
	20	1631417	1681107	1732312	1785076	1839447	1895474	1953207	2012699	2074004	2409697
	21	3659647	3771115	3885978	4004340	4126307	4251989	4381499	4514953	4652473	5405511
	22	1256740	1295019	1334463	1375109	1416993	1460153	1504627	1550456	1597681	1856278
	23	1423430	1466785	1511462	1557499	1604938	1653823	1704196	1756103	1809592	2102488
Urban water service functionality	0	18756	19327	19916	20523	21148	21792	22456	23140	23844	27704
	1	262	270	278	286	295	304	313	323	333	387
	2	86	88	91	94	96	99	102	106	109	126
	3	1407	1450	1494	1540	1587	1635	1685	1736	1789	2079
	4	1048	1080	1113	1146	1181	1217	1254	1293	1332	1548
	5	568	585	603	621	640	659	680	700	722	838
	6	1810	1865	1922	1980	2041	2103	2167	2233	2301	2673
	7	622	641	660	680	701	722	744	767	790	918
	8	1567	1614	1663	1714	1766	1820	1876	1933	1992	2314

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	9	25	26	27	28	29	29	30	31	32	37
	10	21	22	22	23	24	24	25	26	27	31
	11	561	578	595	614	632	651	671	692	713	828
	12	1592	1641	1691	1742	1795	1850	1906	1964	2024	2352
	13	4232	4361	4494	4631	4772	4917	5067	5221	5380	6251
	14	96	99	102	105	109	112	115	119	122	142
	15	154	159	163	168	174	179	184	190	196	227
	16	842	868	894	921	949	978	1008	1039	1070	1244
	17	152	157	162	167	172	177	183	188	194	225
	18	121	125	129	133	137	141	145	149	154	179
	19	1217	1254	1293	1332	1372	1414	1457	1502	1547	1798
	20	584	601	620	639	658	678	699	720	742	862
	21	1052	1084	1117	1151	1186	1222	1259	1297	1337	1553
	22	271	279	288	296	305	315	324	334	344	400
	23	467	482	496	511	527	543	560	577	594	690
Solid waste disposal	0	912143	972461	1004997	1037533	1070069	1102605	1135141	1167676	1200212	1362892
	1	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0
	3	32782	34950	36119	37289	38458	39627	40797	41966	43135	48982
	4	16543	17637	18227	18817	19407	19997	20587	21177	21767	24718
	5	0	0	0	0	0	0	0	0	0	0
	6	100730	107391	110984	114577	118170	121763	125356	128949	132542	150507
	7	0	0	0	0	0	0	0	0	0	0
	8	64510	68776	71077	73378	75679	77980	80281	82582	84883	96388
	9	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0
	12	36975	39420	40739	42058	43377	44696	46015	47333	48652	55247
	13	22224	23694	24487	25280	26072	26865	27658	28451	29243	33207
	14	0	0	0	0	0	0	0	0	0	0

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	15	0	0	0	0	0	0	0	0	0	0
	16	20322	21666	22391	23116	23840	24565	25290	26015	26740	30364
	17	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0
	19	42708	45533	47056	48579	50103	51626	53150	54673	56196	63813
	20	130063	138664	143303	147942	152582	157221	161860	166499	171139	194335
	21	423509	451514	466621	481727	496834	511940	527047	542153	557260	632792
	22	0	0	0	0	0	0	0	0	0	0
	23	21777	23217	23994	24770	25547	26324	27101	27877	28654	32538
Improved sanitation	0	37037781	38165903	39328386	40526276	41760653	43032627	44343344	45693983	47085762	54706950
	1	527696	543769	560332	577399	594985	613108	631782	651025	670855	779438
	2	485488	500275	515513	531215	547395	564068	581249	598953	617196	717094
	3	3147370	3243234	3342019	3443812	3548706	3656795	3768176	3882950	4001220	4648847
	4	1703313	1755193	1808654	1863743	1920510	1979007	2039284	2101398	2165404	2515891
	5	1646528	1696679	1748358	1801610	1856485	1913031	1971300	2031343	2093215	2432017
	6	3273639	3373350	3476098	3581975	3691077	3803502	3919352	4038730	4161745	4835355
	7	1011250	1042052	1073791	1106497	1140200	1174929	1210716	1247592	1285592	1493675
	8	2145069	2210405	2277731	2347107	2418597	2492264	2568175	2646398	2727004	3168391
	9	46292	47702	49155	50653	52195	53785	55423	57112	58851	68377
	10	24644	25395	26168	26965	27786	28633	29505	30404	31330	36401
	11	829135	854390	880413	907229	934862	963337	992679	1022915	1054071	1224681
	12	2695474	2777575	2862176	2949354	3039187	3131757	3227146	3325441	3426729	3981371
	13	4303636	4434719	4569794	4708984	4852414	5000212	5152512	5309450	5471169	6356719
	14	601492	619813	638691	658145	678191	698848	720134	742068	764671	888439
	15	564908	582115	599845	618116	636943	656343	676334	696935	718162	834402
	16	3921729	4041180	4164269	4291107	4421808	4556491	4695275	4838287	4985655	5792621
	17	453292	467098	481326	495986	511093	526660	542702	559232	576265	669538
	18	266618	274738	283107	291730	300615	309772	319207	328930	338948	393810
	19	1418976	1462196	1506732	1552626	1599916	1648648	1698863	1750609	1803930	2095909

Ind	Cat	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	20	1631417	1681107	1732312	1785076	1839447	1895474	1953207	2012699	2074004	2409697
	21	3659647	3771115	3885978	4004340	4126307	4251989	4381499	4514953	4652473	5405511
	22	1256740	1295019	1334463	1375109	1416993	1460153	1504627	1550456	1597681	1856278
	23	1423430	1466785	1511462	1557499	1604938	1653823	1704196	1756103	1809592	2102488
Safely managed sanitation	0	37037781	38165903	39328386	40526276	41760653	43032627	44343344	45693983	47085762	54706950
	1	527696	543769	560332	577399	594985	613108	631782	651025	670855	779438
	2	485488	500275	515513	531215	547395	564068	581249	598953	617196	717094
	3	3147370	3243234	3342019	3443812	3548706	3656795	3768176	3882950	4001220	4648847
	4	1703313	1755193	1808654	1863743	1920510	1979007	2039284	2101398	2165404	2515891
	5	1646528	1696679	1748358	1801610	1856485	1913031	1971300	2031343	2093215	2432017
	6	3273639	3373350	3476098	3581975	3691077	3803502	3919352	4038730	4161745	4835355
	7	1011250	1042052	1073791	1106497	1140200	1174929	1210716	1247592	1285592	1493675
	8	2145069	2210405	2277731	2347107	2418597	2492264	2568175	2646398	2727004	3168391
	9	46292	47702	49155	50653	52195	53785	55423	57112	58851	68377
	10	24644	25395	26168	26965	27786	28633	29505	30404	31330	36401
	11	829135	854390	880413	907229	934862	963337	992679	1022915	1054071	1224681
	12	2695474	2777575	2862176	2949354	3039187	3131757	3227146	3325441	3426729	3981371
	13	4303636	4434719	4569794	4708984	4852414	5000212	5152512	5309450	5471169	6356719
	14	601492	619813	638691	658145	678191	698848	720134	742068	764671	888439
	15	564908	582115	599845	618116	636943	656343	676334	696935	718162	834402
	16	3921729	4041180	4164269	4291107	4421808	4556491	4695275	4838287	4985655	5792621
	17	453292	467098	481326	495986	511093	526660	542702	559232	576265	669538
	18	266618	274738	283107	291730	300615	309772	319207	328930	338948	393810
	19	1418976	1462196	1506732	1552626	1599916	1648648	1698863	1750609	1803930	2095909
	20	1631417	1681107	1732312	1785076	1839447	1895474	1953207	2012699	2074004	2409697
	21	3659647	3771115	3885978	4004340	4126307	4251989	4381499	4514953	4652473	5405511
	22	1256740	1295019	1334463	1375109	1416993	1460153	1504627	1550456	1597681	1856278
	23	1423430	1466785	1511462	1557499	1604938	1653823	1704196	1756103	1809592	2102488
hing at home	0	37037781	38165903	39328386	40526276	41760653	43032627	44343344	45693983	47085762	54706950

Ind	Cat	Year 2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	1	527696	543769	560332	577399	594985	613108	631782	651025	670855	779438
	2	485488	500275	515513	531215	547395	564068	581249	598953	617196	717094
	3	3147370	3243234	3342019	3443812	3548706	3656795	3768176	3882950	4001220	4648847
	4	1703313	1755193	1808654	1863743	1920510	1979007	2039284	2101398	2165404	2515891
	5	1646528	1696679	1748358	1801610	1856485	1913031	1971300	2031343	2093215	2432017
	6	3273639	3373350	3476098	3581975	3691077	3803502	3919352	4038730	4161745	4835355
	7	1011250	1042052	1073791	1106497	1140200	1174929	1210716	1247592	1285592	1493675
	8	2145069	2210405	2277731	2347107	2418597	2492264	2568175	2646398	2727004	3168391
	9	46292	47702	49155	50653	52195	53785	55423	57112	58851	68377
	10	24644	25395	26168	26965	27786	28633	29505	30404	31330	36401
	11	829135	854390	880413	907229	934862	963337	992679	1022915	1054071	1224681
	12	2695474	2777575	2862176	2949354	3039187	3131757	3227146	3325441	3426729	3981371
	13	4303636	4434719	4569794	4708984	4852414	5000212	5152512	5309450	5471169	6356719
	14	601492	619813	638691	658145	678191	698848	720134	742068	764671	888439
	15	564908	582115	599845	618116	636943	656343	676334	696935	718162	834402
	16	3921729	4041180	4164269	4291107	4421808	4556491	4695275	4838287	4985655	5792621
	17	453292	467098	481326	495986	511093	526660	542702	559232	576265	669538
	18	266618	274738	283107	291730	300615	309772	319207	328930	338948	393810
	19	1418976	1462196	1506732	1552626	1599916	1648648	1698863	1750609	1803930	2095909
	20	1631417	1681107	1732312	1785076	1839447	1895474	1953207	2012699	2074004	2409697
	21	3659647	3771115	3885978	4004340	4126307	4251989	4381499	4514953	4652473	5405511
	22	1256740	1295019	1334463	1375109	1416993	1460153	1504627	1550456	1597681	1856278
	23	1423430	1466785	1511462	1557499	1604938	1653823	1704196	1756103	1809592	2102488
Handwashing at school	0	125559904	129383400	133324255	137385133	141569700	145881733	150325099	154903799	159621966	185457988
	1	178943	184393	190010	195797	201761	207906	214239	220764	227489	264309
	2	164653	169668	174836	180162	185649	191304	197131	203135	209322	243202
	3	1067253	1099760	1133258	1167775	1203344	1239996	1277765	1316684	1356788	1576395
	4	577555	595147	613274	631954	651202	671037	691476	712537	734240	853082
	5	558412	575420	592947	611007	629618	648795	668556	688920	709903	824806

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Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	6	1108946	1142723	1177529	1213395	1250353	1288437	1327681	1368121	1409792	1637977
	7	342888	353332	364094	375183	386611	398387	410521	423025	435910	506465
	8	727392	749547	772377	795903	820145	845126	870867	897392	924726	1074400
	9	15697	16175	16668	17176	17699	18238	18793	19366	19956	23185
	10	8354	8609	8871	9141	9419	9706	10002	10307	10620	12339
	11	281195	289760	298586	307680	317052	326709	336660	346914	357480	415341
	12	913897	941733	970417	999974	1030432	1061818	1094159	1127486	1161828	1349878
	13	1459069	1503511	1549305	1596495	1645122	1695231	1746865	1800072	1854900	2155130
	14	203996	210209	216612	223210	230009	237014	244233	251672	259338	301314
	15	191592	197428	203441	209638	216023	222603	229383	236370	243569	282993
	16	1329827	1370332	1412070	1455080	1499400	1545070	1592130	1640625	1690596	1964232
	17	153738	158420	163246	168218	173342	178621	184062	189668	195445	227079
	18	90426	93180	96018	98943	101957	105062	108262	111560	114958	133564
	19	481031	495683	510780	526338	542370	558889	575913	593454	611530	710511
	20	552694	569529	586876	604751	623171	642152	661711	681866	702635	816362
	21	1239598	1277355	1316261	1356353	1397666	1440237	1484104	1529308	1575889	1830958
	22	426085	439063	452437	466217	480418	495050	510129	525667	541678	629353
	23	482663	497364	512513	528123	544209	560785	577866	595467	613604	712921
Irrigation	0	3027788	3027788	3027788	3027788	3027788	3027788	3027788	3027788	3027788	3027788
	1	105295	105295	105295	105295	105295	105295	105295	105295	105295	105295
	2	86274	86274	86274	86274	86274	86274	86274	86274	86274	86274
	3	168795	168795	168795	168795	168795	168795	168795	168795	168795	168795
	4	203252	203252	203252	203252	203252	203252	203252	203252	203252	203252
	5	356880	356880	356880	356880	356880	356880	356880	356880	356880	356880
	6	252321	252321	252321	252321	252321	252321	252321	252321	252321	252321
	7	28478	28478	28478	28478	28478	28478	28478	28478	28478	28478
	8	98962	98962	98962	98962	98962	98962	98962	98962	98962	98962
	9	2489	2489	2489	2489	2489	2489	2489	2489	2489	2489
	10	56967	56967	56967	56967	56967	56967	56967	56967	56967	56967
	11	279187	279187	279187	279187	279187	279187	279187	279187	279187	279187

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	12	162548	162548	162548	162548	162548	162548	162548	162548	162548	162548
	13	178177	178177	178177	178177	178177	178177	178177	178177	178177	178177
	14	35591	35591	35591	35591	35591	35591	35591	35591	35591	35591
	15	14333	14333	14333	14333	14333	14333	14333	14333	14333	14333
	16	212246	212246	212246	212246	212246	212246	212246	212246	212246	212246
	17	175585	175585	175585	175585	175585	175585	175585	175585	175585	175585
	18	86548	86548	86548	86548	86548	86548	86548	86548	86548	86548
	19	104096	104096	104096	104096	104096	104096	104096	104096	104096	104096
	20	72763	72763	72763	72763	72763	72763	72763	72763	72763	72763
	21	152300	152300	152300	152300	152300	152300	152300	152300	152300	152300
	22	86177	86177	86177	86177	86177	86177	86177	86177	86177	86177
	23	108521	108521	108521	108521	108521	108521	108521	108521	108521	108521
WfP functionality	0	1206	1243	1281	1320	1360	1401	1444	1488	1533	1781
	1	17	18	18	19	19	20	21	21	22	25
	2	16	16	17	17	18	18	19	20	20	23
	3	102	106	109	112	116	119	123	126	130	151
	4	55	57	59	61	63	64	66	68	71	82
	5	54	55	57	59	60	62	64	66	68	79
	6	107	110	113	117	120	124	128	132	136	157
	7	33	34	35	36	37	38	39	41	42	49
	8	70	72	74	76	79	81	84	86	89	103
	9	2	2	2	2	2	2	2	2	2	2
	10	1	1	1	1	1	1	1	1	1	1
	11	27	28	29	30	30	31	32	33	34	40
	12	88	90	93	96	99	102	105	108	112	130
	13	140	144	149	153	158	163	168	173	178	207
	14	20	20	21	21	22	23	23	24	25	29
	15	18	19	20	20	21	21	22	23	23	27
	16	128	132	136	140	144	148	153	158	162	189
	17	15	15	16	16	17	17	18	18	19	22

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	18	9	9	9	9	10	10	10	11	11	13
	19	46	48	49	51	52	54	55	57	59	68
	20	53	55	56	58	60	62	64	66	68	78
	21	119	123	127	130	134	138	143	147	151	176
	22	41	42	43	45	46	48	49	50	52	60
	23	46	48	49	51	52	54	55	57	59	68
Storage Capacity	0	164	164	164	164	164	164	164	164	164	164
	1	2	2	2	2	2	2	2	2	2	2
	2	2	2	2	2	2	2	2	2	2	2
	3	14	14	14	14	14	14	14	14	14	14
	4	8	8	8	8	8	8	8	8	8	8
	5	7	7	7	7	7	7	7	7	7	7
	6	14	14	14	14	14	14	14	14	14	14
	7	4	4	4	4	4	4	4	4	4	4
	8	9	9	9	9	9	9	9	9	9	9
	9	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0
	11	4	4	4	4	4	4	4	4	4	4
	12	12	12	12	12	12	12	12	12	12	12
	13	19	19	19	19	19	19	19	19	19	19
	14	3	3	3	3	3	3	3	3	3	3
	15	2	2	2	2	2	2	2	2	2	2
	16	17	17	17	17	17	17	17	17	17	17
	17	2	2	2	2	2	2	2	2	2	2
	18	1	1	1	1	1	1	1	1	1	1
	19	6	6	6	6	6	6	6	6	6	6
	20	7	7	7	7	7	7	7	7	7	7
	21	16	16	16	16	16	16	16	16	16	16
	22	6	6	6	6	6	6	6	6	6	6
	23	6	6	6	6	6	6	6	6	6	6

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
Compliance with water standards	0	939	968	997	1027	1059	1091	1124	1158	1194	1387
	1	14	15	15	15	16	16	17	17	18	21
	2	11	11	12	12	12	13	13	14	14	16
	3	80	83	85	88	90	93	96	99	102	118
	4	59	61	63	64	66	68	70	73	75	87
	5	43	44	46	47	48	50	51	53	54	63
	6	58	59	61	63	65	67	69	71	73	85
	7	47	49	50	52	53	55	57	58	60	70
	8	56	57	59	61	63	65	67	69	71	82
	9	2	2	2	2	2	2	2	2	2	2
	10	1	1	1	1	1	1	1	1	1	1
	11	19	20	20	21	21	22	23	23	24	28
	12	62	63	65	67	69	72	74	76	78	91
	13	165	170	176	181	186	192	198	204	210	244
	14	11	12	12	12	13	13	13	14	14	17
	15	12	12	12	13	13	13	14	14	15	17
	16	77	80	82	85	87	90	92	95	98	114
	17	11	11	11	12	12	13	13	13	14	16
	18	6	6	6	7	7	7	7	8	8	9
	19	66	68	70	72	74	77	79	81	84	97
	20	27	28	29	30	31	32	33	34	35	40
	21	56	57	59	61	63	65	67	69	71	82
	22	24	25	26	26	27	28	29	30	31	36
	23	33	34	35	36	37	38	40	41	42	49
Permit compliance	0	1130	1164	1200	1236	1274	1313	1353	1394	1437	1669
	1	16	17	17	18	18	19	19	20	20	24
	2	15	15	16	16	17	17	18	18	19	22
	3	96	99	102	105	108	112	115	118	122	142
	4	52	54	55	57	59	60	62	64	66	77
	5	50	52	53	55	57	58	60	62	64	74

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Ind	Cat	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
					Year						
	6	100	103	106	109	113	116	120	123	127	148
	7	31	32	33	34	35	36	37	38	39	46
	8	65	67	69	72	74	76	78	81	83	97
	9	1	1	1	2	2	2	2	2	2	2
	10	1	1	1	1	1	1	1	1	1	1
	11	25	26	27	28	29	29	30	31	32	37
	12	82	85	87	90	93	96	98	101	105	121
	13	131	135	139	144	148	153	157	162	167	194
	14	18	19	19	20	21	21	22	23	23	27
	15	17	18	18	19	19	20	21	21	22	25
	16	120	123	127	131	135	139	143	148	152	177
	17	14	14	15	15	16	16	17	17	18	20
	18	8	8	9	9	9	9	10	10	10	12
	19	43	45	46	47	49	50	52	53	55	64
	20	50	51	53	54	56	58	60	61	63	74
	21	112	115	119	122	126	130	134	138	142	165
	22	38	40	41	42	43	45	46	47	49	57
	23	43	45	46	48	49	50	52	54	55	64
Wastewater treatment	0	37037781	38165903	39328386	40526276	41760653	43032627	44343344	45693983	47085762	54706950
	1	527696	543769	560332	577399	594985	613108	631782	651025	670855	779438
	2	485488	500275	515513	531215	547395	564068	581249	598953	617196	717094
	3	3147370	3243234	3342019	3443812	3548706	3656795	3768176	3882950	4001220	4648847
	4	1703313	1755193	1808654	1863743	1920510	1979007	2039284	2101398	2165404	2515891
	5	1646528	1696679	1748358	1801610	1856485	1913031	1971300	2031343	2093215	2432017
	6	3273639	3373350	3476098	3581975	3691077	3803502	3919352	4038730	4161745	4835355
	7	1011250	1042052	1073791	1106497	1140200	1174929	1210716	1247592	1285592	1493675
	8	2145069	2210405	2277731	2347107	2418597	2492264	2568175	2646398	2727004	3168391
	9	46292	47702	49155	50653	52195	53785	55423	57112	58851	68377
	10	24644	25395	26168	26965	27786	28633	29505	30404	31330	36401

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Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	11	829135	854390	880413	907229	934862	963337	992679	1022915	1054071	1224681
	12	2695474	2777575	2862176	2949354	3039187	3131757	3227146	3325441	3426729	3981371
	13	4303636	4434719	4569794	4708984	4852414	5000212	5152512	5309450	5471169	6356719
	14	601492	619813	638691	658145	678191	698848	720134	742068	764671	888439
	15	564908	582115	599845	618116	636943	656343	676334	696935	718162	834402
	16	3921729	4041180	4164269	4291107	4421808	4556491	4695275	4838287	4985655	5792621
	17	453292	467098	481326	495986	511093	526660	542702	559232	576265	669538
	18	266618	274738	283107	291730	300615	309772	319207	328930	338948	393810
	19	1418976	1462196	1506732	1552626	1599916	1648648	1698863	1750609	1803930	2095909
	20	1631417	1681107	1732312	1785076	1839447	1895474	1953207	2012699	2074004	2409697
	21	3659647	3771115	3885978	4004340	4126307	4251989	4381499	4514953	4652473	5405511
	22	1256740	1295019	1334463	1375109	1416993	1460153	1504627	1550456	1597681	1856278
	23	1423430	1466785	1511462	1557499	1604938	1653823	1704196	1756103	1809592	2102488
Ambient water quality	0	1823421	1823421	1823421	1823421	1823421	1823421	1823421	1823421	1823421	1823421
	1	31693	31693	31693	31693	31693	31693	31693	31693	31693	31693
	2	21658	21658	21658	21658	21658	21658	21658	21658	21658	21658
	3	19437	19437	19437	19437	19437	19437	19437	19437	19437	19437
	4	86	86	86	86	86	86	86	86	86	86
	5	10772	10772	10772	10772	10772	10772	10772	10772	10772	10772
	6	38	38	38	38	38	38	38	38	38	38
	7	366	366	366	366	366	366	366	366	366	366
	8	8290	8290	8290	8290	8290	8290	8290	8290	8290	8290
	9	0	0	0	0	0	0	0	0	0	0
	10	6017	6017	6017	6017	6017	6017	6017	6017	6017	6017
	11	191559	191559	191559	191559	191559	191559	191559	191559	191559	191559
	12	245478	245478	245478	245478	245478	245478	245478	245478	245478	245478
	13	87877	87877	87877	87877	87877	87877	87877	87877	87877	87877
	14	1218	1218	1218	1218	1218	1218	1218	1218	1218	1218
	15	3573	3573	3573	3573	3573	3573	3573	3573	3573	3573
	16	3044	3044	3044	3044	3044	3044	3044	3044	3044	3044

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Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	17	322	322	322	322	322	322	322	322	322	322
	18	0	0	0	0	0	0	0	0	0	0
	19	11045	11045	11045	11045	11045	11045	11045	11045	11045	11045
	20	1497	1497	1497	1497	1497	1497	1497	1497	1497	1497
	21	1167287	1167287	1167287	1167287	1167287	1167287	1167287	1167287	1167287	1167287
	22	5075	5075	5075	5075	5075	5075	5075	5075	5075	5075
	23	7088	7088	7088	7088	7088	7088	7088	7088	7088	7088
Water Stress	0	31233	31233	31233	31233	31233	31233	31233	31233	31233	31233
	1	32	32	32	32	32	32	32	32	32	32
	2	26	26	26	26	26	26	26	26	26	26
	3	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	4	1301	1301	1301	1301	1301	1301	1301	1301	1301	1301
	5	777	777	777	777	777	777	777	777	777	777
	6	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210
	7	435	435	435	435	435	435	435	435	435	435
	8	148	148	148	148	148	148	148	148	148	148
	9	0	0	0	0	0	0	0	0	0	0
	10	400	400	400	400	400	400	400	400	400	400
	11	235	235	235	235	235	235	235	235	235	235
	12	10328	10328	10328	10328	10328	10328	10328	10328	10328	10328
	13	10416	10416	10416	10416	10416	10416	10416	10416	10416	10416
	14	101	101	101	101	101	101	101	101	101	101
	15	15	15	15	15	15	15	15	15	15	15
	16	1107	1107	1107	1107	1107	1107	1107	1107	1107	1107
	17	94	94	94	94	94	94	94	94	94	94
	18	67	67	67	67	67	67	67	67	67	67
	19	327	327	327	327	327	327	327	327	327	327
	20	1036	1036	1036	1036	1036	1036	1036	1036	1036	1036
	21	468	468	468	468	468	468	468	468	468	468
	22	400	400	400	400	400	400	400	400	400	400

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	23	410	410	410	410	410	410	410	410	410	410
Wetlands coverage	0	884228	904123	924466	945267	966535	988282	1010518	1033255	1056503	1180830
	1	19272	19706	20149	20603	21066	21540	22025	22520	23027	25737
	2	19482	19920	20368	20827	21295	21774	22264	22765	23277	26017
	3	38064	38920	39796	40691	41607	42543	43500	44479	45479	50831
	4	56233	57498	58792	60114	61467	62850	64264	65710	67189	75095
	5	74869	76554	78276	80037	81838	83680	85562	87488	89456	99983
	6	102923	105238	107606	110027	112503	115034	117623	120269	122975	137447
	7	12248	12524	12806	13094	13388	13690	13998	14313	14635	16357
	8	83282	85156	87072	89031	91034	93082	95177	97318	99508	111218
	9	1285	1314	1344	1374	1405	1437	1469	1502	1536	1717
	10	10260	10491	10727	10968	11215	11467	11725	11989	12259	13701
	11	56535	57807	59107	60437	61797	63188	64609	66063	67549	75498
	12	46497	47543	48613	49706	50825	51968	53138	54333	55556	62093
	13	31418	32125	32847	33587	34342	35115	35905	36713	37539	41956
	14	10443	10677	10918	11163	11415	11671	11934	12202	12477	13945
	15	10302	10534	10771	11013	11261	11514	11773	12038	12309	13758
	16	65264	66733	68234	69770	71339	72945	74586	76264	77980	87156
	17	47739	48813	49912	51035	52183	53357	54558	55785	57040	63753
	18	9222	9430	9642	9859	10080	10307	10539	10776	11019	12315
	19	41659	42596	43555	44535	45537	46561	47609	48680	49775	55633
	20	34759	35541	36341	37159	37995	38849	39724	40617	41531	46419
	21	49700	50818	51961	53131	54326	55548	56798	58076	59383	66371
	22	27639	28261	28897	29547	30212	30891	31587	32297	33024	36910
	23	35134	35924	36733	37559	38404	39268	40152	41055	41979	46919
Forest Coverage	0	3014414	3082239	3151589	3222500	3295006	3369144	3444949	3522461	3601716	4025558
	1	3219	3291	3365	3441	3519	3598	3679	3761	3846	4299
	2	20532	20994	21467	21950	22443	22948	23465	23993	24532	27419
	3	94911	97047	99230	101463	103746	106080	108467	110907	113403	126748
	4	36808	37637	38483	39349	40235	41140	42066	43012	43980	49155

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Ind	Cat	Year									
		2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2030**
	5	112719	115255	117848	120500	123211	125983	128818	131716	134680	150529
	6	430314	439997	449896	460019	470370	480953	491774	502839	514153	574658
	7	13438	13740	14049	14365	14689	15019	15357	15703	16056	17945
	8	148275	151611	155023	158511	162077	165724	169453	173265	177164	198012
	9	12107	12380	12658	12943	13234	13532	13836	14148	14466	16168
	10	85863	87795	89770	91790	93855	95967	98126	100334	102592	114664
	11	88996	90999	93046	95140	97280	99469	101707	103995	106335	118849
	12	611653	625415	639487	653876	668588	683631	699013	714741	730822	816824
	13	369188	377495	385988	394673	403553	412633	421917	431411	441117	493027
	14	42242	43193	44165	45158	46174	47213	48276	49362	50472	56412
	15	53319	54519	55745	56999	58282	59593	60934	62305	63707	71204
	16	266169	272158	278282	284543	290945	297492	304185	311029	318027	355452
	17	29910	30583	31271	31974	32694	33429	34182	34951	35737	39942
	18	2072	2119	2166	2215	2265	2316	2368	2421	2476	2767
	19	14263	14584	14912	15248	15591	15942	16300	16667	17042	19047
	20	183079	187198	191410	195717	200121	204623	209227	213935	218749	244490
	21	202722	207283	211947	216716	221592	226578	231676	236889	242219	270722
	22	113182	115729	118333	120995	123717	126501	129347	132258	135233	151147
	23	79432	81219	83046	84915	86825	88779	90776	92819	94907	106076
GHG emissions	0	14479458	18176511	22085347	26215435	30576628	35179173	40033725	45151367	50543622	82060424
	1	206296	258970	314661	373505	435641	501216	570381	643295	720121	1169157
	2	189795	238256	289493	343630	400796	461125	524758	591840	662521	1075641
	3	1230425	1544590	1876752	2227716	2598318	2989430	3401957	3836840	4295059	6973271
	4	665889	835911	1015672	1205609	1406174	1617838	1841092	2076444	2324426	3773837
	5	643690	808043	981812	1165417	1359295	1563903	1779714	2007220	2246935	3648026
	6	1279788	1606558	1952046	2317090	2702560	3109363	3538440	3990770	4467373	7253032
	7	395336	496277	603001	715765	834840	960504	1093049	1232777	1380003	2240513
	8	838588	1052705	1279088	1518285	1770866	2037426	2318581	2614973	2927269	4752586
	9	18097	22718	27604	32766	38217	43969	50037	56433	63173	102565

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Ind	Cat	Year									
		2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2030**
	10	9634	12094	14695	17443	20345	23407	26637	30043	33630	54601
	11	324140	406903	494407	586864	684494	787528	896203	1010768	1131480	1837021
	12	1053762	1322820	1607291	1907863	2225255	2560211	2913508	3285951	3678380	5972057
	13	1682453	2112035	2566225	3046124	3552877	4087673	4651752	5246401	5872958	9535079
	14	235146	295186	358665	425738	496563	571308	650146	733256	820826	1332658
	15	220844	277232	336851	399844	466361	536560	610603	688659	770902	1251604
	16	1533151	1924612	2338497	2775810	3237593	3724931	4238953	4780832	5351789	8688932
	17	177209	222456	270294	320841	374216	430545	489958	552591	618585	1004307
	18	104231	130844	158982	188713	220107	253238	288184	325024	363840	590715
	19	554731	696371	846124	1004355	1171439	1347770	1533755	1729820	1936406	3143864
	20	637782	800627	972801	1154721	1346820	1549550	1763380	1988799	2226313	3614545
	21	1430693	1795994	2182220	2590307	3021230	3476001	3955672	4461338	4994139	8108266
	22	491307	616753	749384	889524	1037505	1193675	1358396	1532044	1715011	2784417
	23	556472	698557	848780	1007507	1175116	1352000	1538569	1735250	1942484	3153732
Climate Change Vulnerability	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	16	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0
	21	0	0	0	0	0	0	0	0	0	0
	22	0	0	0	0	0	0	0	0	0	0
	23	0	0	0	0	0	0	0	0	0	0
Operational weather stations	0	207	296	386	475	565	654	743	833	922	1369
	1	0	0	0	0	0	0	0	0	0	0
	2	3	4	5	6	7	8	10	11	12	18
	3	13	19	25	31	37	42	48	54	60	89
	4	3	4	5	6	7	8	10	11	12	18
	5	19	27	35	43	51	59	68	76	84	124
	6	19	27	35	43	51	59	68	76	84	124
	7	3	4	5	6	7	8	10	11	12	18
	8	11	15	20	25	29	34	39	43	48	71
	9	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0
	11	16	23	30	37	44	51	58	65	72	107
	12	11	15	20	25	29	34	39	43	48	71
	13	30	42	55	68	81	93	106	119	132	196
	14	5	8	10	12	15	17	19	22	24	36
	15	0	0	0	0	0	0	0	0	0	0
	16	24	35	45	56	66	76	87	97	108	160
	17	3	4	5	6	7	8	10	11	12	18
	18	0	0	0	0	0	0	0	0	0	0
	19	11	15	20	25	29	34	39	43	48	71
	20	3	4	5	6	7	8	10	11	12	18
	21	19	27	35	43	51	59	68	76	84	124

Ind	Cat	Year									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2030
	22	11	15	20	25	29	34	39	43	48	71
	23	5	8	10	12	15	17	19	22	24	36