

**DATA ENTRY MANUAL**

**TREATMENT**

System: Fecal Sludge Management or Wastewater

Element: Treatment

Component: Aerobic FSM, Anaerobic FSM , Passive Aerobic Wastewater,

Machine-Powered Aerobic Wastewater, or Anaerobic Wastewater

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# INTRODUCTION

This manual is intended to assist in providing cost data for a fecal sludge or wastewater treatment facility.

All costs associated with constructing, operating, and maintaining the treatment facility are included in this workbook.

# TAB 1: CONTEXT

Definition

The Context tab provides information that applies to all costs in the data point for which you are reporting. Enter the requested information in the light yellow boxes.

## GENERAL INFORMATION

Data to provide

* **Name of organization / business / utility / operation:** If you are entering data for a formal organization or business, enter the name here.
* **Description of organization / business / utility / operation:** Provide a brief description of your operation here.
* **Description of treatment facility:** Provide a brief description of the treatment facility here including what type of waste is treated and an overview of the treatment processes.
* **Does this treatment facility primarily treat fecal sludge or wastewater?** Select the best choice from the drop-down box. If the facility treats both wastewater and fecal sludge, select either which one it was originally designed to treat or which stream accounts for the majority of the waste treated.
* **Is the primary treatment aerobic or anaerobic?** Select the best choice from the drop-down box. If both treatment types are used, select the one that describes the primary treatment system. Examples of aerobic treatment include composting fecal sludge, thermal treatments such as pyrolysis, drying beds shallow pond systems, constructed wetlands, activated sludge reactors, trickling filters and rotating biological reactors. Examples of anaerobic treatment include anaerobic baffle reactors, upflow anaerobic sludge blanket reactors and deep ponds (e.g., greater than 2 m deep).
* **If the facility primarily treats wastewater aerobically, is the aeration passive or machine-powered?** If you selected ‘fecal sludge’ or ‘anaerobic’ in either of the two question above, select ‘not applicable’ here. Otherwise, select whether the aeration to create aerobic conditions is done passively or powered by machines. Passive aeration does not require significant energy or power input. Examples include aerobic waste stabilization ponds and constructed wetlands. Machine-powered aeration does require significant energy input. Examples include activated sludge reactors and rotating biological reactors.
* **Year:**Enter the year that corresponds to the operating costs that you provide. For example, if the current year is 2020 and you are entering costs based on last year’s financial records, you should enter 2019.
* **Country:** Select the country where the toilets are located from the dropdown box.
* **City**: Enter the name of the city where the toilets are located.

## SERVICE INFORMATION

Definition

The service information helps us determine the number of people and households served by the treatment facility that is reported in this workbook. This information is critical for calculating CACTUS’s key metrics: the total annual cost per capita (TACC) and total annual cost per household (TACH).

Data to provide

**Primary service parameters**

There are three service parameters to enter in this section: *number of households served*, *number of people per household*, and *number of people served*.

* **Number of households served:**
  + If you are entering costs for a wastewater treatment facility, the *number of households served* should correspond to the number of households connected to the sewer system.
  + If you are entering costs for a fecal sludge treatment facility, the number of households might be unknown. If possible, enter an estimate here and describe in the notes how it was estimated and any uncertainty in the value.
  + If you are entering a plant that treats both wastewater and fecal sludge, you should include both the number of households connected to the sewer system and number of people served by onsite sanitation whose waste is treated at the plant. If you only know the number of sewer connections, enter that number as the value, and explain in the notes that the number of people served by onsite sanitation is not included.
* **Number of people per household** represents the average household size in the area that is served by the treatment facility.
* **Number of people served** would normally be calculated as the number of households served multiplied by the average number of people per household.

In the notes column, provide any information about how you came to the value for each parameter. If you know the value within a given range, you can provide the range here and then use the average of the range in the value column. You may also use this space to note how confident you are in the estimate provided in the ‘value’ column. You should provide your best estimate for service parameters, even if there is high uncertainty in it.

**Additional contextual information**

The remaining questions can help provide more information to supplement the estimates about the number of people served.

* **What is the wastewater daily capacity of the treatment facility?** Enter the capacity that the treatment facility was designed for and provide the appropriate units. Most likely, this will be in L or m3 per day. If treatment facility only treats fecal sludge, leave this question blank.
* **What is the fecal sludge daily capacity of the treatment facility?** Enter the capacity that the treatment facility was designed for and provide the appropriate units. Most likely, this will be in t or m3 per day. If treatment facility only treats wastewater, leave this question blank.
* **How much wastewater does the treatment facility receive daily?**Provide an average value, including appropriate units. If the treatment facility is operated under or below capacity, this number will be different than the number provided for the designed capacity. If treatment facility only treats fecal sludge, leave this question blank.
* **How much fecal sludge does the treatment facility receive daily?** Provide an average value, including appropriate units. If the treatment facility is operated under or below capacity, this number will be different than the number provided for the designed capacity. If treatment facility only treats wastewater, leave this question blank.
* **Describe the geographic area that the treatment facility serves***:* Provide any helpful information about the geographic area that you serve. This might include how many other treatment facilitys exist in the city and distance to closest other treatment facility(s). You already provided the city where the plant is located above. If the plant serves surrounding areas as well, list those here. If the plant only serves a portion of the city, describe which areas within the city it serves.
* **What is the population of the geographic area that the treatment facility serves?** To the best of your ability, provide the population for the entire geographic area that you serve.

# TAB 2: DIRECT CAPEX

## OVERVIEW

Definition

**Direct CAPEX** includes capital investments (either purchases or long-term leases longer than one year) into physical assets that are beneficial beyond one year and that directly contribute to construction and maintenance of the treatment facility. These investments are broken into three categories: (1) physical assets, (2) major and extraordinary repairs and (3) taxes and financing fees.

Common parameters

The following parameters to describe cost items are common throughout this tab. Any differences in these parameters seen in individual sections will be described separately in the corresponding section.

* **Cost:** Total cost for the described item
* **Currency:** Select the appropriate currency from the drop-down box, which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Lifetime (years):** Indicate the estimated lifetime of the cost item in years. Estimates can be based on personal observations of asset lifetimes, estimates provided by vendors or values used for internal financial purposes. The workbook only allows input of a single value in years. If you are working with a range, provide the average value as the lifetime, and indicate the expected range in the notes column.
* **Year purchased or year cost was incurred:** For physical assets, list the year that the item was purchased. For major and extraordinary repairs, taxes and financing, provide the year that cost was incurred. Use an average if you are reporting on the costs of multiple items purchased over a span of multiple years.
* **Indicate if cost is incurred but not reported:**  Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

## SECTION 1: PHYSICAL ASSETS

Definition

This section includes the costs for purchasing and constructing all physical assets that make up the sewer system.

Parameters

Clarifications of the parameters specific to this section include:

* **Cost:** Provide the amount paid for the asset. You may enter the cost either inclusive or exclusive of taxes such as VAT. If the cost is inclusive of VAT or other taxes, indicate that in the notes column for each cost item. If the cost is exclusive of VAT or other taxes, provide the cost of those taxes separately in Section 3. Make sure to only include the taxes in one section to avoid double counting them.

Cost items

* **Land:** This includes the purchase or long-term lease for the land on which the treatment facility is built.
  + A long-term lease means that you pay for the lease at a frequency of less than once per year, for example if you pay upfront for a 25-year lease on the land.
  + If you are entering the cost of a long-term lease, report the frequency of payment as the lifetime. If you are reporting the cost for purchased land, use a default lifetime value of 100 years.
* **Infrastructure and buildings:** Provide the cost for all infrastructure and buildings required for the treatment facility. There are two rows provided in case parts of the plant were built at different times. For example, if a wastewater treatment facility was originally built in 1998 and then received a major upgrade with the addition of new facilities or treatment technologies in 2015, you can enter the construction costs for the original plant in the first row and the additional costs for the upgrade in the second row. Use the notes column to describe the infrastructure and buildings that are included.
  + If possible, costs for administrative buildings such as offices should be included in the indirect CAPEX tab instead of here. However, if you only know the total combined cost for both the plant and administrative buildings, you may enter that here and leave the corresponding row on the indirect CAPEX tab blank.
* **Equipment:** Provide the cost for any equipment purchased for the plant that is not included in the rows above. This might include tractors, lawn mowers, large purchases of personal protective equipment, and others. If items need to be combined, provide the total combined cost and a weighted average for the lifetime and year purchased. Use the notes column to describe the specific equipment included in each row.

Frequently asked questions

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| **1.** **I only know the combined purchase price for land and infrastructure and buildings. How should I report that?**  *You can leave the row for land blank, and enter the combined cost under infrastructure and buildings. In the notes column, describe that the cost also includes the purchase of land.*  **2. I am reporting the costs for a treatment facility that received a major upgrade in the 2015, but I do not have access to the original costs for the land and original facilities. How do I report those here?**  *In the row for land, leave most columns blank, but check the box to indicate that the cost was incurred but not reported, and add a note indicating that the land was previously purchased and the cost is not known. If you know the year that the land was purchased, you can still provide that in the appropriate column. For infrastructure and buildings, use one row to report the cost of the recent upgrade. In the other row, follow the same guidance as for the land: use the check box to indicate that the cost was incurred but not reported and use the notes column to describe the original infrastructure that was not included in the cost of the upgrade.* |

## SECTION 2: MAJOR AND EXTRAORDINARY REPAIRS

Definition

Major and extraordinary repairs include any extensive repairs made to an asset that prolong its useful life beyond one year and have a materially significant value.

Parameters

The parameters in this section are the same as those in the physical assets section with one clarification:

* **Lifetime:** Here, lifetime indicates how frequently a repair is expected to be required in years.

Cost items

There are three rows provided to enter the costs for different major and extraordinary repairs. Common examples of major and extraordinary repairs include desludging wetlands, drying beds, reactors or ponds and major overhauls or upgrades to the plant infrastructure. Use the notes column to describe the specific repair reported in each row.

## SECTION 3: TAXES AND FINANCING FOR PHYSICAL ASSETS

Definition

Taxes and financing for physical assets include any interest paid on a loan, commissions or fees paid to a lender or bank, and taxes, which might include sales tax, value added tax (VAT) and import tax.

Parameters

All parameters are described previously in the overview section.

Cost items

There are three sections to provide taxes and financing separately for land, infrastructure and buildings, and equipment. If there are multiple items included in one of those categories (for example, if you reported two different costs for infrastructure and buildings and have financing for both of them), you can either report the combined cost and weighted average for the lifetime and year purchased under the appropriate section, or you can enter the costs for one item in the appropriate section and the costs for the other item under other or combined physical assets. You may also use the section for other or combined physical assets if you prefer to report the combined financing and taxes for all physical assets. In that case, use a weighted average for the lifetime and year purchased.

**Financing costs** and **taxes** should be reported in separate rows:

* **Financing costs:** Includes the total interest plus any commissions and fees paid to a lender or bank
* **Taxes:** Examples include sales, VAT or import taxes paid for a physical asset

Frequently asked questions

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| **1.****The physical asset cost that I reported in Section 1 is inclusive of VAT. Do I need to report that cost separately in this section as well?**  *No, if the cost reported for a physical asset in Section 1 already includes VAT, you should leave the corresponding row for taxes here blank.*  **2. I received a waiver for VAT for the purchase of my equipment. How should I indicate that in my reporting?**  *This is a great example for indicating that a cost should b) incurred but is not reported. If you received a waiver for VAT but reasonably expect that similar operators in the future would have to pay taxes on the equipment, then you should mark the cell for ‘Indicate if cost is incurred but not reported’ with an X in the taxes row for the appropriate physical asset.* |

# TAB 3: INDIRECT CAPEX

## OVERVIEW

Definition

**Indirect CAPEX** includes capital investments (either purchases or long-term leases longer than one year) into physical assets that are beneficial beyond one year and that **indirectly** support the treatment facility. Typically these are administrative costs. (Stumped? See **INSIGHT 3.1**)

***INSIGHT 3.1***

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| **Guidance for determining whether a cost is direct or indirect**  Some cost descriptions are listed on both the direct and indirect cost tabs. To determine where a specific cost should be reported, consider the following questions:   * Is the item/service/staff member used only for this service? * Is it essential to deliver the service? If we eliminate it, would we be unable to operate the service?   If the answers to the questions above are yes, then it is likely a direct cost and should be reported on this tab.  Alternatively, consider:   * Does the item/service/staff member provide core business services that indirectly support the sanitation service? * Is the item/service/staff member shared across multiple services or different business activities?   If the answers to those questions are yes, then the cost is more likely an indirect cost. |

Common parameters

The following parameters to describe cost items are common throughout this tab. Any differences in these parameters seen in individual sections will be described separately in the corresponding section.

* **Cost:** Total cost for the described item that is incurred by the operation or business
* **Fraction applied to shared costs:** The fraction of the reported total cost that should be applied to this component, which should be generated using the methodology described in the Appendix. The fraction should be entered as a decimal equal to or between 0 and 1. (Stumped? See **INSIGHT 3.2**)
* **Currency:** Select the appropriate currency from the drop down box which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Indicate if cost is incurred but not reported:** Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

***INSIGHT 3.2***

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| **Cost allocation between shared costs**  Indirect costs are often shared between multiple products or services that are offered by a business. For example, if your utility provides both sewerage and drinking water, then indirect costs such as your office rent and finance team salaries are likely shared between three different services—the sewer system (which is reported in a different workbook), wastewater treatment (which is reported in this workbook), and drinking water treatment and distribution (which are not reported to CACTUS in any workbook). For each cost item provided in this tab, report the total cost that is incurred by your organization and then determine the fraction of the total cost that should be applied to the sewer system using the methodology described in the Appendix. |

## SECTION 1: PHYSICAL ASSETS

Definition

This section includes the purchase cost for physical assets that indirectly support the treatment facility.

Parameters

Additions and clarifications of the parameters specific to this section include:

* **Cost:** Total cost for the described item. You may enter the cost either inclusive or exclusive of taxes such as VAT. If the cost is inclusive of VAT or other taxes, indicate that in the notes column for each cost item. If the cost is exclusive of VAT or other taxes, provide the cost of those taxes separately in Section 3. Make sure to only include the taxes in one section to avoid double counting them.
* **Lifetime (years):** Indicate the estimated lifetime of the physical asset in years. Estimates can be based on personal observations of asset lifetimes, estimates provided by vendors or values used for internal financial purposes. The workbook only allows input of a single value in years. If you are working with a range, provide the average value as the lifetime, and indicate the expected range in the notes column.
* **Year purchased:** List the year that the item was purchased. Use an average if you are reporting on the costs of multiple assets purchased over a span of multiple years, for example if you are reporting the cost for 5 vehicles that were purchased between 2018 and 2021.

Cost items

* **Land for office:** Includes the costs associated with purchasing or long-term leasing the land on which your office is built.
  + A long-term lease means that you pay for the lease at a frequency of less than once per year, for example if you pay upfront for a 25-year lease on the land.
  + If you are entering the cost of a long-term lease, report the frequency of payment as the lifetime. If you are reporting the cost for purchased land, use a default lifetime value of 100 years.
  + This cost typically only applies if you have built your own office. If you purchased or rent an office, it will be reported as 'purchase, construction or long-term lease of an office building' below (if a long-term lease with payment frequency less than once per year) or in the indirect OPEX tab.
* **Purchase, construction or long-term lease of an office building:** Includes all costs associated with purchasing, constructing or long-term leasing the office building.
  + For construction, the cost should include all labour and materials.
  + A long-term lease means that you pay for the lease at a frequency of less than once per year. If you rent your office and pay rent monthly or annually, the cost should be reported on the indirect OPEX tab.
  + If you are entering the cost of a long-term lease, report the frequency of payment as the lifetime. If you are reporting the cost for a purchased or constructed office building, use a default lifetime value of 40 years.
* **Office equipment:** Includes the costs associated with purchasing all equipment to be used in the office that are replaced at a frequency of less than once per year. This includes furniture, computers and all other electronic equipment used in the office.
  + The lifetime and year purchased should be averages of the multiple items included in this row. Ideally the average would be weighted based on the relative cost of each included item.
  + Use the notes column to describe specifically which items are included.
* **General use vehicles:** Includes the combined cost for purchase of any vehicles used for general, sales and administrative purposes.
  + Note that these do not include vehicles used for transportation of waste. If a vehicle is sometimes used for both, list it in the direct CAPEX tab.
* **Other or combined physical assets:** Provide the combined cost for any physical assets that are not explicitly listed above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Use the notes column to provide more details about the items accounted for in the cost. For the lifetime of combined costs, use the average lifetime of the items, weighted by the individual item costs.

## SECTION 2: MAJOR AND EXTRAORDINARY REPAIRS

Definition

Major and extraordinary repairs include any extensive repairs made to an asset that prolong its useful life beyond one year and have a materially significant value.

Parameters

The parameters in this section are the same as those in the physical assets section with one clarification:

* **Lifetime:** Here, lifetime indicates how frequently a repair is expected to be required in years. For example, if your vehicles require a significant repair such as replacing the brakes every three years, the lifetime would be 3.
* **Year cost was incurred:** Indicate the year when the reported cost was incurred

Cost items

Major and extraordinary repairs should be reported according to the physical asset which requires the repair.

* **Land for office:** Possible examples include excavation to improve stormwater drainage on the property or an overhaul of the property landscaping
* **Office building:** Possible examples include renovation of the office building or construction of a new staff kitchen
* **Office equipment:** A possible example is upgrading the CPUs of office computers
* **General use vehicles:** Possible examples include replacing the vehicle brakes, transmission, or engine
* **Other or combined major and extraordinary repairs:** Use this row for any major and extraordinary repairs required for any other physical assets that you reported in the previous section or to report the combined cost of major and extraordinary repairs for multiple assets. Use the notes column to provide more details about the repair that is accounted for in the cost. For the lifetime of combined items, use an average lifetime, ideally weighted by the cost of each item.

## SECTION 3: TAXES AND FINANCING FOR PHYSICAL ASSETS

Definition

Taxes and financing for physical assets include any interest paid on a loan, commissions or fees paid to a lender or bank for the financing and taxes, which might include sales tax, value added tax (VAT) and import tax. Only taxes that are incurred from the purchase or initial lease transaction should be reported here. Annual taxes such as property taxes should be reported on the indirect OPEX tab.

Parameters

All parameters are described previously in the overview section.

Cost items

Where possible, taxes and financing costs should be reported for the individual physical asset for which they were incurred. However, if you only know combined financing costs and taxes for all indirect physical assets, you may report those in the rows for 'other or combined physical assets'. You may also use the row for 'other or combined physical assets' if you reported the cost of a physical asset in the 'other' row in the previous sections of this tab.

For each asset, **financing costs** and **taxes** should be reported in separate rows:

* **Financing costs:** Includes the total interest plus any commissions and fees paid to a lender or bank
* **Taxes:** Examples include sales, VAT or import taxes paid for a physical asset

## SECTION 4: PROFESSIONAL DEVELOPMENT AND TRAINING

Definition

This section includes expenses incurred for one-time or infrequent staff trainings.

Parameters

* **Lifetime (years):** For a routinely held training (e.g., one that is held every two years), indicate the estimated frequency of the training in years. For a training that was held once when the company or service provider first began operations and is not expected to ever be repeated, you may enter a lifetime of 100 years.
* **Year cost was incurred:** Indicate the year when the reported cost was incurred

Cost items

* **One-time of infrequent staff training expenses**: Examples include single trainings that are held when a company or service provider first begins operations but that are not expected to be repeated or large trainings that are held routinely at a frequency less than once per year.

## SECTION 5: OTHER INDIRECT CAPEX

Any other capital investment into physical assets that occurs at a frequency of less than once per year, is needed to provide the core business activities that support the sewer network, and does not fit into any of the other sections on this tab can be reported here. If there are multiple items that meet this description, the costs should be combined to report as a single item. Use the notes column to describe what the item(s) are.

# 

# TAB 4: DIRECT OPEX

## OVERVIEW

Definition

**Direct OPEX** includes all operational costs that directly contribute to operation and maintenance of the treatment facility. (Stumped on the difference between direct and indirect costs? See **INSIGHT 3.1** for the indirect CAPEX tab)

Common parameters

The following parameters to describe cost items are common throughout this tab:

* **Annual cost:** The cost incurred for each item over the course of a year
* **Currency:** Select the appropriate currency from the drop-down box which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Indicate if cost is incurred but not reported:** Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

***INSIGHT 4.1***

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| **Revenue streams or fees paid between different sanitation actors**  In order to reduce variability caused by differences in organization and structure of different sanitation systems, the CACTUS method assumes that all elements of the sanitation value chain are operated by a single virtual operator. While this rarely occurs in real life, the important practical implication of this assumption is that any financial transactions between sanitation actors are not included in cost reporting. For example, any tariffs that a utility charges to households for use of the sewer system or tipping fees that are charged to onsite sanitation service providers to discharge waste are not reported in this workbook. |

## SECTION 1: SALARIED DIRECT STAFF

Definition

This section covers all wage costs for staff who are employed on an annual or long-term contract and contribute directly to operation and maintenance of the treatment facility.

Parameters

* The parameters in this section are the same as those in the overview section.

Cost items

* **All salaried staff:** Combined salaries for all staff who provide operational support, maintenance or supervision of the treatment facility

Frequently asked questions

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| **We have staff members who provide maintenance for both a wastewater treatment facility and the connected sewer network. How do I report their salaries and other expenses?**  *All costs for operating and maintaining the sewer system should be reported in a separate workbook for the appropriate emptying and transport component. If staff salaries cover operation of both the sewer network and the treatment facility, then you can estimate the fraction of the total salary cost that should be reported here based on the approximate fraction of time that employees spend working on the treatment facility versus the sewer network. You may also use the Appendix, which provides guidance on allocating shared indirect costs, for ideas about how to determine the appropriate portion of the total salaries to report here.* |

## SECTION 2: VARIABLE STAFF PAYMENTS

Definition

This section covers costs for workers who support operation and maintenance of the treatment facility and are paid per day, week or month on a variable basis, usually because the need for their labour is variable based on the amount of wastewater or fecal sludge coming into the treatment facility in a given period of time.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Wages paid to staff on a variable or casual basis:** Includes all wages paid over the course of the year for casual labor paid on a variable basis
* **Other variable staff costs:** Includes any additional costs for staff that would vary depending on the amount of waste treated in a given week or month. This might include short-term insurance for casual workers, phone credit, or meals purchased on a variable basis. Use the notes column to provide details about which costs are included.

## SECTION 3: FIXED NON-SALARY STAFF EXPENSES

Definition

This section includes the fixed annual expenses that are incurred on behalf of all staff and workers for items such as insurance costs and vaccinations that are not included in their salaries.

Parameters

All parameters are described previously in the overview section. The annual costs reported here should reflect the total annual cost incurred for all staff.

Cost items

* **Insurance:** Includes costs for all insurances and other similar items. Examples include health insurance, disability insurance, workers’ compensation and social security if those are not previously included in the reported salary.
* **Annual vaccinations**: Includes annual costs associated with vaccinations and other annual or routine health checks provided by the employer
* **Other or combined expenses**: Provide the combined cost for any expenses that are not explicitly listed above, or you may use this row to report the combined cost for insurance, vaccinations and any other staff expenses if your financial records group those costs together. Use the notes column to provide more details about the items accounted for in the cost.

Frequently asked questions

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| **What is the difference between “other costs” in Section 2 (Variable Staff Payments) versus Section 3 (Fixed Non-Salary Staff Expenses)?**  *The primary difference is whether you would consider the cost as fixed or variable. If the cost is generally fixed for the year, then enter it in Section 3. If it is likely to change based on short-term (weekly or monthly) changes in the number of containment facilities that you service, then enter it in Section 2.* |

## SECTION 4: EQUIPMENT, LAND AND BUILDINGS

Definition

This section includes all direct annual costs incurred for equipment, land and buildings, which can include routine maintenance, rent, or replacement of items if done on a routine basis. Any costs already reported for equipment, land and buildings in the direct CAPEX tab should not be repeated here.

Parameters

All parameters are described previously in the overview section.

Cost items

* **All OPEX for equipment:** Include any OPEX costs for equipment here including equipment that is rented, routine maintenance for equipment, and routine replacement for smaller equipment. Examples include tractors or trucks that are rented, routine maintenance for tractors and trucks, and routine replacement for small equipment such as shovels, rakes and other tools. Consumables for the equipment such as fuel and lubricant should be reported in the next section rather than here.Use the notes column to describe the specific costs that are covered.
* **All OPEX for land:** Include any OPEX costs for land. This will primarily include rent if the land for the treatment facility is rented rather than purchased.
* **All OPEX for infrastructure and buildings:** Include any OPEX costs for infrastructure and buildings. This will primarily include rent if the buildings and infrastructure for the treatment facility are rented rather than purchased. It can also include maintenance that is performed on the infrastructure. However, maintenance that is contracted to a third-party service provider should be reported in the section for services rather than here. Utilities for the buildings should similarly be reported in the section for consumables rather than here. Use the notes column to describe the specific costs that are covered.

## SECTION 5: CONSUMABLES

Definition

This section includes annual costs paid for items that are regularly consumed and replaced and that directly contribute to operation and maintenance of the treatment facility.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Personal protective equipment (PPE) for technical personnel**: Includes boots, overalls, reflective vests, safety glasses, gloves and any other protective gear used by the technical personnel
* **Cleaning chemicals:** Includes disinfectants, sanitizers and other cleaning products used to clean the treatment facility and equipment
* **Bulking materials:** Includes purchase and transport of materials such as sawdust and bagasse which might be combined with fecal sludge if composting is used as a treatment method
* **Water:** Includes water that is used to facilitate waste treatment
* **Electricity:** Includes the cost of electricity used to run the treatment facility. If it can be separated, this should not include electricity used at an administrative office.
* **Fuel:** Includes fuel used for pumps, generators, tractors, trucks and other equipment
* **Lubricant**: Includes oil, pipe grease and other similar products used for motorized equipment
* **Other chemicals:** Includes any other chemicals used at the treatment facility for the waste treatment processes
* **Other or combined consumables**: Provide the combined cost for any consumables that are not explicitly listed above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Use the notes column to provide more details about the items accounted for in the cost.

## SECTION 6: SERVICES

Definition

This section includes annual costs paid for professional services that are essential to operate and maintain the treatment facility.

### 

Parameters

All parameters are described previously in the overview section.

Cost items

* **Maintenance services:** Any maintenance services that are paid to a third party can be provided here if they were not already included in the equipment operating expenses above.
* **Insurance that is considered a direct cost:** Includes insurance on treatment equipment and trucks or other vehicles used at the treatment facility. It would not include staff insurance, which is reported above. If your organization records all insurance costs together and some are considered indirect expenses, then you may leave this blank and report all insurance costs on the indirect OPEX tab.
* **Laboratory testing services:** Includes fees paid to a laboratory to conduct testing on treated sludge and effluent
* **Sludge disposal:** Includes fees paid to transport and dispose treated waste, if applicable
* **Other services**: If you pay for any services that are not explicitly included above, you may provide those costs here. This might include insurance that you consider a direct expense or software licenses that are required to monitor the sewer network.

## SECTION 7: ADMINISTRATIVE CHARGES AND PERMITS

Definition

This section includes annual costs paid for administrative charges and permits that are considered direct operating expenses, such as an annual permit required to manage waste. There is only one row in this section, which can be used to report the combined cost for all costs that match this description. Use the notes column to describe the costs that are covered.

# TAB 5: INDIRECT OPEX

## OVERVIEW

Definition

**Indirect OPEX** consists of routine expense items or operational costs that **indirectly** support waste treatment. These are most often costs that support core business activities. (Stumped on the difference between direct and indirect costs? See **INSIGHT 3.1** for the indirect CAPEX tab)

Common parameters

The following parameters to describe cost items are common throughout this tab. Any differences in these parameters seen in individual sections will be described separately in the corresponding section.

* **Annual cost:** The cost incurred for each item over the course of a year
* **Fraction applied to shared costs:** The fraction of the reported cost that should be applied to this component, which should be generated using the cost allocation methodology described in the Appendix. The fraction should be entered as a decimal equal to or between 0 and 1. (Stumped? See **INSIGHT 3.2** for the indirect CAPEX tab)
* **Currency:** Select the appropriate currency from the drop-down box which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Indicate if cost is incurred but not reported:** Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

## SECTION 1: SALARIES

Definition

This section includes the salaries or wages paid to staff who indirectly support waste treatment through core business activities.

Parameters

The parameters in this section are the same as those in the overview section.

Cost items

* **Sales and marketing staff:** Includes salaries paid for the sales and marketing team
* **Customer support and call centre staff:** Includes salaries paid for staff who provide customer support or staff a call centre to field requests from customers and schedule services
* **All other or combined indirect staff:** Includes combined salaries for any other office personnel (e.g., human resources, IT, accounting, finance, government relations and others), executives or other staff (e.g., government relations, research and development, external relations) who indirectly support the activities reported in this workbook. If it is simpler to combine sales, marketing, customer support and call centre staff here with the others, you may do so. Use the notes column to provide details about the type and number of staff if possible.

## SECTION 2: OTHER EXPENSES FOR INDIRECT STAFF

Definition

This section includes the annual expenses that are incurred on behalf of all indirect staff for items such as insurance and vaccinations that are not included in salaries. Note that the costs reported here should only reflect those incurred for indirect staff as similar costs for direct staff are reported elsewhere.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Insurance:** Includes the combined costs for all insurances and other similar items. Examples include health insurance, disability insurance, workers’ compensation and social security if those are not previously included in the reported salary.
* **Annual vaccinations**: Includes annual costs associated with vaccinations and other annual or routine health checks provided for indirect staff
* **Other or combined staff expenses**: Provide the combined cost for any expenses that are not explicitly described above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Be sure to include the details of the included items in the notes cell.

## SECTION 3: PROFESSIONAL DEVELOPMENT AND TRAINING

Definition

This section includes all annual expenses incurred for professional development and staff training.

Parameters

All parameters are described previously in the overview section.

Cost items

* **All annual professional development and staff training**: Includes orientations, safety trainings, staff certification programs, and any annual staff development funds provided by the employer.

## SECTION 4: EQUIPMENT, LAND AND BUILDINGS

Definition

This section includes all indirect costs incurred for equipment, land and buildings. Costs can include routine maintenance, rent, or replacement of times if done on a routine basis.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Office building:** Includes the office building rent if the building is not fully owned or long-term leased and any operational expenses for upkeep of the office that are not included elsewhere
* **Land:** Includes all rent or other operational expenses for land. This might be used if you pay rent specifically for the land that the office is built on, separate from the office itself. If there are multiple pieces of land that you incur annual costs for, you should enter the combined cost for all land here.
* **Office equipment:** Includes rent, maintenance, upkeep or routine replacement for office equipment such as computers, phones, desks, and chairs
* **Vehicles:** Includes rent, maintenance and upkeep on general use vehicles. These are vehicles used for general staff transportation and should not include any vehicles used directly for transportation of waste.
* **Other operational costs for buildings:** Include the combined cost for any annual expenses paid for buildings that should be classified as an indirect expense and are not the office building. This might include storage buildings or a warehouse.
* **Other or combined operational costs for equipment:** Include the combined cost for any annual expenses for equipment that were not included in the lines for office equipment or vehicles above.

## SECTION 5: CONSUMABLES

Definition

This section includes annual costs for items that are regularly consumed and replaced and that are considered indirect costs.

Parameters

All parameters are described previously in the overview section.

* **Utility expenses:**Includes utility expenses paid for the office such as water, electricity and internet. Input the cumulative utility expenses in this row and indicate the utilities that are included in the notes column.
* **Office supplies:** Includes any expenses associated with regularly purchasing consumables used in the office or to produce marketing materials such as paper, printer ink, pens, whiteboard markers, etc.
* **Fuel for general use vehicles:** Includes total annual expenditures on fuel for general use vehicles. Any fuel purchased for vehicles that directly provide waste transportation services, such as trucks used to transport waste to disposal or treatment, should not be reported here.
* **Other or combined consumable expenses:** Provide the combined cost for any consumables that are not explicitly described above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Be sure to include the details of the included items in the notes cell.

## SECTION 6: SERVICES

Definition

This section includes fees paid for professional services that support waste treatment services.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Insurance:** Includes any insurance fees paid that are considered indirect expenses, excluding the insurance payments for employees which are included as staff expenses. Examples of insurance include fire insurance for the office building and liability insurance for the business.
* **Legal:** Includes fees paid to legal advisors for any legal processes required to operate the organization
* **Financial:** Includes any fees associated with financial advisory services received. Note that financing costs, such as interest on loans, are not included in this section.
* **Marketing:** Includes any fees paid for marketing services that are not already included as office supplies. This might include fees paid for radio advertisements or fees paid to a professional marketing firm.
* **Consulting or advisory:** Includes any fees associated with professional advisory or consulting services that are not considered financial, legal or marketing
* **Other or combined services:** Provide the combined cost for any professional services that are not explicitly listed above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Be sure to include the details of the included items in the notes cell.

## SECTION 7: ADMINISTRATIVE FEES, TAXES AND FINANCING

Definition

This section includes annual costs for licenses, permits, taxes, and financing charges that are not already accounted for in one of the CAPEX tabs.

Parameters

All parameters are described previously in the overview section.

Cost items

* **All administrative charges and permits considered indirect operating expenses:** Includes any administrative fees, licenses (including software licenses and general business licenses) and professional memberships for employees or for the organization
* **Annual taxes:** Includes any taxes paid annually that are not included elsewhere, such as property tax or income tax for a business
* **Annual financing charges:** Includes annual financing charges that are not already accounted for in one of the CAPEX tabs