



**Abstract:**

The Waste Management Analysis Tool (WMAT) is a cost-benefit analysis tool designed to empower informal waste management organizations by improving business practices. This tool is the first of its kind. It was explicitly designed to be owned by informal communities, allowing these organizations to maintain control over their data and decision-making processes. The WMAT has two functions: Private Profitability Analysis (PPA) and Social Cost-Benefit Analysis (SCBA). By using the WMAT, informal waste management organizations can assess current profitability, plan for future business expansion, or articulate their impact on society through metrics related to the employment of vulnerable populations and environmental benefits from recycling and cleaner cities.

The following document contains the WMAT User Manual and two data entry notebooks. The tool itself is not preserved in the Digital Conservancy as it utilizes Microsoft Excel. To learn more about the WMAT and access the Excel tool, visit the website: <http://www.informalwastesector.net/>

# Waste Management Analysis Tool

## User Manual

Spring 2011  
CGI Rethinking Waste Thinking Group  
Cason Family Foundation  
Humphrey School of Public Affairs, University of Minnesota

# Table of Contents

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<b>History and Acknowledgments .....</b>	<b>4</b>
<b>Introduction to the Waste Management Analysis Tool .....</b>	<b>5</b>
The Story of the Kattameya Center .....	6
The Waste Value Chain .....	8
Private Profitability Analysis and Social Cost Benefit Analysis .....	12
<b>Where to Start .....</b>	<b>13</b>
<b>Step-by-Step Guide to WMAT.....</b>	<b>15</b>
Before You Begin.....	16
Section 1.0: Determining the Scope of Analysis .....	17
1.1: <i>Select a Model: Basic, Detailed or Scenario Planning</i> .....	18
1.2: <i>Select Organizational Stages and Units</i> .....	26
Section 2.0: Using the WMAT Notebook .....	31
2.1: <i>Printing the WMAT Notebook Sections</i> .....	32
2.2: <i>Collecting Data</i> .....	32
Section 3.0: Using the WMAT Excel Workbook.....	34
3.1: <i>Using the WMAT Excel Workbook – Basic Model</i> .....	36
3.2: <i>Using the WMAT Excel Workbook – Detailed Model</i> .....	37
3.3: <i>Using the WMAT Excel Workbook – Scenario Planning Model</i> .....	38
3.4: <i>Navigating the WMAT Excel Workbook (Navigation Screen)</i> .....	40
3.5: <i>Entering Data (Data Entry Screen)</i> .....	49
3.6: <i>Reviewing Data (Data Review Screen)</i> .....	60
3.7: <i>Analyzing Data (Data Analysis Screen)</i> .....	72
Section 4.0: Interpreting The Results.....	87
4.1: <i>Basic Definitions and Use in Decision-Making</i> .....	88
4.2: <i>Interpreting the Graphs</i> .....	93
4.3: <i>Complex Definitions</i> .....	96

Section 5.0: Additional Concepts.....	100
5.1: <i>How to Use Excel</i> .....	101
5.2: <i>Tipping Fees</i> .....	103
5.3: <i>Employee Education Level</i> .....	105
5.4: <i>Capital Expenditures</i> .....	106
<b>Glossary of Terms and Concepts .....</b>	<b>107</b>
<b>References and Further Information.....</b>	<b>115</b>

# History and Acknowledgments

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The Waste Management Analysis Tool (WMAT) is the product of a Master's Capstone project undertaken by five students at the Humphrey School of Public Affairs, University of Minnesota in Minneapolis, MN. The Master's Capstone is the culmination of the students' course work at the Humphrey School and the final requirement for the students to earn their Master of Public Policy degrees. The authors of this manual and accompanying Excel tool are Jay Bowman, Marc Dettmann, Jessica Hillyard, Mike Osberg and Lindsey Wollschlager.

This project developed out of work that the authors contributed to a class project in the spring semester of 2010. For the course *Development Planning and Policy Analysis* with Professor Ragui Assaad, the authors conducted a Private Profitability Analysis (PPA) and Social Cost-Benefit Analysis (SCBA) for the Association for the Protection of the Environment's Kattameya Center for Integrated Waste Management & Recycling. The Kattameya Center is located in Cairo, Egypt and works with the *Zabbaleen* informal waste collector community.

The cost-benefit analysis for the Kattameya Center was shared with several organizations that expressed interest in developing the project further. During the summer of 2010, Roxanne Mankin Cason of the Cason Family Foundation contacted Prof. Ragui Assaad. The Cason Family Foundation, on behalf of the Clinton Global Initiative Rethinking Waste Thinking Group, was interested in replicating the analysis for other informal waste collection communities. Prof. Assaad suggested that a group of students develop a user-friendly tool that would allow almost anyone working with informal waste collectors to conduct their own analysis. This is the first time a tool like this has been created for informal waste collectors that will allow them to maintain control over the process as well as their data.

The Waste Management Analysis Tool (WMAT) is a product of the partnership between the Humphrey School of Public Affairs and the Cason Family Foundation. The WMAT is intended to belong to the larger informal waste management community. The developers of the WMAT strongly support the work of informal waste collectors. The goal of this tool is to allow organizations in the informal waste sector to highlight their contributions to society so that waste collectors can receive the recognition they deserve.

The authors wish to express gratitude to both Professor Ragui Assaad and Professor Sherry Gray for coordinating the details of the project and for providing extensive guidance to the students throughout the WMAT development process.

The authors are also grateful to the Cason Family Foundation and for the unwavering support of Roxanne Mankin Cason. The expertise of Dr. Martin Medina, Ricardo Valencia, Mark Dawes, Nicole Dewing, Silvio Ruiz, Katrina Mitchell and of other members of the Clinton Global Initiative Rethinking Waste Thinking Group were invaluable as well.

# Introduction to the Waste Management Analysis Tool

# The Story of the Kattameya Center for Integrated Waste Management and Recycling

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The city of Cairo, Egypt, could not function without the *Zabbaleen*. *Zabbaleen*—which translates to “people of the trash”—is a name that this community uses proudly. The *Zabbaleen* are descendents from farmers and herders who moved from Upper Egypt to Cairo two or three generations ago. Because these first migrants were Christians, and did not have the religious prohibition against owning pigs, they brought their pigs with them to Cairo. The early *Zabbaleen* gathered organic waste to feed to their pigs and sold the manure as fertilizer. In this way the early *Zabbaleen* quickly established a livelihood. Cairo soon came to depend on the *Zabbaleen*’s waste collection services. When recycling technology came to Egypt, the *Zabbaleen* expanded their business to adapt to the new markets. Unfortunately, the *Zabbaleen* are looked down upon by the rest of Cairo society, and their important role is overlooked.

Recognizing the important role the *Zabbaleen* play in waste management, the Association for the Protection of the Environment (APE) began working with the community. With the help of APE, the *Zabbaleen* established the Kattameya Center for Integrated Waste Management and Recycling in Cairo, Egypt. The Kattameya Center’s mission is to promote environmentally safe solid waste management in Cairo by empowering waste collectors to use improved technology and sound financial management practices.<sup>1</sup> The Kattameya Center also aims to earn recognition for the *Zabbaleen*’s work and improve their acceptance in Cairo.

*The Zabbaleen are extremely good at what they do – diverting 70 to 80 percent of collected waste from landfills through recycling and composting, compared to a 30 percent “best practice” from global corporations.*

In 2010, the Kattameya Center asked for a cost-benefit analysis similar to the Waste Management Analysis Tool (WMAT). The goal of the cost-benefit analysis was to determine whether each business unit was financially healthy in terms of its balance between spending and bringing in revenue. Additionally, the cost-benefit analysis measured the benefits to society provided by the *Zabbaleen*, such as employment of women and less waste going to the landfills.

The cost-benefit analysis consisted of two parts. The first part was a Private-Profitability Analysis (PPA). The PPA focused on the revenues and expenses of the organization, examining the Center as a business. The results of the PPA gave the Kattameya Center a more comprehensive understanding of the organization. The analysis indicated which units of the Center—such as Composting, Plastics, PET Recycling, Machinery production and Sewing—were profitable, and which units needed changes.

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<sup>1</sup> Association for the Protection of the Environment: <http://www.ape.org.eg/Mission.html>



The second part was a Social Cost-Benefit Analysis (SCBA). The SCBA measured the social benefits of the *Zabbaleen*'s work, especially the money saved by the city. With this information, the Kattameya Center felt more confident that their waste collection services provided value to society as a whole. This analysis also helped the Center understand its strengths so it could prepare to compete for business contracts with formal waste management corporations in Cairo.

The *Zabbaleen* are extremely good at what they do—diverting 70 to 80 percent of collected waste from landfills through recycling and composting, compared to a 30 percent “best practice” from global corporations.<sup>2</sup> The cost-benefit analysis provided evidence that their waste management practices are financially and socially sustainable. This type of information gives the Kattameya Center an advantage, setting it apart from formal businesses that do not provide these added social benefits.

The Kattameya Center's experience doing a cost-benefit analysis inspired the development of the Waste Management Analysis Tool (WMAT). Informal waste collectors exist in every country and make valuable contributions to the societies in which they live and work. This work provides income for roughly 15 million people around the world.<sup>3</sup> Waste collectors also benefit the environment by helping to keep cities cleaner.

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<sup>2</sup> Wilson, D., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in development countries. *Habitat International*, 30(4), 797-808.

<sup>3</sup> Solid Waste Management in the World's Cities: Water and Sanitations in the World's Cities. (2010). United Nations Human Settlements Programme. Malta: Gutenberg Press.

# The Waste Value Chain

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Informal waste collectors already know the secret to success: *trash is cash*.<sup>4</sup> Wafalme, a hip-hop group from Kenya, won the 2009 *MTV Positive Climate Change Award* with this exact message.<sup>5</sup>

The members of Wafalme are young informal waste collectors from Nairobi. They are proud of their work. Their lyrics show why informal waste collectors are so important—they turn trash into cash. In the process, waste collectors create jobs for millions of people while also helping the environment.

Below, in their own words, Wafalme describes how they recover value from the waste stream.

## Lyrics from “Trash Is Cash”<sup>6</sup>

*Community groups, micro entrepreneurs / Selling to farmers asset compost manure / Irrigation from the river / Eco sandals, handbags, jewelry made from the trashy granular / Mattress, pillow baskets, roof tiles from the trash plastic / Sold to local and foreign market / Metals sold to scrap dealers in a rampage / Cheap cookers made using dumped coffee seeds and paper as fuel / Feed the poor, the price not cruel / Millions of people trying to save the world / While make a living with the strong unemployment*



**Figure 1: Wafalme in Nairobi, Kenya<sup>7</sup>**

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<sup>4</sup> Jansen, P. (2010). *Trash Is Cash*. Retrieved May 2011, from View Change: <http://www.viewchange.org/videos/trash-is-cash>

<sup>5</sup> Jansen, P. (2011). *Slum Talent Trust: Home*. Retrieved May 2011, from Slum Talent Trust: <http://www.slumtalenttrust.com/home>

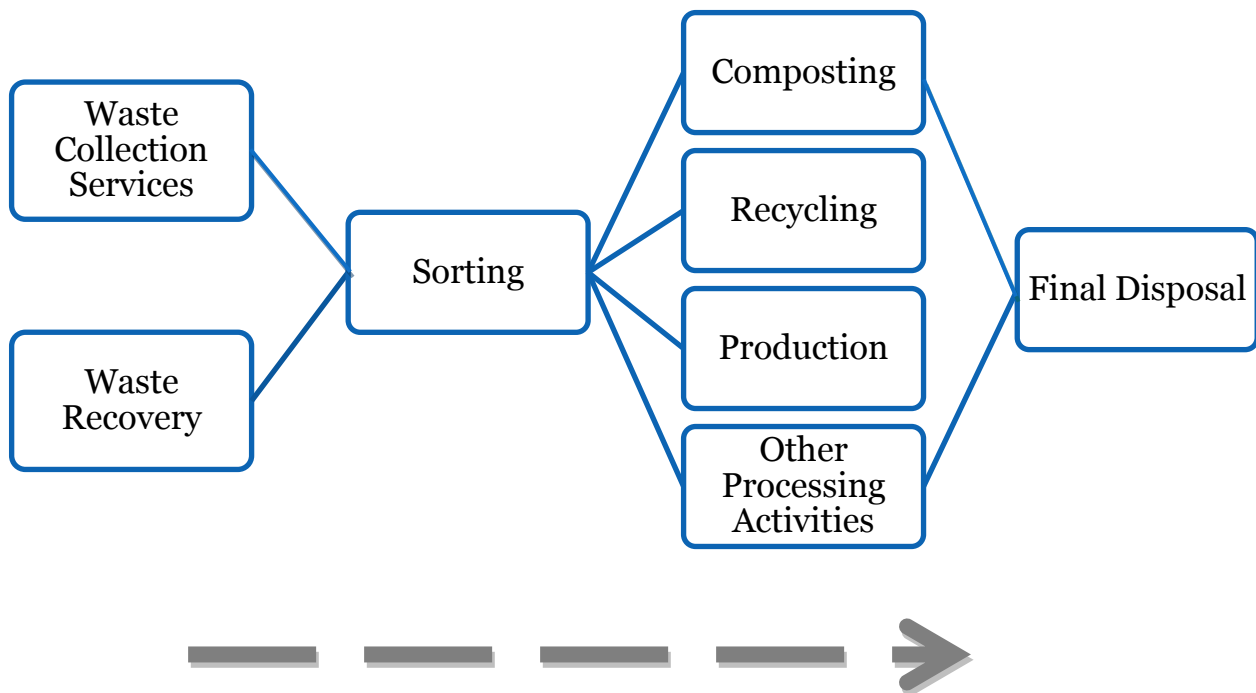
<sup>6</sup> Jansen, P. (2010). *Trash Is Cash*.

<sup>7</sup> Nairobi Waste. (2011). Retrieved May 2011, from Nairobi Waste: <http://nairobiwaste.com/>

Wafalme’s lyrics describe a “value chain.” Waste changes shape and transfers hands as it moves through the waste management cycle. A “value chain” describes how money is earned across the different stages of waste management, from collection to sorting, recycling and production of new products.

Some organizations operate at just one stage, while other organizations are involved in several stages.

**Figure 2: Waste Management "Value Chain"**



When waste management organizations expand into more than one activity, they have the opportunity to earn more money.

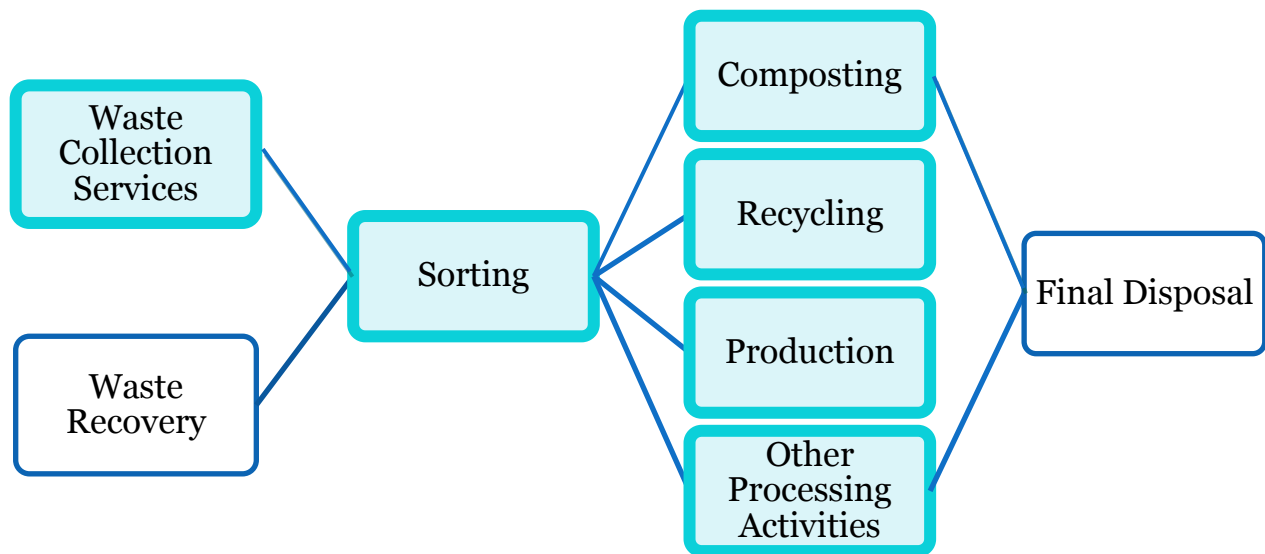
This is because materials are worth more money as they are processed for future use. For example, a tonne of mixed waste is worth less than a tonne of sorted plastics. The act of sorting allows future users to make better use of the materials. In a similar way, plastic pellets are worth more money than plastic bottles.

The Waste Management Analysis Tool can help organizations understand if it makes sense to expand their business. Recycling plastic into pellets requires expensive equipment and trained staff. The WMAT can help an organization learn if buying that equipment would be worthwhile by evaluating changes to profitability and social impact over time.

Consider the example of the *Zabbaleen* and the Kattameya Center for Integrated Waste Management and Recycling in Cairo, Egypt.

The Kattameya Center allows the *Zabbaleen* to transform waste into new products. At the Kattameya Center, workers sort the waste and then prepare the materials for recycling. Some recycled materials are manufactured into new products. For example, the *Zabbaleen* make new construction materials from melting plastic and mixing it with sand to make sturdy bricks and sheeting. They also compost organic materials using manure from their pigs. The *Zabbaleen* do not recover waste from dumpsites, but they do provide household waste collection services. In Figure 3, the *Zabbaleen* value chain is highlighted in turquoise.

**Figure 3: "Value Chain" for Zabbaleen in Cairo, Egypt**



The *Zabbaleen* are involved in waste collection services, sorting, composting, recycling, production, and other processing activities.

Informal waste collectors each have their own unique way of making money, however. Many organizations are different from the *Zabbaleen*.

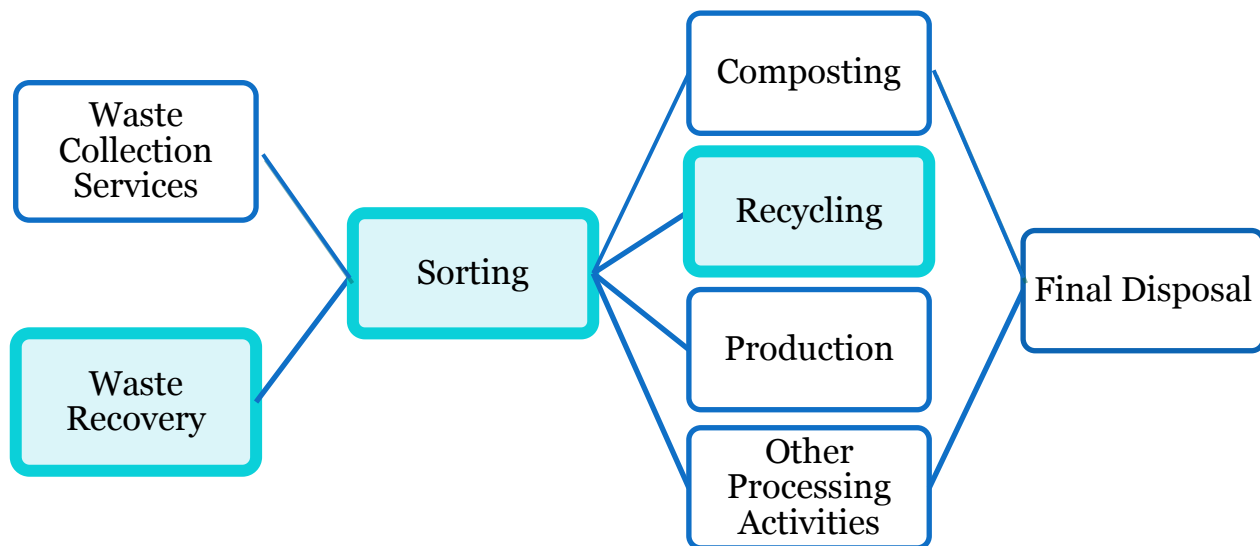
As another example, consider the waste collectors from the Payatas Dumpsite in Manila, Philippines. These collectors mostly recover valuable materials from dumpsites in Payatas.

With help of the Vincentian Missionaries Foundation, however, the Payatas waste collectors were able to secure a plot of land where they could store and sort their collected materials.<sup>8</sup>

Having a place where they could store their materials overnight allowed the Payatas collectors to choose what days they wanted to sell. If the nearby junk dealer is offering a bad price one day, the collectors can wait until prices go up again. The Payatas Collectors made more money because they moved into a second activity.

After the Payatas Collectors started their sorting unit, they started making more money. Eventually they were able to save enough money to open their own junk shop.<sup>9</sup> By expanding into a third activity, recycling, the Payatas Collectors were able to earn even more money than before.

**Figure 4: "Value Chain" for Payatas in Manila, Philippines**



The Collectors at Payatas are involved in waste recovery, sorting, and recycling activities.

<sup>8</sup> Carcellar, F. N. (1998). The Payatas Environmental Development Programme: Micro-enterprise Promotion and Involvement in Solid Waste Management in Quezon City. *Environment and Urbanization*, 10 (2), 55-68; Gonzales, E. M. (2003). From Wastes to Assets: The Scavengers of Payatas. *International Conference on Natural Assets* (pp. 1-23). Tagaytay City, Philippines: Political Economy Research Institute and Centre for Science and the Environment.

<sup>9</sup> Gonzales, E. M. (2003).

# Private Profitability Analysis and Social Cost Benefit Analysis

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The WMAT is a cost-benefit analysis tool designed to empower informal waste collector organizations in order to help them improve business practices. The WMAT has two parts: a Private Profitability Analysis and a Social Cost-Benefit Analysis.

**Private Profitability Analysis (PPA)** is a business analysis tool that compares spending and revenue. This type of analysis shows whether a business is currently profitable. PPA analysis can also be used to plan for future business expansion, such as the purchase of new equipment. It also helps build trust within an organization by documenting how money is spent and how money is earned. This transparency encourages trust, informed decision-making and helps people work together towards a common goal.

No matter how many activities each organization does, it is helpful for every organization to keep good, clear records of how money is spent and earned. The WMAT helps organizations track the flow of money for each unit. This type of record-keeping and analysis helps the organization see a clear picture of each activity. As a result, the WMAT helps organizations avoid surprises. For example, one unit could be very profitable, but another unit could be struggling to make a profit. If the organization only looked at the entire budget, it may not see that a unit is struggling since the profitable unit would cover up the losses from the unprofitable unit. By looking at each unit individually, organizations have better information for their decision-making.

**Social Cost-Benefit Analysis (SCBA)** quantifies the benefits society receives from the work of informal waste collectors. These benefits are expressed as a monetary value. Social benefits include recovering recyclable materials from landfills, creating new jobs, and improving the environment by removing waste from homes and neighborhoods. Measuring and being able to state clearly these social benefits will help waste collectors bargain for contracts from the city or a formal business. Waste collectors should be recognized as valuable partners. Being able to measure social benefits could also help waste collectors win grants from NGOs.

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## Where to Start

# Where to Start

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The Waste Management Analysis Tool includes three main components:

- User Manual (this document)
- Notebook (appendix of this document)
- Excel Workbook

The WMAT is designed to help many different organizations, large and small. By using the three components of the WMAT, any organization can perform its own analysis, including Private Profitability Analysis (PPA) and Social Cost Benefit Analysis (SCBA).

The rest of this manual explains how to use the different parts of the Waste Management Analysis Tool. Shown below is an overview of the process:

Action Step	WMAT Component
<b>1. Read “Determining the Scope of Analysis”</b>	WMAT User Manual
<b>2. Complete WMAT Checklist</b>	WMAT User Manual
<b>3. Read “Using the WMAT Notebook”</b>	WMAT User Manual
<b>4. Print WMAT Notebook</b>	WMAT Notebook
<b>5. Collect Organizational Data</b>	WMAT Notebook
<b>6. Read “Using the WMAT Excel Workbook”</b>	WMAT User Manual
<b>7. Enter Organizational Data</b>	WMAT Notebook → WMAT Excel Workbook
<b>8. Review Data</b>	WMAT Excel Workbook
<b>9. Read “Interpreting the Results”</b>	WMAT User Manual
<b>10. Analyze Data and Interpret Results</b>	WMAT Excel Workbook

This WMAT User Manual guides users through the process of collecting data and entering it in the WMAT. It also provides guidance on how to interpret the results.

Throughout the WMAT User Manual, important terms or concepts are **highlighted in bold text**, and have a corresponding textbox in the right-hand margin. These textboxes indicate the page number of sections where more information can be found about that term or concept.



# Step-by-Step Guide to WMAT

**Before you Begin**

# Step-by-Step Guide to WMAT

## Before you Begin

The WMAT Checklist below is used to record decisions made in Section 1.0 of the Step-by-Step Guide. Print a copy of the WMAT Checklist before moving to the next step.

Throughout Section 1.0, decisions will be made that must be recorded on the Checklist. After each part of Section 1.0, there will be highlighted textboxes to remind you to record your decisions on the Checklist. Refer back to the Checklist before starting Section 2.0 in order to decide which WMAT Notebook pages to print.

<b>Select Your Model (Only Check 1)</b>	√	<b>Print WMAT Notebook Pages:</b>
Basic →		B1-B4
Detailed →		See units below
Scenario Planning →		
<b>Only Detailed and Scenario Planning Models</b>		
<b>Select Waste Management Stage from Section 1, Step 2 (Check all that apply)</b>	√	
Administration→		1 - 2
Collection and Recovery→		See units below
Processing→		See units below
Other Services→		See units below
Final Disposal→		55 -57
<b>Select Collection Units from Section 1, Step 2</b>	√	
Waste Collection Services→		3 - 6
Waste Recovery →		7 - 9
<b>Select Processing Units from Section 1, Step 2</b>	√	
Sorting and Separating→		10 - 14
Recycling→		15 - 18
Production→		19 - 22
Composting→		23 - 26
<b>List Additional Processing Units (If necessary)</b>	√	
Unit 5		27 - 30
Unit 6		31 - 34
Unit 7		35 - 38
Unit 8		39 -42
Unit 9		43 - 46
Unit 10		47 - 50
Unit 11		51 - 54
<b>Select “Other Services” Units from Section 1, Step 2</b>	√	
Janitorial Services →		58 - 60
Construction Services →		61 - 62
Other Services (Enter Name)→		63 - 65

# Step-by-Step Guide to WMAT

## Section 1.0: Determining the Scope of Analysis

## Section 1.0: Determining the Scope of Analysis

### I.I: Select a Model - Basic, Detailed or Scenario Planning

The WMAT includes three analysis models. The three models are:

- 1) *The Basic Model*
- 2) *The Detailed Model*
- 3) *The Scenario-Planning Model*

Before reading about each model, a few questions about the organization must be answered. Use these questions throughout this step to choose the model that best fits your needs.

#### What is the structure of the organization?

- Does the organization work in one waste management stage?
- Does the organization work in multiple waste management stages?

#### What type of information does the organization collect?

- Information about the organization's total expenses and revenues? Or information about expenses and revenues of specific waste management stages in the organization?
- Detailed information about waste management stage?

#### How will the organization use the information?

- Will the information be used to learn only about this year's expenses and revenues?
- Will the organization use the information for future planning?
- Will the organization use the information to decide whether a new investment is financially feasible?

#### Stages and Units

Section 1.2 of the Step-By-Step Guide, found on page 25, explains how waste organizations can be divided into stages and units.

Keep these questions in mind while reading the descriptions of each model. The different models are designed to meet the needs of a wide range of organizations. An organization's needs may change from year to year, and the different models are designed to be used by organizations in transition. Each model asks for different inputs, and provides different outputs.

Figure 5 summarizes the characteristics of each model; the following sections provide detailed descriptions of the three analysis models.

**Figure 5: WMAT Models Summary**

Basic	Detailed	Scenario Planning
<ul style="list-style-type: none"><li>• <b>Time Frame</b><ul style="list-style-type: none"><li>• 1 Year Snapshot</li><li>• No Past or Future Data</li></ul></li><li>• <b>Data Requirements</b><ul style="list-style-type: none"><li>• Total Expenses</li><li>• Total Revenues</li></ul></li><li>• <b>Type of Analysis</b><ul style="list-style-type: none"><li>• 1 year net resource flow measures</li><li>• Benefit Cost Ratio</li><li>• Social value of operations</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Time Frame</b><ul style="list-style-type: none"><li>• Multi-year projections - up to 15 years</li></ul></li><li>• <b>Data Requirements</b><ul style="list-style-type: none"><li>• Detailed Expenses</li><li>• Detailed Revenues</li></ul></li><li>• <b>Organizational Requirements</b><ul style="list-style-type: none"><li>• Differentiated Waste Cycle Stages and Units</li></ul></li><li>• <b>Type of Analysis</b><ul style="list-style-type: none"><li>• Net Present Value of 15 year resource flow projections and social value projections</li><li>• Internal Rate of Return (IRR)</li><li>• Benefit-Cost Ratio (BCR)</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Time Frame</b><ul style="list-style-type: none"><li>• Multi-year projections - up to 15 years</li></ul></li><li>• <b>Data Requirements</b><ul style="list-style-type: none"><li>• Detailed Expenses</li><li>• Detailed Revenues</li><li>• Estimation of future changes in expenses and revenues</li></ul></li><li>• <b>Organizational Requirements</b><ul style="list-style-type: none"><li>• Differentiated Waste Cycle Stages and Units</li></ul></li><li>• <b>Type of Analysis</b><ul style="list-style-type: none"><li>• Net Present Value of 15 year resource flow projections and social value projections</li><li>• Internal Rate of Return (IRR)</li><li>• Benefit-Cost Ratio (BCR)</li><li>• Economically variable scenario testing</li></ul></li></ul>

### 1.1.1: The Basic Model

If there is uncertainty about which model best fits the organization, it is recommended that the user start with the *Basic Model*. This model provides an overview of the current financial situation of the organization over a one-year period. The *Basic Model* serves as the foundation for the *Detailed and Scenario-Planning* models.

#### Input:

The *Basic Model* requires data from the current year for the organization as a whole. The required data includes:

- **Current Expenditures**
  - Number of Female and Male employees
  - Number of employees with greater than or less than a secondary education.
- **Capital Expenditures**
- **Inventory**
- **Revenues**
- Tonnes of waste collected and disposed

#### **Current Expenditures, Capital Expenditures, Inventory, Revenue**

The Glossary on page 106, provides definitions of each of these terms.

#### Output:

After entering the above data into the *Basic Model*, the WMAT calculates a financial indicator for Private Profitability Analysis (PPA) and Social Cost Benefit Analysis (SCBA). The SCBA also calculates five social indicators.

#### Financial Indicators:

- Benefit-Cost Ratio (BCR)

#### Social Indicators:

- Total Employees in the Organization
- Total Monetary Benefit from Employment of men with less than secondary education
- Total Monetary Benefit from Employment of women with less than secondary education
- Total Tonnes Diverted from the Landfill
- Total Monetary Benefit from Tonnes Diverted from the Landfill

#### **Financial Indicators**

Glossary entries for these terms can be found on the following pages:

Benefit-Cost Ratio (BCR) — pg. 106

→ *Moving On*: If the organization -

- Has data from a previous year's operations; *and*
- Can identify multiple stages and units involved in your organization; *and*
- Wants future financial projections of operations

Then it is appropriate to move on to the *Detailed Model* (next page).

If not, proceed with *Basic Model*. Be sure to record this decision in the WMAT Checklist.

### 1.1.2: Detailed Model

For planning for the future of an organization, moving to the *Detailed Model* is appropriate. The *Detailed Model* allows the user to measure the financial health of the organization for up to 15 years into the future. This model requires the user to differentiate the waste management stages of the organization. The **stages of waste management** include: Administration, Collection and Recovery, Processing, Other Services and Final Disposal.

#### Stages and Units

Section 1.2 of the Step-By-Step Guide, found on page 25, explains how waste organizations can be divided into stages and units.

#### Input:

The *Detailed Model* requires information about the various stages of waste management. Additionally, the *Detailed Model* asks for data from the previous 2-3 years of operation. For each stage and unit, the *Detailed Model* requires data for:

- Current Expenditures
- Number of Female and Male employees
- Number of employees with greater than or less than a secondary education.
- Available data about current expenditures from previous 2-3 years.
- Capital Expenditures
  - Available data about capital expenditures from previous 2-3 years
- Inventory
- Revenues
- Data about tonnes of waste collected and disposed of

#### Output:

The *Detailed Model* produces indicators of the financial state of the organization. The SCBA also produces seven social indicators.

#### Financial Indicators:

- Benefit-Cost Ratio (BCR)
- Net Present Value (NPV)

#### Social Indicators:

- Total Employees in the Organization
- Total Monetary Benefit from Employment of women with less than secondary education
- Total Monetary Benefit from Employment of men with less than secondary education
- Total Tonnes Diverted from the Landfill
- Total Monetary Benefit from Tonnes Diverted from the Landfill
- Total Tonnes Kept Off the Streets
- Total Monetary Benefit from Tonnes Kept Off the Streets

#### Financial and Social Indicators

Section 4 provides more information about each indicator. It can be found on page 86



→ *Moving On*: If the organization:

- Is able to provide information about Rates of Change.
- Will make decisions based on the scenarios projected through different Rates of Change.
- Has used the detailed model, *and*
- Fully understands the concepts of the detailed model and Microsoft Excel,

Then it is appropriate to move to the *Scenario Planning Model* (next page).

If not, proceed with the *Detailed Model*. Be sure to record this in decision in the WMAT Checklist.

### 1.1.3: Scenario Planning Model

The *Scenario Planning Model* builds directly from the *Detailed Model*. Once the *Detailed Model* is completed, the user can move to the *Scenario Planning Model* if the required data is available.

The *Scenario Planning Model* allows organizations to estimate how the structure and finances of the organization may change in the future. This is the most powerful and time consuming, decision-making model of the WMAT.

#### Input:

The *Scenario Planning Model* requires all of the data for the *Detailed Model* to be complete. After finishing the *Detailed Model*, it is then necessary to estimate how each waste management stage and unit might grow or shrink in the future. Within the WMAT, this is called estimating the Rate of Change.

For each stage and unit, the *Scenario Planning Model* requires the same data as the *Detailed Model* in addition to data for.

- Estimation of **Rates of Change** for each unit.
- Potential **Scenarios**
- **Variable Expenditures**
- **Variable Revenues**

#### Scenario Planning Model Inputs

The Glossary entry for these terms can be found on:

- Rate of Change – Pg. 111
- Scenarios – Pg. 112
- Variable Expenditures – Pg. 113
- Variable Revenues – Pg. 113

#### Output:

The *Scenario Planning Model* produces indicators of the financial state of the organization. The SCBA also produces seven social indicators.

Financial Indicators:

- Benefit-Cost Ratio (BCR)
- Net Present Value (NPV)

Social Indicators:

- Total Employees in the Organization
- Total Monetary Benefit from Employment of women with less than secondary education
- Total Monetary Benefit from Employment of men with less than secondary education
- Total Tonnes Diverted from the Landfill
- Total Monetary Benefit from Tonnes Diverted from the Landfill
- Total Tonnes Kept Off the Streets
- Total Monetary Benefit from Tonnes Kept Off the Streets

If the organization:

- Is able to provide information about Rates of Change.
- Will make decisions based on the scenarios projected through different Rates of Change.
- Has used the detailed model, *and*
- Fully understands the concepts of the detailed model and Microsoft Excel,

Then it is appropriate to proceed with the *Scenario Planning Model*

Be sure to record this in decision in the WMAT Checklist.

## I.2: Select Organizational Stages and Units

The waste management cycle includes all of the activities that occur from the point where waste is created (often at the household or business level) to the point where waste is disposed of (often burned or dumped in a landfill). Many activities take place between the creation and disposal of waste. The movement of waste from creation to disposal is called the waste management cycle.

**Note:** This step is only necessary for the *Detailed* and *Scenario Planning Models*. If the *Basic Model* was selected, move directly to the next section.

### Stages

The waste management cycle can be divided into groups of activities with similar characteristics. Within the WMAT, these groups of activities are called **stages** of the waste management cycle. The *Detailed* and *Scenario Planning Models* require that organizations identify the stages of the waste management cycle in which they operate.

The WMAT is divided into five stages:

- Administration
- Collection and Recovery
- Processing
- Other Services
- Final Disposal.

The characteristics of these stages are described in the following section.

### Units

The WMAT asks the user to identify specific activities within the Collection and Recovery, Processing, and Other Services stages. These specific activities are called **units**. Some of the more common units of these stages are described in the following section. However, space for users to identify any units that fit under the Processing or Other Services stages is provided.

The stages and units listed below are also the main section into which the WMAT is divided. Not every organization will completely identify with these. The user should select stages and units that BEST match their organization. The match does not need to be perfect. **The WMAT will still provide valuable analysis to each organization.**

<b>Overview of the Stages and Units in the WMAT</b>	
<b>Stage</b>	<b>Unit</b>
Collection and Recovery	Waste Collection Services
	Waste Recovery
Processing	Sorting and Separating
	Composting
	Recycling
	Production
	Unidentified Processing Units (Up to 7 other units)
Other Services	Janitorial Services
	Construction Services
	Unidentified Other Services
Administration	N/A
Final Disposal	N/A

## **1.2.1: Description of the Stages and Units of the WMAT**

### **Administration**

The Administration stage oversees day to day operations across multiple units and stages. There are costs in the Administration stage. If the organization employs a manager or an accountant, or if the organization purchases land or machinery that is used in more than one stage of the organization, the data should be entered into Administration.

### **Collection and Recovery**

The Collection and Recovery stage accounts for all work that involves gathering waste. Waste can be gathered with a contract or without a contract; and waste can be gathered for the value of the contract and/or for the value of the waste itself. The important difference for the units within this stage is the presence or absence of a contract.

#### **Waste Collection Services**

This unit refers to any service of collecting waste that an organization provides. These services are typically provided for a business or neighborhood, and are paid by a contract.

#### **Waste Recovery**

Recovery for value of waste refers to the collection of waste from the street, a landfill or other dumpsite. This unit is for collection that is done WITHOUT a contract. This type of collection involves recovering waste and receiving payment for the specific type of waste collected.

### **Processing**

The Processing stage involves the conversion of waste into something of value. This stage includes a range of units. Some of the more common units in this stage are named in the WMAT, but other units may not be specifically named in the WMAT. As such, this stage of the WMAT is flexible and will allow the user to name the units of his/her organization.

It is very important to complete the Sorting and Separating Unit before other Processing units. The Sorting and Separating unit provides information that other units use to make calculations of costs and revenues. For example, the data entered for Question 14 in the Sorting and Separating unit gives the price of raw materials for other units.

If the any unit in the Processing stage is selected, then the Sorting and Separating unit must be completed also.

#### **Sorting and Separating**

Sorting and Separating refers to the organization of waste by type. This unit is essential to the operation of all other processing units. It is designated as its own unit in the WMAT in order to cover all of the costs of this activity. However, all of the revenues and benefits from this unit will be found in other units.

For example, if collected mixed waste is immediately sold to another business, the revenue will be recorded in the Recycling unit; or, if the waste is transformed into another product by the organization, the revenue will be recorded in the Other Processing units.

### **Composting**

Composting refers to managing organic waste. Composted organic waste changes into fertilizer or animal feed that can be sold to other businesses or farmers.

### **Recycling**

Recycling refers to the selling of specific types of materials to other businesses. These materials most often include paper, aluminum cans, plastics, glass and other materials that can be broken down and remade into new version of what it was previously.

If the organization alters the waste in any way, especially by creating a new product (such as a chair or paper), please enter this data into the Other Processing Units.

### **Production and Other Processing Units (enter names)**

Production collects materials output from the Collection and Sorting units and valuable goods to sell externally. Many different forms of Production exist. The organization may have two or more different Production operations at one time. This is okay; but the data for each of the Production processes should be collected SEPARATELY, and separate units of the WMAT Notebook and WMAT Excel Workbook should be filled in.

If the organization is engaged in more than one Production unit, then the names of these units should be entered into the WMAT Checklist. For example, if the organization makes its own carts for hauling waste, or if the organization creates its own machines for cutting aluminum cans, then a unit for both the carts and the can-cutting machines should be created.

## **Other Services**

Other Services refers to the non-waste collection services provided by the organization. This work may be seen as peripheral to the main organizational units, but it is important to capture the costs and benefits of these services to have an accurate picture of the organization. Some common Other Services are described below, but if the organization performs services not described here, the data for these services can be entered into this unit.

### **Janitorial Services**

Janitorial Services are a common Other Service that waste collector organizations perform. If the organization is paid to clean houses, offices or other buildings, then revenues and expenses for these services should be recorded here.

## Construction Services

Construction services are another common Other Service that waste collector organizations perform. If the organization is paid to help construct buildings, then revenue and expenses should be recorded here.

If the organization is engaged in more services other than the two listed above, then a name for this third unit should be entered into the WMAT Checklist.

## Final Disposal

Final Disposal refers to the stage when the organization can no longer use waste. Most often, this is when the organization brings the waste to a landfill or pays another company to take the waste to the landfill, or if the waste is burned.

This stage should be seen as the last stage of the waste disposal process. If the organization continues to control the waste, or if the organization plans to continue making money from the waste, then it has not reached the final disposal phase.

### **WMAT Checklist: Select Stages and Units**

- On the WMAT Checklist, there are boxes for each stage. Place a check (✓) next to the stages the organization operates in.
- If the organization operates in the Collection and Recovery, Processing, and Other Services stages, place a check (✓) next to the pre-identified units, or write-in the names of units that are identified by the user. It is possible for an organization to perform all, some, or none of the units within a stage. Please fill out only the stages and units that the organization performs.



# Step-by-Step Guide to WMAT

## Section 2.0: Using the WMAT Notebook

## Section 2.0: Using the WMAT Notebook

The WMAT Notebook is the component of the WMAT that is used to record on paper the data gathered about the organization. These describe how to print the applicable sections of the WMAT Notebook and provide suggestions for collecting the data.

### 2.1: Printing the WMAT Notebook Sections

The WMAT Notebook is divided into sections that match the terms listed on the WMAT Checklist. In the far right column of the WMAT Checklist, all of the page numbers of the specific sections of the WMAT Notebook are listed. To ensure that the correct sections are printed:

- Review the WMAT Checklist to determine which sections have a check (✓) next to them.
- Print the page numbers listed next to each check (✓).
- Other pages of the WMAT Notebook are not necessary if there is no check (✓).

Once the WMAT Notebook sections have been printed, these pages can be used to record data for the organization as it is collected. This allows more than one person to be involved in collecting and recording this data. The next section provides suggestions for collecting data using the WMAT Notebook.

### 2.2: Collecting Data

#### 2.2.1: The Necessity of Good Data

It is essential that accurate data be entered into the WMAT. Incomplete or false data will not reflect the reality of the waste collection organization, and can make the analysis useless.

Accurate data will result in a good analysis, and the decisions made as a result of a good analysis will be more useful to the organization.

#### 2.2.2: Where to Find Data

The best place to start looking for data is the organization's internal records. Most organizations and businesses keep records of income, sales and purchases. If the waste collection organization keeps thorough records of its activities, then gathering the necessary data should be simple.

If the organization keeps limited records, or no records at all, then the data for the WMAT will have to be gathered more deliberately. This will probably take time and will delay the completion of the analysis.

Approximations and "best guesses" can be used if the necessary data cannot be gathered. It should be kept in mind that this is a limitation to the quality of the final outcome of the analysis. Therefore, "best guesses" should be used as little as possible; only when more accurate info is unavailable.

**Prompting questions** are the questions asked to elicit the specific data that the WMAT Notebook needs. Here are two examples from the Administration section of the notebook:

- How many workers earn an hourly wage?
- What is the wage paid per hour?

Completely read all of the sections that you will need to fill out and note all of the prompting questions. By answering all of these questions individually, you will find all of the data necessary to complete the WMAT Notebook.

However, data for multiple questions can be gathered at one time in order to facilitate collection and reduce collection time, and data strategies can help. Remember, the more effectively data can be collected and recorded, the better the quality of the WMAT analysis will be. One example of a data gathering strategy is described below.

### ***2.2.3: Data Strategy #1: Grouping Prompting Questions***

By grouping the prompting questions into categories, it is easier to find and record data for questions that are similar. For example, both the Administration section and the Collection section ask for the number of workers that are paid by the hour and what the hourly wage is. Answers to both of these questions could be found on the payroll sheets of the organization. So, if the organization keeps payroll records, many of the labor questions can be answered in one place.

Here are some general groupings of prompting questions:

- Labor
- Sales
- Revenue from Service Contracts
- Machine Purchases
- Raw Material Purchases
- Day to Day Purchases
- Utilities and Fuel

These are only some of the possible groupings of prompting questions. Any groupings that will help in data gathering can be used.

# Step-by-Step Guide to WMAT

## Section 3.0: Using the WMAT Excel Workbook

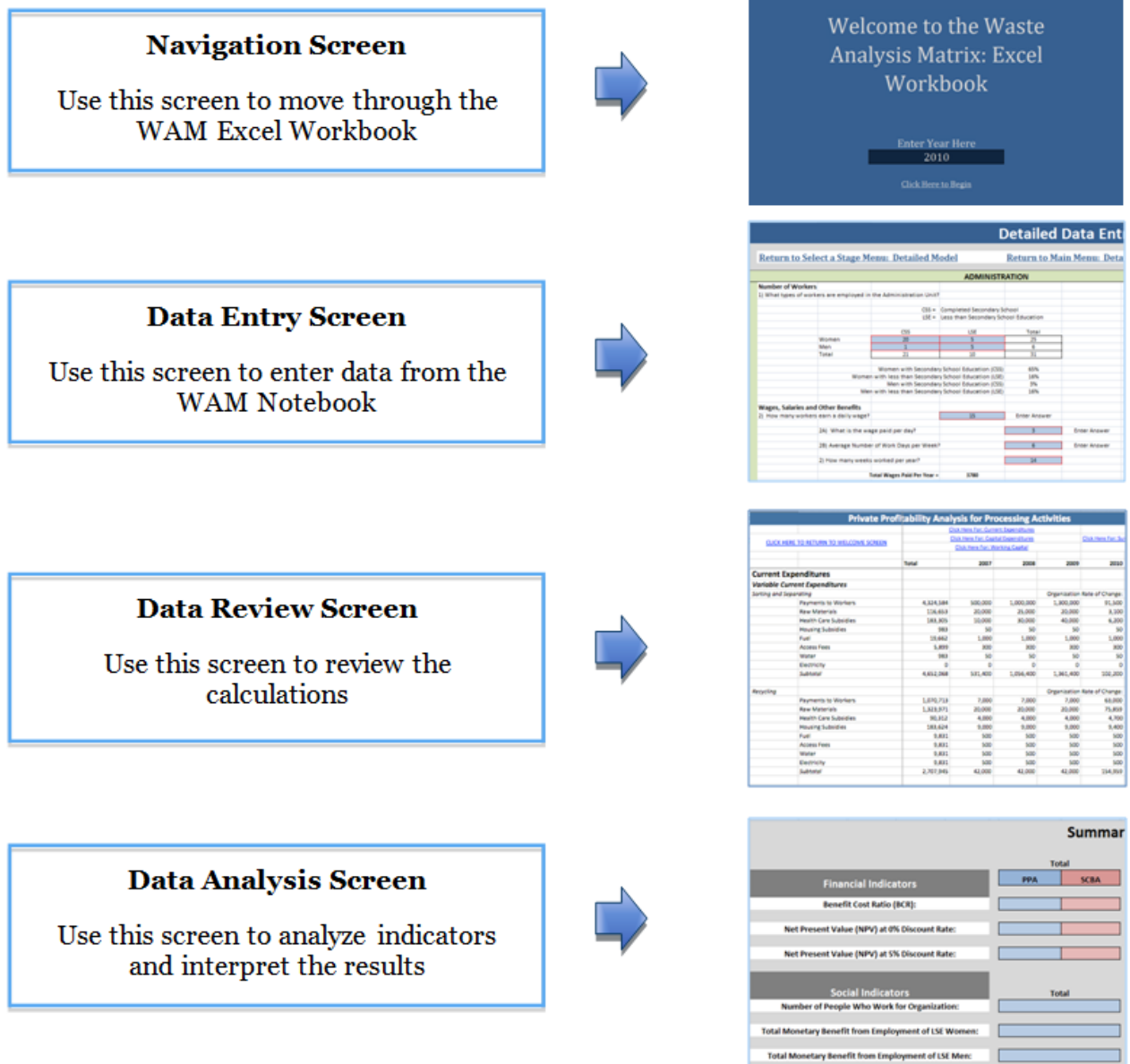
## Section 3.0: Using the WMAT Excel Workbook

The WMAT Excel Workbook is the part of the WMAT that performs the calculation and analysis of the financial data collected in the WMAT Notebook. The data from the WMAT Notebook is entered into data entry cells of the WMAT Excel Workbook. After all the data from the WMAT Notebook has been entered into and calculated by the WMAT Excel Workbook, the financial and social information can be reviewed and analyzed.

### How to Use Excel

For those unfamiliar with Microsoft Excel, read the “How to Use Excel” section on page 101

The WMAT Excel Workbook has four screens that allow the user to complete four separate activities. These four screens and activities look like this:



## 3.I: Using the WMAT Excel Workbook – Basic Model

### **Navigating the WMAT**

The Navigation Screen is used as a starting point to move to each of the other activities of the WMAT Excel Workbook. From the Navigation Screen the user will need to move to different activities of the WMAT Excel Workbook, which are on different screens. After completing these activities of the WMAT Excel Workbook, the user can return to the Navigation Screen to move to other activities on other screens.

### **Entering Data**

After all of the information for the *Basic Model* has been collected in the WMAT notebook, the data is entered in the Data Entry Screen. All of the questions in the Data Entry Screen match the questions that were answered in the WMAT Notebook. There are blue boxes in the Data Entry Screen where answers are entered.

### **Reviewing Data**

Once the data is entered, the WMAT Excel Workbook will automatically perform calculations that have been programmed into Excel. These calculations are made on the Data Review Screen. This screen will show all of the calculations for the *Basic Model*. The user should use this screen to review all of the calculations and make sure there were no errors in the calculation process.

### **Analyzing Data**

The final section of the WMAT Excel Workbook is the Data Analysis Screen. This screen provides financial and social indicators that summarize data of the organization. These indicators can be used to make decisions about the organization. Section 4 of the Step-by-Step Guide to WMAT: Interpreting the Results, provides definitions and suggestions for how to make decisions using the indicators.

## 3.2: Using the WMAT Excel Workbook – Detailed Model

### **Navigating the WMAT**

The Navigation Screen is used to move to other activities of the WMAT Excel Workbook that are on different screens. After completing these activities of the WMAT Excel Workbook, the user can return to the Navigation Screen to move to other activities on other screens.

### **Entering Data**

After all of the information for the *Detailed Model* has been collected in the WMAT Notebook, the data is entered in the Data Entry Screen. All of the questions in the Data Entry Screen match the questions that were answered in the WMAT Notebook. There are blue boxes in the Data Entry Screen where answers are entered.

The Data Entry Screen is split into multiple sections. There is one section for every stage and unit of the waste management cycle. Review the stages and units that were selected and written down on the WMAT Checklist. All of these sections should be completed on the Data Entry Screen as well. Each section can be accessed through the Navigation Screen.

### **Reviewing Data**

Once the data is entered, the WMAT Excel Workbook will automatically perform calculations that have been programmed into Excel. These calculations are made on the Data Review Screen. There is a Data Review Screen for every stage of the waste management cycle. The user should use the Data Review Screens to review all of the calculations and make sure there were no errors in the calculation process.

### **Analyzing Data**

The final section of the WMAT Excel Workbook is the Data Analysis Screen. This screen provides financial and social indicators that summarize data of the organization. These indicators can be used to make decisions about the organization. Section 4 of the Step-by-Step Guide to WMAT: Interpreting the Results, provides definitions and suggestions for how to make decisions using the indicators.

### 3.3: Using the WMAT Excel Workbook – Scenario Planning Model

The *Scenario Planning Model* is an extension of the *Detailed Model* in WMAT Excel Workbook. The *Scenario Planning Model* can only be used once the *Detailed Model* has been completed.

#### Navigation Screen

After completing the *Detailed Model*, return to the Navigation Screen and select the *Scenario Planning Model*. This will direct the WMAT Excel Workbook to the screens for each of the other activities of the *Scenario Planning Model*.

#### Entering Data

The Data Entry Screen of *Scenario Planning Model* is divided into three tables called **Rate of Change** tables:

- Variable Expenditures – Tonnes of Waste Collected and Processed
- Variable Expenditures – Number of Workers
- Variable Revenue – Revenue from External Sales or Service Contract Fees

#### Rate of Change

For more information about Rate of Change, see page 111

The default rate of change in the *Scenario Planning Model* is zero. This default means that the *Scenario Planning Model* will not automatically make any changes to costs or revenues in the future. By entering numbers into the Rate of Change Tables, the *Scenario Planning Model* will begin to make changes. The Rates of Change tables should only be completed for the stages and units that were selected in the WMAT Checklist, and completed in the *Detailed Model*. It is okay to leave some of the Rate of Change tables empty, if that stage is not being used.

Any rate of change may be entered into the Rate of Change Tables, but rates of change that are based on best guesses about the future business environment, or based on fears of what might happen, will allow the organization to ask helpful “what if” questions. And by asking “what if”, the organization can simulate changes that might occur in the future.

#### Reviewing Data

Once the data is entered, the WMAT Excel Workbook will automatically perform calculations that have been programmed into Excel. These calculations are made on the Data Review Screen. There is a Data Review Screen for every stage of the waste management cycle. The user should use this screen to review all of the calculations and make sure there were no errors in the calculation process.

If the user enters data in the Rate of Change table, the numbers in the Data Review sheet will change. Each time different numbers are entered in the Rate of Change table, the calculations in the Data Review Screen will change. Every time the numbers are changed in the Rate of Change table, this is a new “Scenario.”



## Analyzing Data

The final section of the WMAT Excel Workbook is the Data Analysis Screen. This screen provides financial and social indicators that summarize data of the organization. These indicators can be used to make decisions about the organization. For the *Scenario Planning Model*, the indicators change depending on the numbers entered in the Rate of Change table. By changing these numbers, and saving the different results, scenarios can be compared, and decisions can be made based on the indicators show in the Data Analysis Screen.

Section 4 of the Step-by-Step Guide to WMAT: Interpreting the Results, provides definitions and suggestions for how to make decisions using the indicators.

## 3.4: Navigating the Workbook (Navigation Screen)

The Navigation Screen includes all of the menus that are shown in pictures XX through XX. These menus navigate the user to every other screen in the WMAT Excel Workbook.

### 3.4.1: Welcome to WMAT Menu

When the WMAT Excel Workbook is opened, the first menu is the Welcome to WMAT Menu (see Picture 1). When opening the WMAT Excel Workbook for the first time, enter the current year in the box before beginning any section of the WMAT. Once the year has been entered, it will not be necessary to enter the year again.

#### Hyperlinks

The method for navigating the WMAT Excel Workbook is by using Hyperlinks. See page 102 for information about Hyperlinks.

In the Welcome to WMAT Menu, click on the hyperlink that says [Click Here to Begin](#), to direct the Navigation Screen to the next menu.

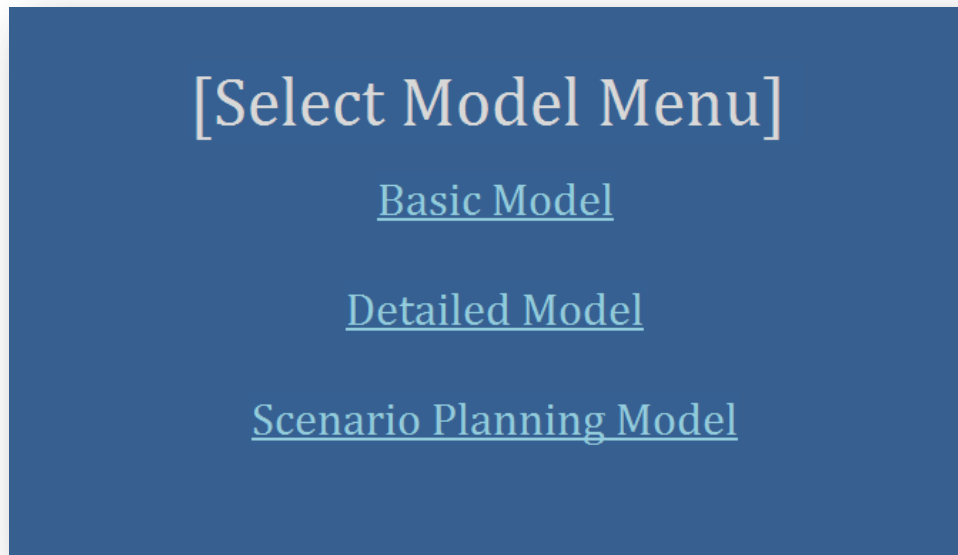
**Picture 1: Welcome to the WMAT**



### 3.4.2: Select Model Menu

The second menu is the Select Model Menu (see Picture 2). Refer to the WMAT Checklist to determine which model to select. Click on the hyperlink of the appropriate model.

**Picture 2: Select Model Screen**

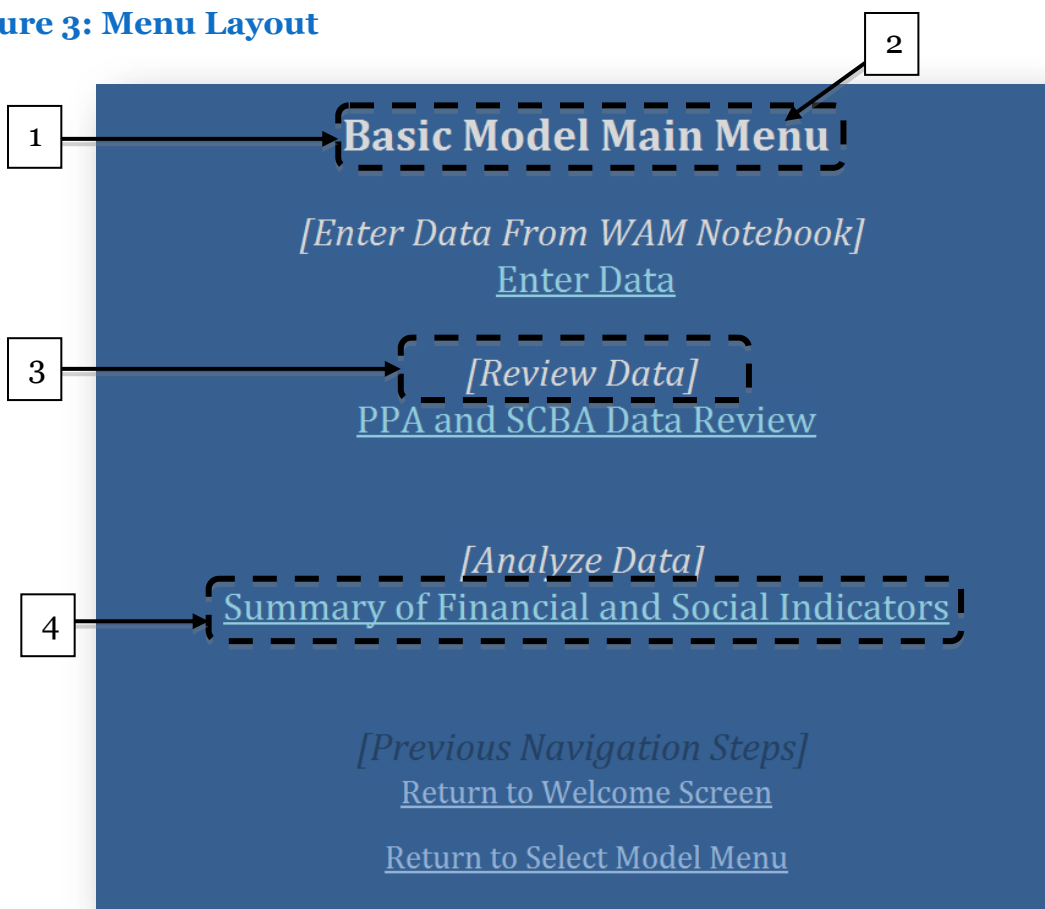


### 3.4.3: Layout of Main Menu for each model

Each model has its own Main Menu. After selecting a model (see picture 2), the menu of each model will appear. Each Main Menu is formatted the same way. Key features of the following menus are (see picture 3):

1. Model Name – Displays the model that is being used (Basic, Detailed, Scenario Planning)
2. Activity Name – Displays the activity of the WMAT Excel that is being worked on (Main Menu, Enter Data, Review Data, Analyze Data)
3. Prompting Questions
4. Hyperlinks – Links that will navigate to other parts of the WMAT Excel Workbook

Picture 3: Menu Layout



### 3.4.4: Navigating with the Main Menu

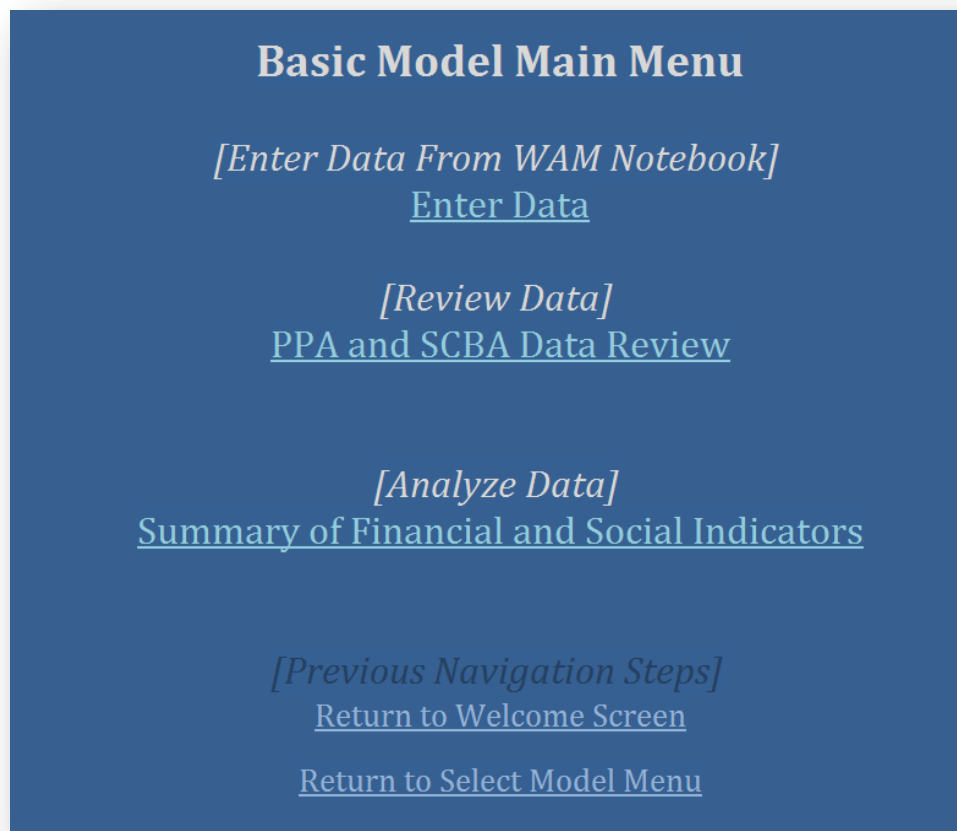
Once a model has been selected, the Main Menu is displayed with the following activities. The Main Menu will direct the user to the different activities of the WMAT:

- Entering Data
- Reviewing Data
- Analyzing Data

By using the hyperlinks in the Main Menu, the user is able to navigate directly to different sections of the WMAT Excel Workbook. Descriptions of each activity – entering data, reviewing data, and analyzing data - and instructions for navigating between them are included in the following pages.

Instructions for navigating between the activities; *enter data*, *review data*, *analyze data*, are included in the next pages.

#### Picture 4: Main Menu Screen



### **3.4.5: Select a Stage Menu (Detailed Model and Scenario Planning Models ONLY)**

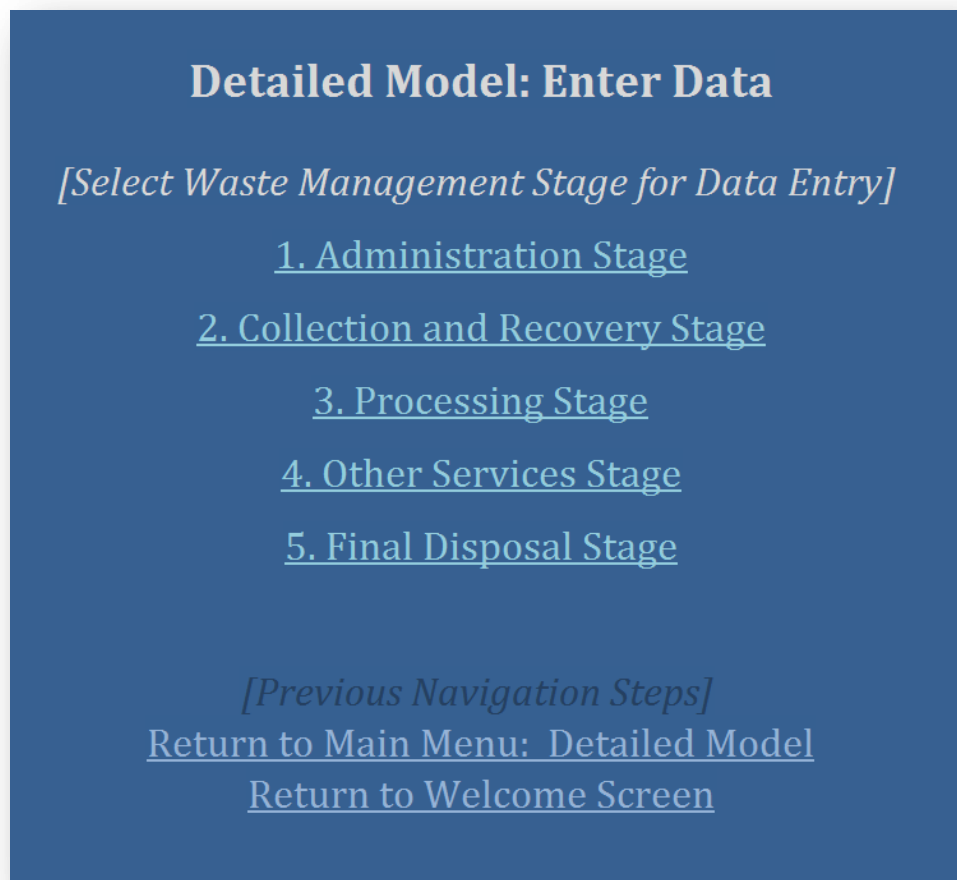
Because the *Detailed* and *Scenario Planning Models* separate the waste management cycle into stages and units, the WMAT Excel Workbook separates waste the waste management cycle in the *Detailed* and *Scenario Planning Models*.

From the Main Menu, selecting Enter Data or Review Data moves the WMAT Excel Workbook to the Stage Selection Menu. (see Picture 5)

Selecting the Administration or Final Disposal stage from this menu moves the WMAT Excel Workbook directly to the sheet requested.

If the Collection and Recovery, Processing or Other Services stages are selected, the WMAT Excel Workbook moves to a new menu that allows for selection of specific units within each stage.

#### **Picture 5: Select Stage Menu**



### **3.4.6: Select a Unit Menu (Collection and Recovery, Processing and Other Services stages ONLY)**

If the Collection and Recovery, Processing or Other Services stages are selected, the WMAT Excel Workbook moves to a new menu that allows for selection of specific units within each stage. This is called the Select a Unit Menu (see Picture 6, 7, 8)

Selecting specific units from these stages moves the Navigation Screen directly to the unit requested.

#### **Picture 6: Select Unit - Collection and Recovery Menu**



**Picture 7: Select Processing Unit**

**Detailed Model: Enter Data**  
*[Select Processing Units for Data Entry]*

4.1	<a href="#">Unit 1:</a>	Sorting and Separating
4.2	<a href="#">Unit 2:</a>	Recycling
4.3	<a href="#">Unit 3:</a>	Production
4.4	<a href="#">Unit 4:</a>	Composting
4.5	<a href="#">Unit 5:</a>	<Unit 5>
4.6	<a href="#">Unit 6:</a>	<Unit 6>
4.7	<a href="#">Unit 7:</a>	<Unit 7>
4.8	<a href="#">Unit 8:</a>	<Unit 8>
4.9	<a href="#">Unit 9:</a>	<Unit 9>
4.10	<a href="#">Unit 10:</a>	<Unit 10>
4.11	<a href="#">Unit 11:</a>	<Unit 11>

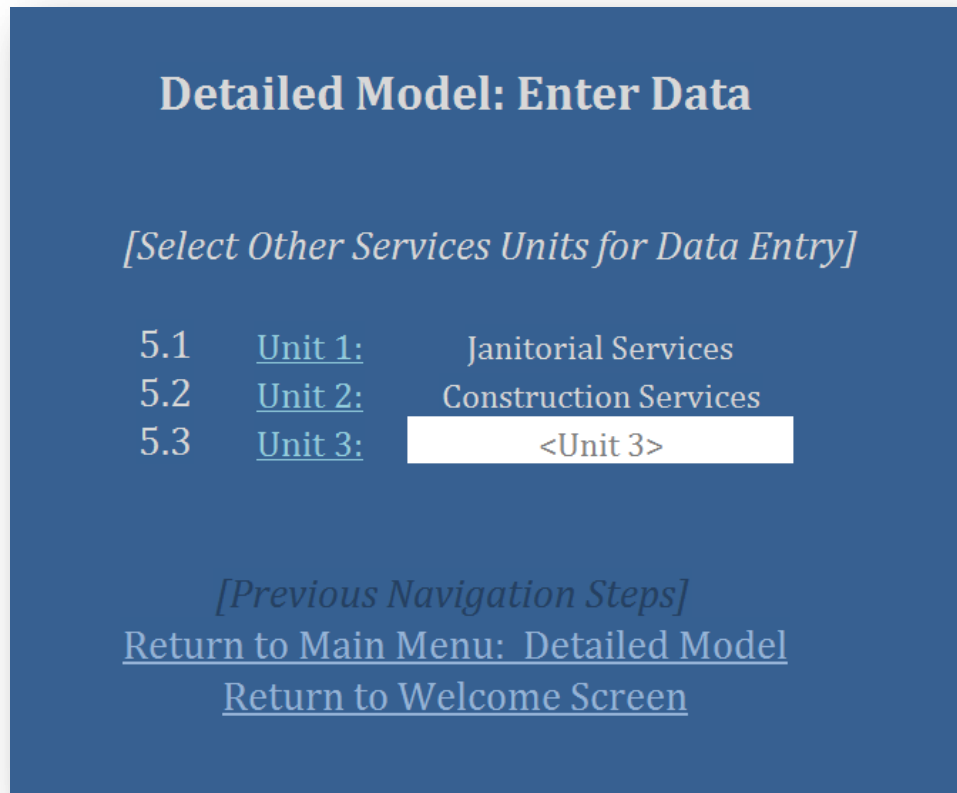
*[Previous Navigation Steps]*  
[Return to Main Menu: Detailed Model](#)  
[Return to Welcome Screen](#)

**Entering Names for Unnamed Units**

On the “Select a Processing Unit” menu, enter the names of up to 7 additional processing units. Review the WMAT Checklist to determine if additional units should be entered, and enter their names here.



**Picture 8– Select an Other Services Unit**



### **Entering Names for Unnamed Units**

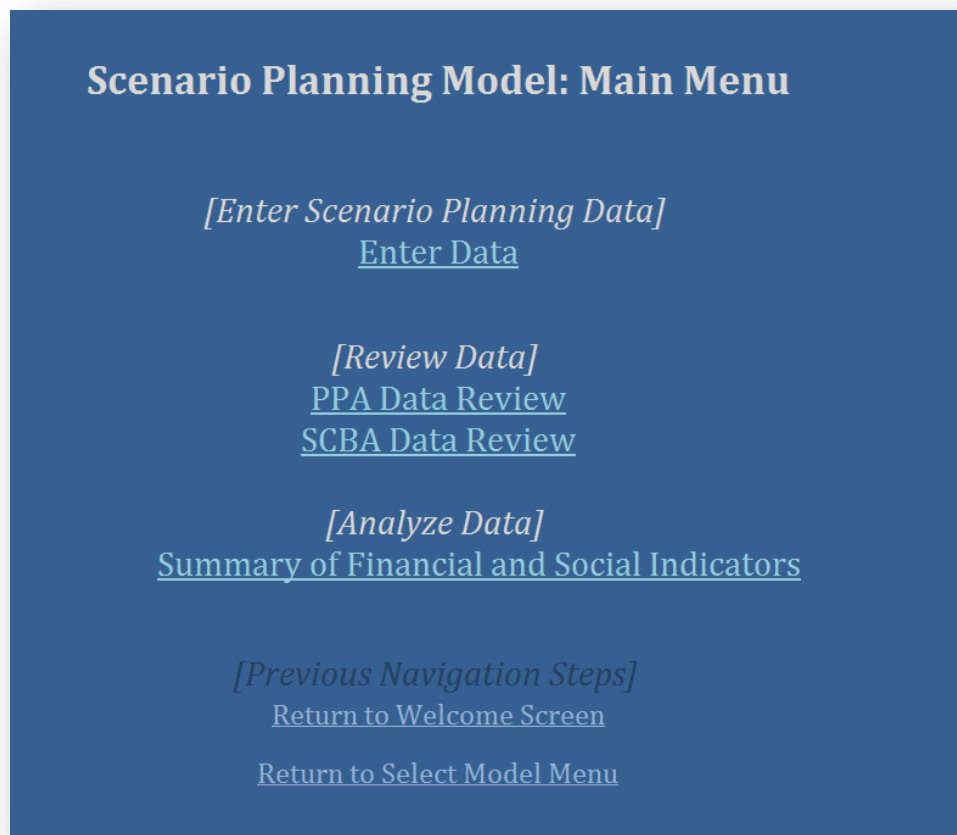
On the “Select an Other Services Unit” menu, there are spaces for entering the names of an additional other services units. Review the WMAT Checklist to determine if additional units should be entered, and enter their names here.

### 3.4.7: Scenario Planning Main Menu

The *Scenario Planning Model* takes the *Detailed Model* one step further. The *Scenario Planning Model* is built to modify the information in the *Detailed Model*. The Main Menu for the *Scenario Planning Model* has a link to [Enter Data](#). Clicking on this link will move the WMAT Excel Workbook directly to the Data Entry Sheet where rates of change need to be entered (see Picture 9).

This sheet should only be modified AFTER the Detailed model is completed.

**Picture 9: Scenario Planning Main Menu**



#### Using the Scenario Planning Model

The *Scenario Planning Model* modifies the data that is entered in the *Detailed Model*. To use the *Scenario Planning Model* follow these steps:

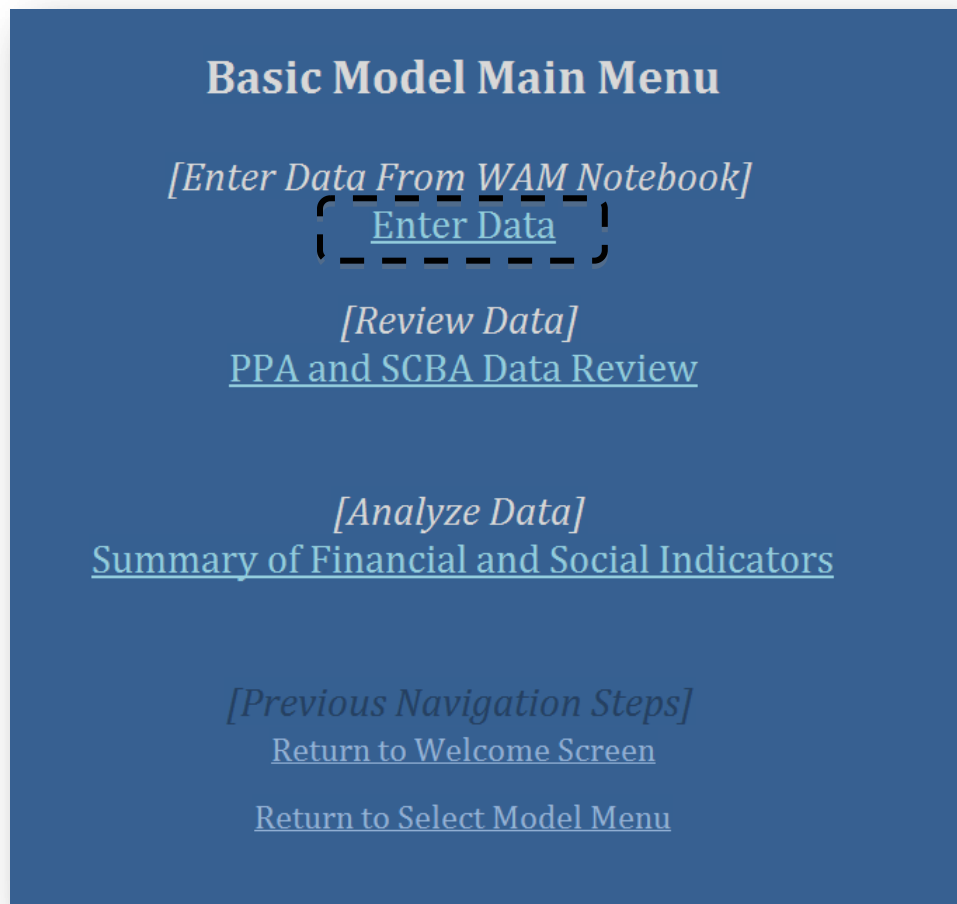
1. Complete the Detailed model, and save the results
2. Open saved results from Step 1
3. Complete rate of change information for Scenario Planning model, this will modify the results from Step 1.
4. Save results from step 3 as a different name than the results of step 1 (e.g. Scenario Planning 1).
5. Compare financial indicators and output data from steps 1 and 3 to see effect of rates of change.

### 3.5: Entering Data (Data Entry Screen)

Data entry is the first step. Use the information from the WMAT Notebook to match sections in the WMAT Excel Workbook for every stage and unit. Enter data for every stage and unit that was entered in the WMAT Notebook. The WMAT Checklist provides information on where data needs to be entered in the WMAT Excel Workbook.

Navigating the Model Main Menu to Enter Data, opens a data entry page on the WMAT Excel Workbook (see picture 10)

**Picture 10: Entering Data**



### 3.5.1: Entering the Data - Basic Model

**Data Entry Screen:** The data entry page is where information from the WMAT Notebook is entered (see Picture 11). There are 4 main features of the data entry page:

1. Model Name
2. Hyperlink Menu
3. Data Entry Question
4. Data Entry Cells

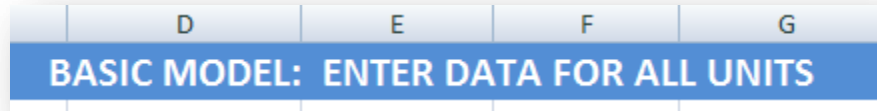
**Picture 11: Data Entry Screen**

BASIC MODEL: ENTER DATA FOR ALL UNITS					
<a href="#">Section 1: Revenue</a>		<a href="#">Section 3: Past Expenditures</a>		<a href="#">Return to Welcome Menu</a>	
<a href="#">Section 2: Capital Expenditures</a>				<a href="#">Return to Main Menu: Basic Model</a>	
Section 1: Revenue					
1) List the materials sold per week					
#	Materials Collected	Average Price per Tonne	Tonnes per Week	Weeks per Year	Yearly Revenue
#1	glass	25	25	52	32,500
#2	plastic	26	23	23	13,754
#3	paper	28	4	43	4,816
#4	cardboard	24	3	34	2,448
#5	organic	90	34	24	73,440
#6	coldplay	25	12	12	3,600
#7	books	25	12	24	7,200
#8	ladies	36	14	12	6,048
#9	gents	2	5	2	20
#10	horsies	4	13	23	1,196
Year Total					145,022

## 1. Model Name

The bar on top of the data entry page lists the name of the model that is being used. (see Picture 12) If the name is not the correct model, return to the Navigation Screen and select the appropriate model.

**Picture 12: Model Name**



## 2. Hyperlink Menu

The hyperlinks near the top of the data entry page make up the Hyperlink Menu. (see picture 13) The Hyperlinks Menu includes hyperlinks to the menus of the Navigation Screen. Use this Hyperlinks Menu to return to the Navigation Screen and select different stages and units, or to move to another activity (data review or data analysis).

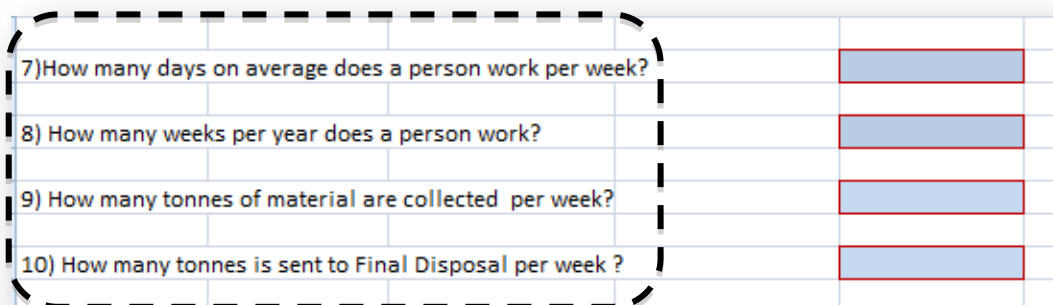
**Picture 13: Hyperlink Menu**

<a href="#">Section 1: Revenue</a>	<a href="#">Section 3: Past Expenditures</a>
<a href="#">Section 2: Capital Expenditures</a>	

### 3. Data Entry Questions

Beneath the Hyperlinks Menu, the list of questions for the data entry sheet begins. (see Picture 14) These questions are the guiding questions for data entry, and match the questions that were asked in the WMAT Notebook. Each stage or unit Data Entry Screen includes a list of questions for which data must be entered.

**Picture 14: Data Entry Questions**

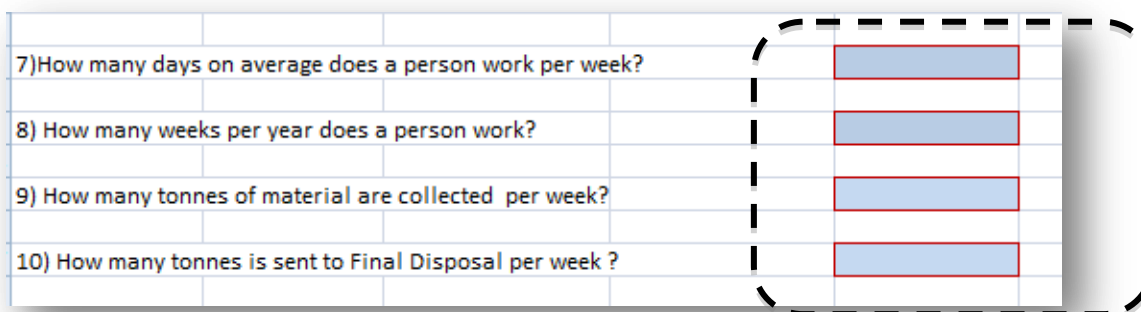


7) How many days on average does a person work per week?	<input type="text"/>
8) How many weeks per year does a person work?	<input type="text"/>
9) How many tonnes of material are collected per week?	<input type="text"/>
10) How many tonnes is sent to Final Disposal per week ?	<input type="text"/>

### 4. Data Entry Cells

Accompanying each of the Data Entry Questions are blue cells with red borders (see Picture 15). These are the Data Entry Cells. For each Data Entry Question, enter the answer in the Data Entry Cells.

**Picture 15: Data Entry Cells**



7) How many days on average does a person work per week?	<input type="text"/>
8) How many weeks per year does a person work?	<input type="text"/>
9) How many tonnes of material are collected per week?	<input type="text"/>
10) How many tonnes is sent to Final Disposal per week ?	<input type="text"/>

Each stage or unit data entry sheet has a list of questions. After the list of questions is complete, the title bar for the next section will appear (see Picture 14). This means that all of the questions for the current stage or unit data entry sheet are complete. The user should move to the next section of the WMAT Excel Workbook to enter more data. After data has been entered for all of the sections that are listed in the WMAT Checklist, move to the Data Review Screen.

### 3.5.2: Entering the Data - Detailed Model

**Data Entry Screen:** Enter data from the WMAT Notebook (see Picture 16). There are 5 main features of the data entry page:

1. Model Name
2. Hyperlink Menu
3. Data Entry Question
4. Data Entry Cells
5. Stage and Unit Navigation

The data entry screen has a section for each of the stages and units of the *Detailed Model*.

**Picture 16: Data Entry Screen**

**Detailed Data Entry**

[Return to Select a Stage Menu: Detailed Model](#)    [Return to Main Menu: Detailed Model](#)    [Return to Welcome Menu](#)

**ADMINISTRATION**

**Number of Workers**  
1) What types of workers are employed in the Administration Unit?

	CSS = Completed Secondary School	LSE = Less than Secondary School Education	Total
Women	20	5	25
Men	1	5	6
Total	21	10	31

Women with Secondary School Education (CSS) 65%  
Women with less than Secondary School Education (LSE) 16%  
Men with Secondary School Education (CSS) 3%  
Men with less than Secondary School Education (LSE) 16%

**Wages, Salaries and Other Benefits**  
2) How many workers earn a daily wage?  Enter Answer

2A) What is the wage paid per day?  Enter Answer

2B) Average Number of Work Days per Week?  Enter Answer

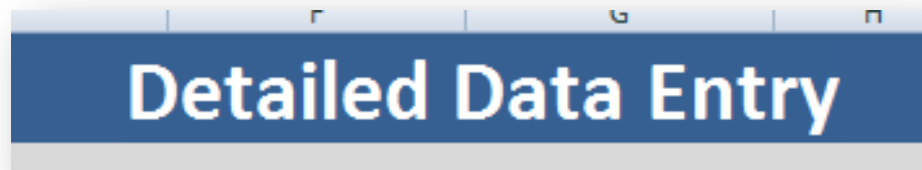
2) How many weeks worked per year?  Enter Answer

Administration    Sorting and Separating    Composting    <Unit 7>    <Unit 10>    Janitorial Services  
Waste Collection Services    Recycling    <Unit 5>    <Unit 8>    <Unit 11>    Construction Services  
Waste Recovery    Production    <Unit 6>    <Unit 9>    Final Disposal    <Unit 3>

## 1. Model Name

The bar on top of the data entry page lists the name of the model that is being used. (see picture 17) If the name is not the correct model, return to the Navigation Screen and select the appropriate model.

**Picture 17: Model Name**



## 2. Hyperlink Menu

The hyperlinks near the top of the data entry page make up the hyperlink menu. (see picture 18) The Hyperlinks Menu includes hyperlinks to the menus of the Navigation Screen. Use this Hyperlinks Menu to return to the Navigation Screen and select different stages and units, or to move to another activity (data review or data analysis).

**Picture 18: Hyperlink Menu**





### 3. Data Entry Questions

Beneath the Title Bar, the list of questions for the data entry sheet begins. (see picture 19) These questions are the guiding questions for data entry, and match the questions that were asked in the WMAT Notebook. Each stage or unit data entry sheet includes a list of questions for which data must be entered.

**Picture 19: Data Entry Question**

8) Does the organization sell the materials you collect as "mixed materials" to another business?		
If yes, what price do you receive per tonne of "mixed materials"?		
Enter Answer		<input type="text"/>
8A) On a typical day, how many tonnes of "mixed materials" is sold to another business?		
Enter Answer		<input type="text"/>
9) Does the business keep the materials collected to be used by another unit?		
If yes, on a typical day, how many tonnes of "mixed materials" is passed onto another unit?		
Enter Answer		<input type="text"/>

### 4. Data Entry Cells

Accompanying each of the Data Entry Questions are blue cells with red borders (see picture 20). These are the Data Entry Cells. For each Data Entry Question, enter the answer in the Data Entry Cells.

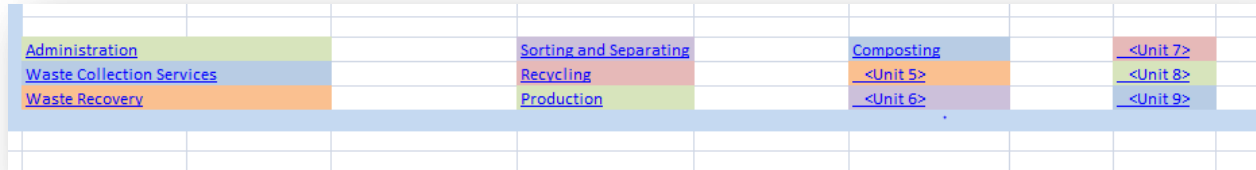
**Picture 20: Data Entry Cells**

8) Does the organization sell the materials you collect as "mixed materials" to another business?		
If yes, what price do you receive per tonne of "mixed materials"?		
Enter Answer		<input type="text"/>
8A) On a typical day, how many tonnes of "mixed materials" is sold to another business?		
Enter Answer		<input type="text"/>
9) Does the business keep the materials collected to be used by another unit?		
If yes, on a typical day, how many tonnes of "mixed materials" is passed onto another unit?		
Enter Answer		<input type="text"/>

## 5. Unit Navigation Hyperlinks

At the end of the data entry sheet for each unit, there is a menu that allows for navigation to data entry section for other units (see picture 21). Use these links as a method for navigating to other data entry sections that need to be completed

**Picture 21: Unit Navigation Hyperlinks**



The image shows a screenshot of a data entry sheet with a grid of cells. The cells contain text and hyperlinks, each with a colored background. The text and hyperlinks are arranged in a grid pattern. The hyperlinks are: <Unit 7>, <Unit 5>, <Unit 6>, <Unit 8>, and <Unit 9>.

Administration		Sorting and Separating	Composting	<Unit 7>
Waste Collection Services		Recycling	<Unit 5>	<Unit 8>
Waste Recovery		Production	<Unit 6>	<Unit 9>

### 3.5.3: Entering the Data - Scenario Planning Model

**Data Entry Screen:** Enter rate of change information on this screen for the *Scenario Planning Model*.

Scenario Modeling is divided into three Rates of Change tables:

- Variable Expenditures – Tonnes of Waste Collected and Processed
- Variable Expenditures – Number of Workers
- Variable Revenue – Revenue from External Sales or Service Contract Fees

Each table has 3 main features

1. Unit Name
2. Summary Data
3. Rate of Change Entry Cells

**Picture 22: Scenario Planning Entering Data**

Scenario Modeling Data Entry							
<a href="#">Return to Main Menu: Scenario Modeling</a>							
Rate of Change -- Variable Expenditures -- Tonnes of Waste Collected and Processed							
	2010	Expected	Expected	Expected	Expected	Expected	
	Tonnage	2011	2012	2013	2014	2015	
Collection Services	78,000	1%	1%	1%	1%	1%	
Recovery	249,600	1%	1%	1%	1%	1%	
Sorting	100,700	1%	1%	1%	1%	1%	
Recycling	14,400	1%	1%	1%	1%	1%	
Production	8,700	1%	1%	1%	1%	1%	
Composting	24,165	1%	1%	1%	1%	1%	
<Unit 5>	12,960	1%	1%	1%	1%	1%	
<Unit 6>	12,096	1%	1%	1%	1%	1%	
<Unit 7>	12,384	1%	1%	1%	1%	1%	
<Unit 8>	12,384	1%	1%	1%	1%	1%	
<Unit 9>	12,384	1%	1%	1%	1%	1%	
<Unit 10>	12,384	1%	1%	1%	1%	1%	
<Unit 11>	12,384	1%	1%	1%	1%	1%	
Final Disposal	1,680	1%	1%	1%	1%	1%	

1

2

3

## 1. Unit Name

Each table has a list of the units of the waste management cycle.

### Picture 23: Unit Name

	Tonna
Collection Services	
Recovery	
Sorting	
Recycling	
Production	
Composting	

## 2. Summary Data

Summary data is next to the unit name. The summary units displayed are:

- Tonnes Collected or Processed (Tonnes)
- Total Employees (Employment)
- Total Revenue from Sales or Service Fees (Revenue)

### Picture 24 - Summary Data

2010
Tonnage

### 3. Rate of Change Entry Cells

The Rate of Change table includes cells where information is entered about future changes of that unit. The default rate of change in the *Scenario Planning Model* is zero. This default means that *Scenario Planning Model* will not automatically make any changes to costs or revenues in the future. By entering numbers into the Rate of Change Tables, the *Scenario Planning Model* will begin to make changes. Rate of Change cells are only provided for five years into the future. After five years, the WMAT assumes that Rate of Change will be constant.

Picture 25 - Rate of Change Entry Cells

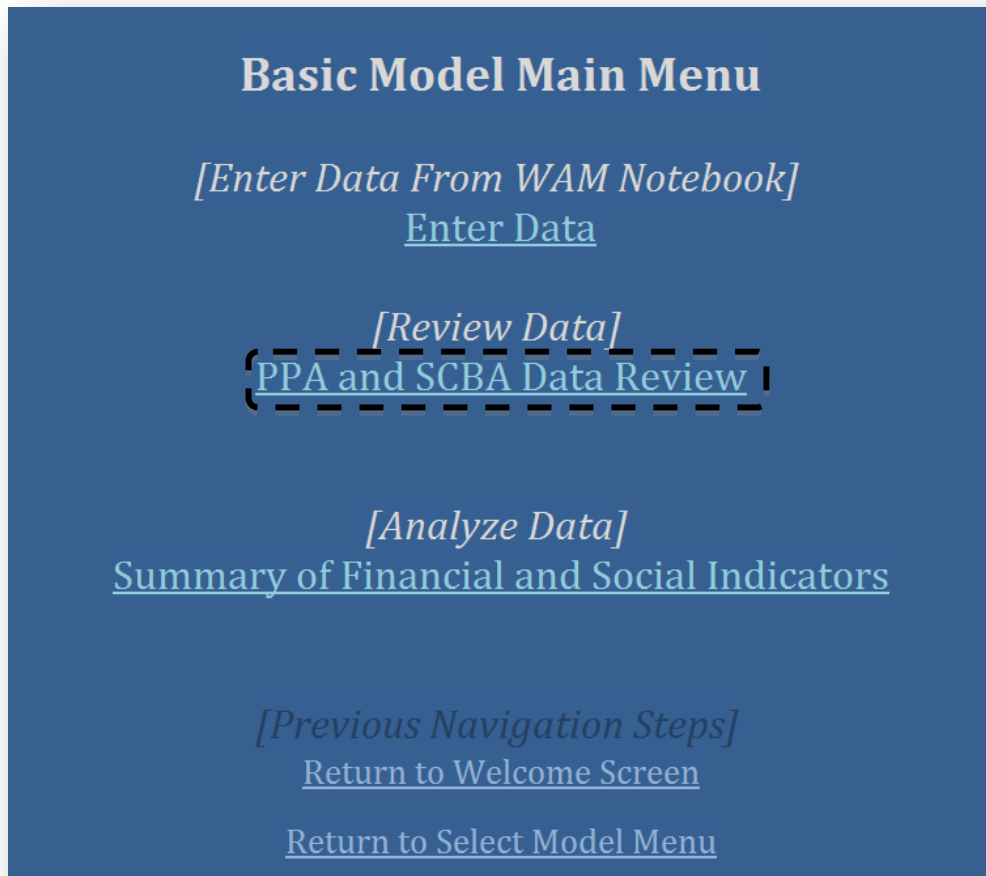
Expected	Expected	Expected	Expected	Expected
2011	2012	2013	2014	2015
0%	0%	0%	0%	0%
0%	0%	0%	0%	0%
0%	0%	0%	0%	0%
0%	0%	0%	0%	0%
0%	0%	0%	0%	0%

## 3.6: Reviewing Data (Data Review Screen)

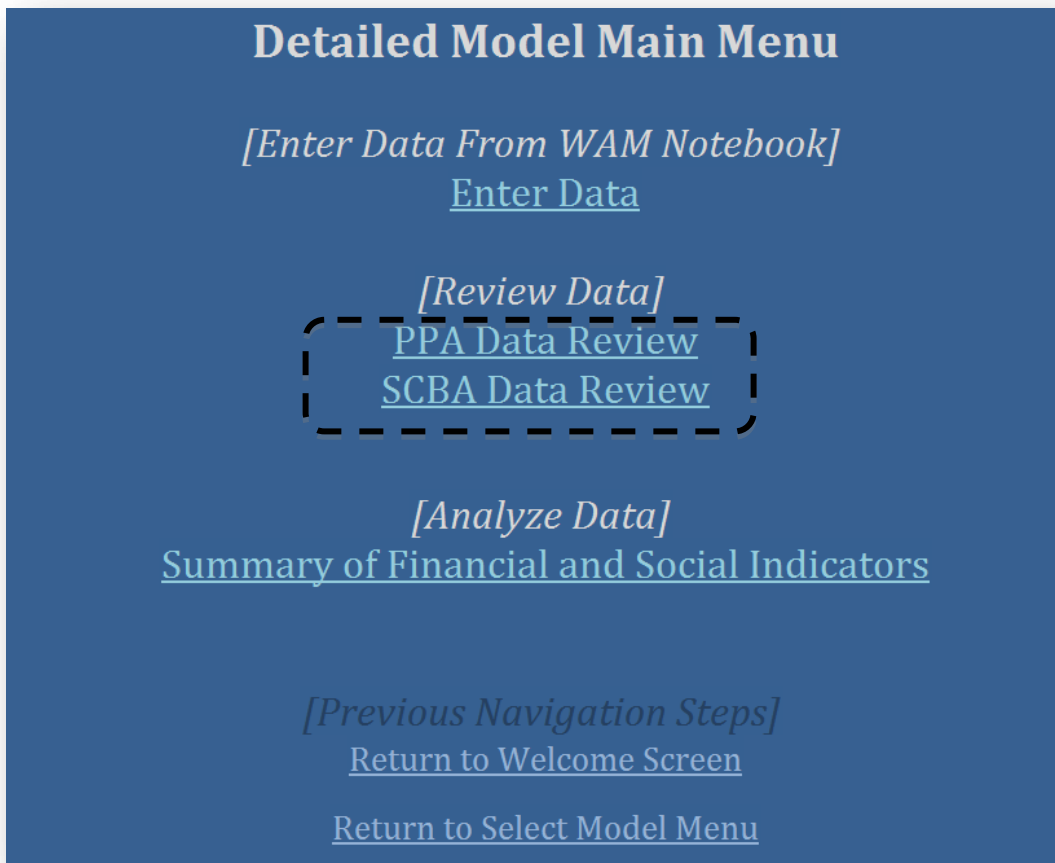
### 3.6.1: Format of Data Review Menus

The second step of the WMAT Excel Workbook is to review the data. Use the Model Main Menu to navigate to different each Data Review sheet (see picture 26 and 27).

**Picture 26: Basic Model - Data Review Link**



**Picture 27: Detailed Model - Data Review Links**



### 3.6.2: Reviewing the Data - Basic Model

The *Basic Model* has one data review sheet that includes both the PPA and SCBA (see picture 18). This sheet reports all of the information about expenditures and revenues. The data review sheet is divided into sections of financial information:

- Current Expenditures
  - Variable Expenditures
  - Fixed Expenditures
- Capital Expenditures
- Working Capital
- Revenues
- Net Resource Flow

#### Financial Information

For definitions of these terms, see entries in the Glossary on page on the following pages:

Capital Expenditure – pg. 109

Working Capital – pg. 113

Net Resource Flow – pg. 111

The Basic model data review sheet is separated into 4 main features:

1. Financial Information Name
2. Line Items
3. Year Summaries
4. Future Capital Expenditure Cycle (See picture 32)

**Picture 28: Basic Model data review sheet**

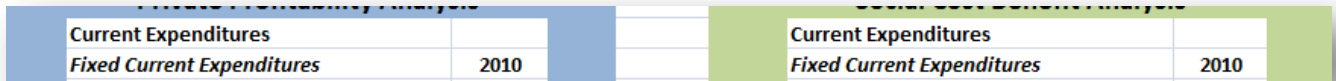
Private Profitability Analysis and Social Cost Benefit Analysis for Basic Model			
<a href="#">Return to Main Menu: Basic Model</a>		<a href="#">Return to Welcome Menu</a>	
<b>Private Profitability Analysis</b>		<b>Social Cost Benefit Analysis</b>	
1	Current Expenditures	Current Expenditures	2010
	Fixed Current Expenditures	Fixed Current Expenditures	2010
	Rent	Rent	
	Phones	Phones	
	Taxes	Taxes	
	Maintenance	Maintenance	
	Supplies	Supplies	
	Loan Payments	Loan Payments	
	Training	Training	
	Accountant	Accountant	
	Scholarships	Scholarships	
	Other	Other	
	Subtotal Fixed Current Expenditures	Subtotal Fixed Current Expenditures	
2			3



## 1. Financial Information Name

For both the PPA and SCBA data review screens, the name of the financial information is displayed. The name will display whether the data shown is for current expenditures, capital expenditures, working capital, revenue or net resource flow (see picture 29).

**Picture 29: Financial Information Name**



The image shows two side-by-side screenshots of a software interface. The left screenshot has a blue header and shows a table with two rows: 'Current Expenditures' and 'Fixed Current Expenditures'. The right screenshot has a green header and shows a table with two rows: 'Current Expenditures' and 'Fixed Current Expenditures', with the year '2010' visible in the right column.

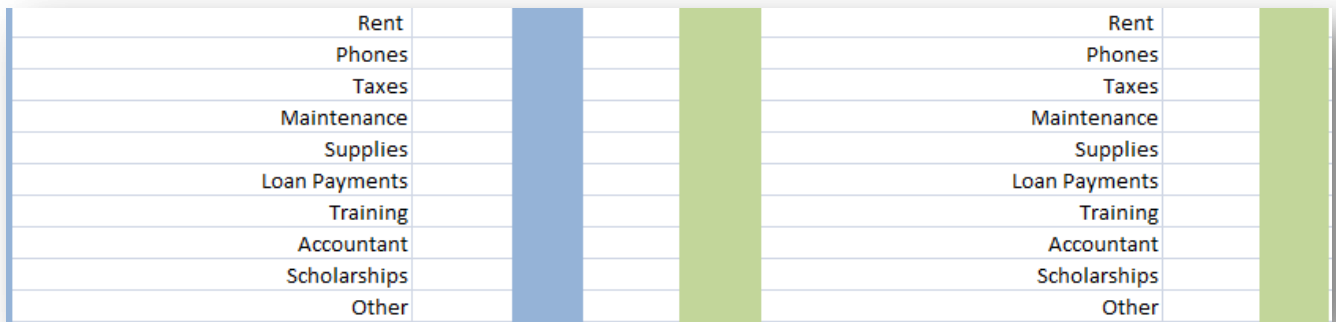
PPA - Financial Information Name	
Current Expenditures	
Fixed Current Expenditures	2010

SCBA - Financial Information Name	
Current Expenditures	
Fixed Current Expenditures	2010

## 2. Line Items

The line items are listed under each financial information name. (see picture 22) The line item displays specific costs or revenues of the organization.

**Picture 30: Line Items**



The image shows two side-by-side screenshots of a software interface displaying a list of line items. The left screenshot has a blue header and the right has a green header. Both show a list of line items: Rent, Phones, Taxes, Maintenance, Supplies, Loan Payments, Training, Accountant, Scholarships, and Other.

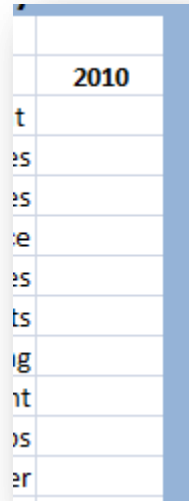
PPA - Line Items	
Rent	
Phones	
Taxes	
Maintenance	
Supplies	
Loan Payments	
Training	
Accountant	
Scholarships	
Other	

SCBA - Line Items	
Rent	
Phones	
Taxes	
Maintenance	
Supplies	
Loan Payments	
Training	
Accountant	
Scholarships	
Other	

### 3. Year Summaries

Listed near the top of each data review sheet is the year. Underneath the year, the total cost or revenue for each line item is displayed (see picture 31).

**Picture 31 - Year Summary**



The image shows a vertical column of a spreadsheet. The top cell contains the year '2010'. Below it are several rows, each with a partial label on the left side: 't', 'es', 'es', 'e', 'es', 'ts', 'ig', 'nt', 'os', and 'er'. The right side of the spreadsheet is obscured by a blue vertical bar.

	2010
t	
es	
es	
e	
es	
ts	
ig	
nt	
os	
er	

#### 4. Future Capital Expenditures

This section displays the costs of capital expenditure purchases. (see picture 32) The cost of each capital expenditure is displayed for the next 15 years. By displaying the costs of capital expenditure purchases for the next 15 years, the organization can plan to make payments accordingly.

**Picture 32 - Future Capital Expenditures**

Capital Expenditures	2010	2011	2012	2013	2014	2015
onion	0	0	0	0	0	0
spah	0	27	0	27	0	27
liverpool	0	28	0	0	0	28
aston	29	0	0	0	0	0
villa	0	0	0	30	0	0
manu	0	0	0	0	31	0
ginobli	0	0	0	0	0	0
austin	0	0	0	0	0	0
croshere	0	0	0	0	0	0
water	0	0	0	0	0	0
<b>Total Capital Expenditure</b>	<b>29</b>	<b>55</b>	<b>0</b>	<b>57</b>	<b>31</b>	<b>55</b>

### 3.6.3: Reviewing the Data - Detailed Model and Scenario Planning Model

For the *Detailed Model*, each waste management stage has its own PPA and SCBA data review sheet. The data review sheets include all of the information about expenditures and revenues that is calculated from the data entry activity. The data review sheets are divided into sections of financial information:

- Current Expenditures
  - Variable Expenditures
  - Fixed Expenditures
- Capital Expenditures
- Working Capital
- Revenues
- Net Resource Flow

Within each section, the data review sheets are separated into multiple features. These features include:

1. Stage Name
2. Hyperlink Menu
3. Financial Information Name
4. Line Items
5. Year Summaries (PPA only)
6. Shadow Prices (SCBA only)

Picture 18 displays an example of the PPA sheet, with each of the main parts labeled.

Picture 19 displays an example of the SCBA sheet, with each of the main parts labeled.

Each data review sheet should be reviewed for data entry errors. In order to review the data for errors, scroll through each of the sheets to see if any cells display the following error messages:

- [#DIV/o]
- [####]

#### **Data Entry Errors**

For explanations of these errors see “How to Use Excel” on pg. 100



Picture 34: SCBA Data Review Sheet

1

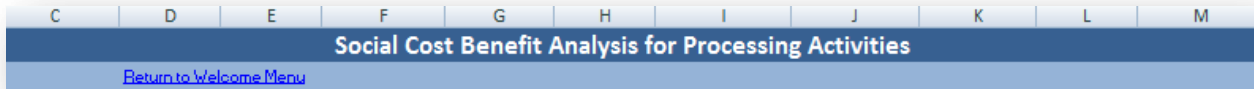
Social Cost Benefit Analysis for Processing Activities																		
2		3																
Return to Main Menu: Detailed Model		Return to Welcome Menu																
		Shadow Price @ 5%							Shadow Price @ 0%							Market Prices		
		N/A	CSS Women	LSE Women	CSS Men	LSE Men	T	Shadow Price @ 5%	N/S	CSS Women	LSE Women	CSS Men	LSE Men	T	Shadow Price @ 0%	Mkt prices at 5% NPV	Mkt prices at 0% NPV	
3		Current Expenditures																
3		Variable Current Expenditures																
3		Sorting and Separating																
4		Payments to Workers	0	646,518	285,960	596,785	571,919	0	2,101,182	0	780,732	345,324	720,676	690,648	0	2,537,380	3,530,980	4,264,000
4		Raw Materials	3,128,655	0	0	0	0	0	3,128,655	4,960,000	0	0	0	0	0	4,960,000	3,128,655	4,960,000
4		Health Care Subsidies	92,424	0	0	0	0	0	92,424	114,600	0	0	0	0	0	114,600	92,424	114,600
4		Housing Subsidies	135,800	0	0	0	0	0	135,800	179,200	0	0	0	0	0	179,200	135,800	179,200
4		Fuel	634	0	0	0	0	0	634	950	0	0	0	0	0	950	634	950
4		Access Fees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12,690	19,000
4		Water	3,807	0	0	0	0	0	3,807	5,700	0	0	0	0	0	5,700	3,807	5,700
4		Electricity	634	0	0	0	0	0	634	950	0	0	0	0	0	950	634	950
4		Subtotal	3,361,954	646,518	285,960	596,785	571,919	0	5,463,136	5,261,400	780,732	345,324	720,676	690,648	0	7,798,780	6,905,624	9,544,400
4		Recycling																
4		Payments to Workers	0	122,536	59,936	95,898	90,570	0	368,939	0	197,225	96,469	154,350	145,775	0	593,819	639,317	1,029,000
4		Raw Materials	448,183	0	0	0	0	0	448,183	696,400	0	0	0	0	0	696,400	448,183	696,400
4		Health Care Subsidies	57,639	0	0	0	0	0	57,639	87,200	0	0	0	0	0	87,200	57,639	87,200
4		Housing Subsidies	118,138	0	0	0	0	0	118,138	177,400	0	0	0	0	0	177,400	118,138	177,400
4		Fuel	6,345	0	0	0	0	0	6,345	9,500	0	0	0	0	0	9,500	6,345	9,500
4		Access Fees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,345	9,500
4		Water	6,345	0	0	0	0	0	6,345	9,500	0	0	0	0	0	9,500	6,345	9,500
4		Electricity	6,345	0	0	0	0	0	6,345	9,500	0	0	0	0	0	9,500	6,345	9,500
4		Subtotal	642,996	122,536	59,936	95,898	90,570	0	1,011,935	989,500	197,225	96,469	154,350	145,775	0	1,583,319	1,288,657	2,028,000

5

### 1. Stage Name

The stage name refers to the blue bar at the top of the screen that displays which waste management stage the data is from. (see Picture 35) The bar also displays whether the data review sheet is data for PPA or SCBA.

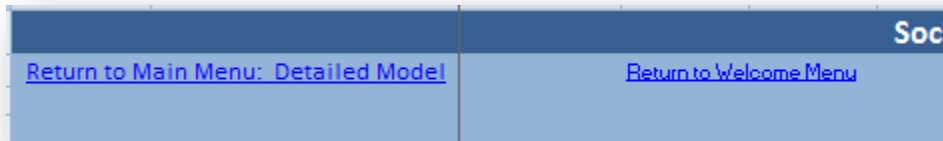
**Picture 35 - Stage Name**



### 2. Hyperlink Menu

The hyperlinks near the top of the data entry page make up the Hyperlink Menu. (See picture 36) The Hyperlink Menu includes hyperlinks to the menus of the Navigation Screen. Use this Hyperlink Menu to return to the Navigation Screen and select different stages and units, or to move to another activity (data review or data analysis).

**Picture 36: Hyperlink Menu**



### 3. Financial Information Name

Near the upper left corner of the data review screen, the name of the financial information is displayed. The name will display whether the data shown is for current expenditures, capital expenditures, working capital, revenue or net resource flow.

**Picture 37: Financial Info Name**

6			N/
7	Current Expenditures		
8	Variable Current Expenditures		
9	Sorting and Separating		
10	Payments to Workers		

### 4. Line Items

The line items are listed under each financial information name. (See picture 38) The line item displays specific costs or revenues of the organization.

### Picture 38 - Line Items

<b>Variable Current Expenditures</b>	
<i>Sorting and Separating</i>	
	Payments to Workers
	Raw Materials
	Health Care Subsidies
	Housing Subsidies
	Fuel
	Access Fees
	Water
	Electricity
	<i>Subtotal</i>

### 5. Year Summaries

Listed near the top of each data review sheet is a series of year. Underneath each year, the cost or revenue for that year is displayed. (see picture 23).

### Picture 39: Year Summaries

	Total	2007	2008	2009
<b>Expenditures</b>				
<b>Variable Current Expenditures</b>				
<i>Sorting and Separating</i>				
Payments to Workers				
Raw Materials				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				
<i>Subtotal</i>				





## 3.7: Analyzing Data (Data analysis Screen)

### Attention! Calculate Now

The WMAT uses the Excel software to calculate output indicators and graphs. The output indicators and graphs should be calculated *after* all of the data has been entered. To calculate the output indicators and graphs with the completed data, the user will select the Calculate Now option.

Here are the instructions for how to choose the Calculate Now option. These instructions were taken from the Microsoft Support website.

#### **Excel 2003 and Excel 2007 for PC and MAC**

To recalculate all open documents, use one of the following methods:

- Press F9.
- In Excel 2003 and in earlier versions of Excel, click **Options** on the **Tools** menu, click the **Calculation** tab, and then click the **Calc Now** button.

In Excel 2007, click **Calculate Now** on the **Formulas** menu in the **Calculation** group.

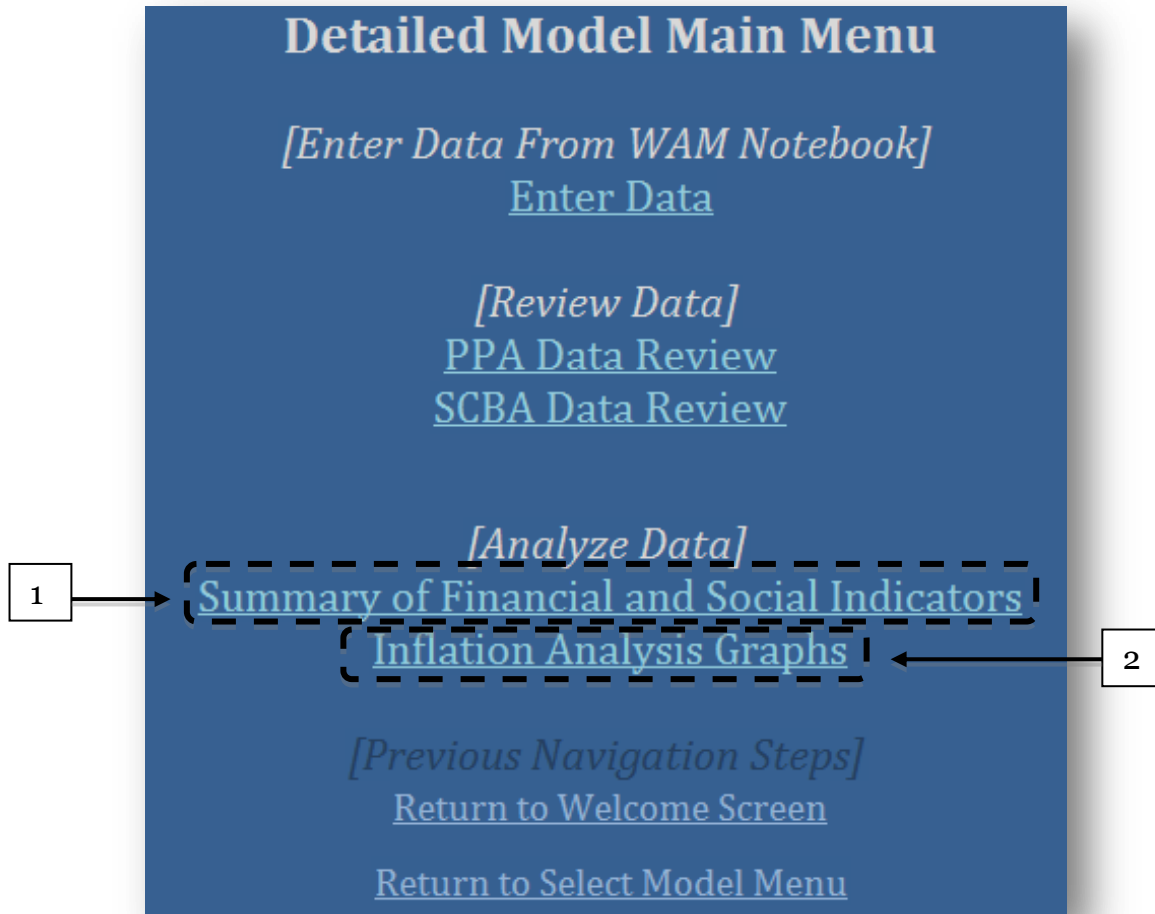
The user should also select the Calculate Now option after any *changes* have been made to the complete data. This is especially important for Scenario Planning, because changes occur often. If the user does not choose the Calculate Now option after changes have occurred, then the output indicators and graphs will be incorrect.

The last activity of the WMAT Excel Workbook is to analyze the data. This process is only possible after data has been entered and reviewed. The basic and detailed models each have a data analysis screen. The data can be shown by the:

1. Summary of Financial and Social Indicators
2. Inflation Analysis Graphs

The scenario planning model shares the data analysis screen with the detailed model. Each of the data analysis screens can be accessed through the navigation screen (see picture 41).

**Picture 41: Analyzing the Data Link**



### 3.7.1: Analyzing the Data - Basic Model

The *Basic Model* data analysis sheet includes one financial indicator and five social indicators (See picture 42).

The three features of the *Basic Model* analysis sheet:

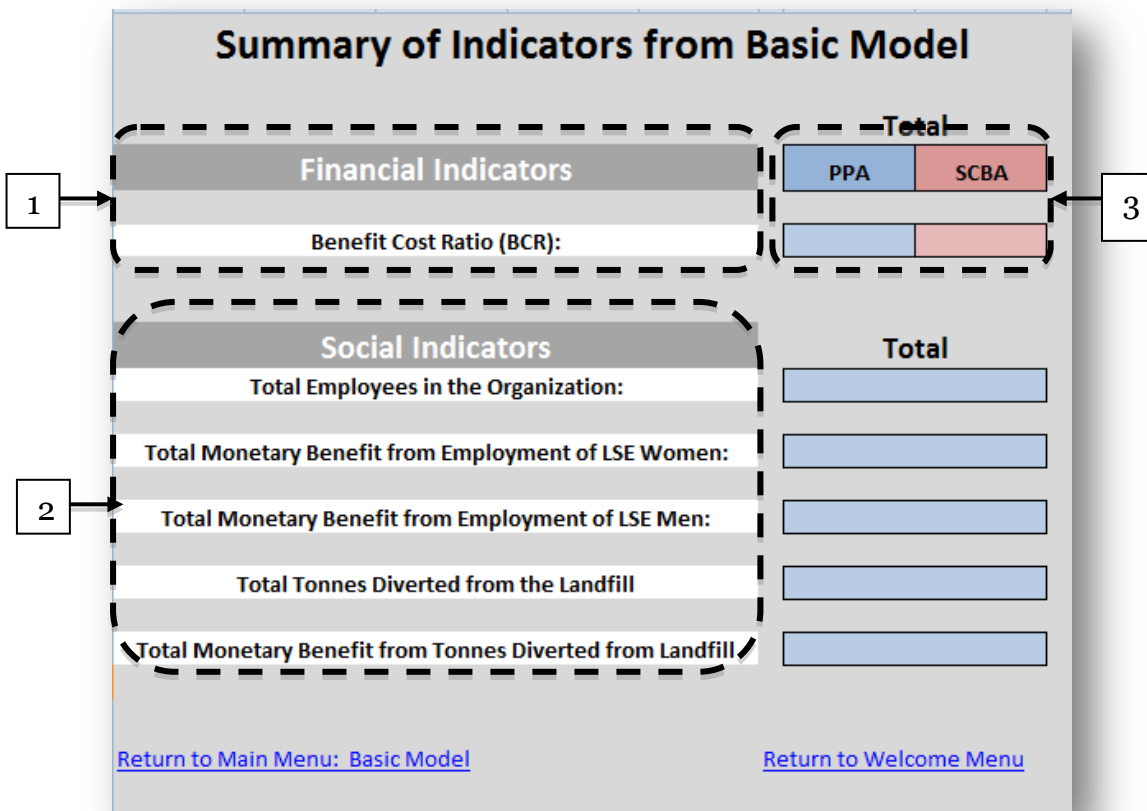
1. Financial Indicators
2. Social Indicators
3. Data from PPA and SCBA

This data analysis screen should be used with the “Interpreting the Results” section of the Step-by-Step Guide to WMAT. After reading the overview of the data analysis screens shown here, move to the next section, “Interpreting the Results”, to learn how each of these numbers should be used to make decisions.

#### Interpreting the Results

The analyzing the data screen should be used with the “Interpreting the Results” section, which can be found on 87

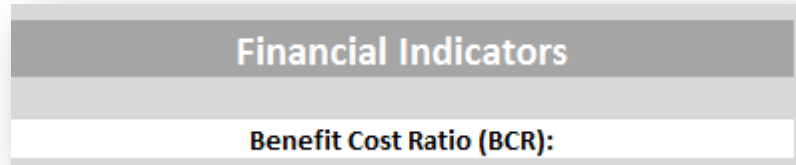
**Picture 42: Analyzing the Data - Basic Model**



## 1. Financial Indicators

The financial indicators are listed on top half of the data analysis screen (see picture 43). These are the three indicators that take into account the expenditures and revenues of the organization.

**Picture 43: Financial Indicators**

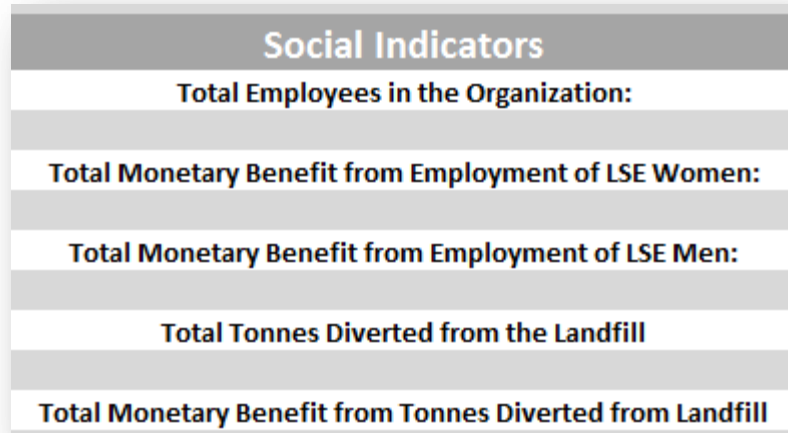


Financial Indicators
Benefit Cost Ratio (BCR):

## 2. Social Indicators

The social indicators are listed on the bottom half of the data analysis screen (see picture 44). These five indicators display the social benefits that the organization is providing through the waste management work.

**Picture 44: Social Indicators**

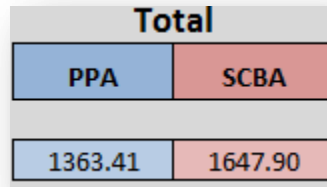


Social Indicators
Total Employees in the Organization:
Total Monetary Benefit from Employment of LSE Women:
Total Monetary Benefit from Employment of LSE Men:
Total Tonnes Diverted from the Landfill
Total Monetary Benefit from Tonnes Diverted from Landfill

### 3. Data from PPA and SCBA

The financial indicators are reported for the PPA and the SCBA (see picture 45). These indicators are reported in the blue and red boxes on the data analysis screen. The indicators display the difference between the financial information of the organization with and without social benefits.

**Picture 45: Data from PPA and SCBA**



Total	
PPA	SCBA
1363.41	1647.90

### 3.7.2: Analyzing the Data - Detailed Model and Scenario Planning Model

The *Detailed Model* has a data analysis sheet includes five financial indicators and seven social indicators (See picture 46).

The four features of the *Detailed Model* data analysis sheet:

1. Financial Indicators
2. Social Indicators
3. Waste management stage name
4. Data from PPA and SCBA

This data analysis screen should be used with the Interpreting the Results section of the *Step-by-Step Guide*. After reading the overview of the data analysis screens shown here, move to the next section, “Interpreting the Results”, to learn how each of these numbers should be used to make decisions.

#### Interpreting the Results

The analyzing the data screen should be used with the “Interpreting the Results” section, which can be found on page 87.

**Picture 46 - Analyzing the Data: Detailed and Scenario Planning Models**

Summary of Financial and Social Indicators													
		Total		Administration		Collection and Recovery		Processing		Other Services		Final Disposal	
		PPA	SCBA	PPA	SCBA	PPA	SCBA	PPA	SCBA	PPA	SCBA	PPA	SCBA
1	<b>Financial Indicators</b>												
	Benefit Cost Ratio (BCR):												
	Net Present Value (NPV) at 0% Discount Rate:												
	Net Present Value (NPV) at 5% Discount Rate:												
2	<b>Social Indicators</b>	Total		Administration		Collection and Recovery		Processing		Other Services		Final Disposal	
	Number of People Who Work for Organization:												
	Total Monetary Benefit from Employment of LSE Women:												
	Total Monetary Benefit from Employment of LSE Men:												
	Total Tonnes Diverted from the Landfill:												
	Monetary Benefit from Tonnes Diverted From Landfill:												
	Total Tonnes Kept Off the Streets:												
Monetary Benefit from Tonnes Kept Off the Streets:													

4

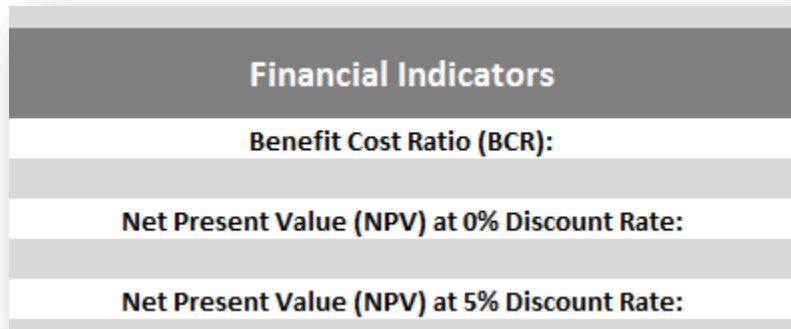
3



## 1. Financial Indicators

The financial indicators are listed on top half of the data analysis screen (see picture 47). These are the five indicators that take into account the expenditures and revenues of the organization.

**Picture 47: Financial Indicators**

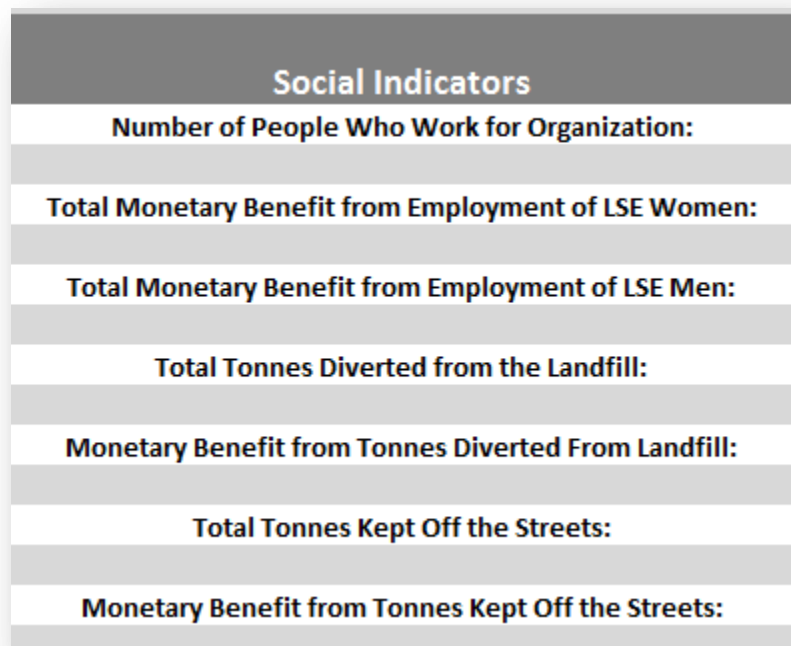
A screenshot of a software interface showing a list of financial indicators. The title 'Financial Indicators' is centered at the top in a dark grey bar. Below it, five indicators are listed in alternating light and dark grey bars.

Financial Indicators
Benefit Cost Ratio (BCR):
Net Present Value (NPV) at 0% Discount Rate:
Net Present Value (NPV) at 5% Discount Rate:

## 2. Social Indicators

The social indicators are listed on the bottom half of the data analysis screen (see picture 48). These five indicators display the social benefits that the organization is providing through the waste management work.

**Picture 48: Social Indicators**

A screenshot of a software interface showing a list of social indicators. The title 'Social Indicators' is centered at the top in a dark grey bar. Below it, seven indicators are listed in alternating light and dark grey bars.

Social Indicators
Number of People Who Work for Organization:
Total Monetary Benefit from Employment of LSE Women:
Total Monetary Benefit from Employment of LSE Men:
Total Tonnes Diverted from the Landfill:
Monetary Benefit from Tonnes Diverted From Landfill:
Total Tonnes Kept Off the Streets:
Monetary Benefit from Tonnes Kept Off the Streets:

### 3. Waste Management Stage Name

In the *Detailed Model*, each of the waste management stages produces summary indicators. There is also a total column that shows all the stages combined. Only the stages that have data collected and entered for them display indicators provided here.

**Picture 49: Waste Management Stage Name**

Total	Administration	Collection and Recovery	Processing
-------	----------------	-------------------------	------------

### 4. Data from PPA and SCBA

The financial indicators are reported for the PPA and the SCBA (See picture 50). These indicators are reported in the blue and red boxes on the data analysis screen. The indicators display the difference between the financial information of the organization with and without social benefits.

**Picture 50: Data from PPA and SCBA**

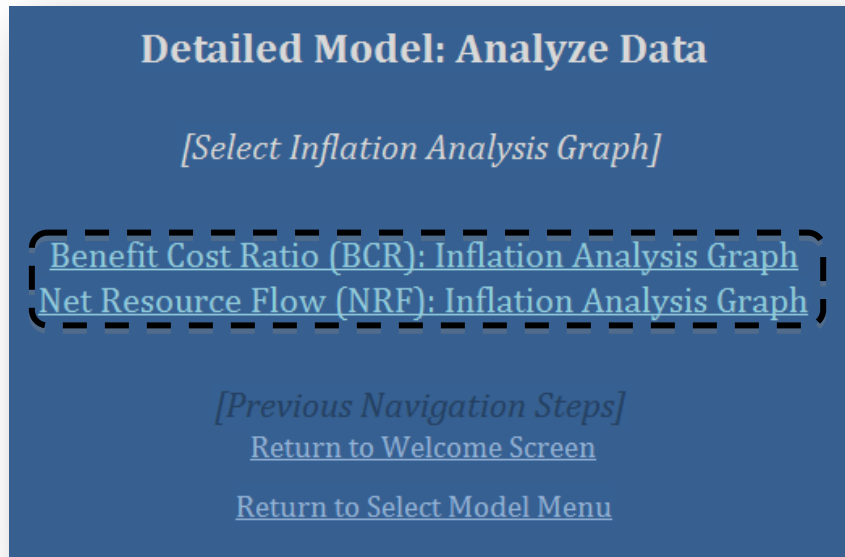
Total	
PPA	SCBA
0.67	13.10
-47,146,428	1,314,850,666
-31,553,318	903,756,388

### 3.7.3: Select Inflation Analysis Graph: BCR or NRF

The *Detailed Model* has an inflation analysis graph section for two different graphs. Choose either the Benefit-Cost Ratio (BCR) graph or the Net Resource Flow (NRF) graph. For more information on the difference between the output in the graphs refer to the *Interpreting the Results* section on page 77.

After selecting the BCR or NRF option, the next screen will present the choice of stages, and after selecting the stage, the graph result will appear.

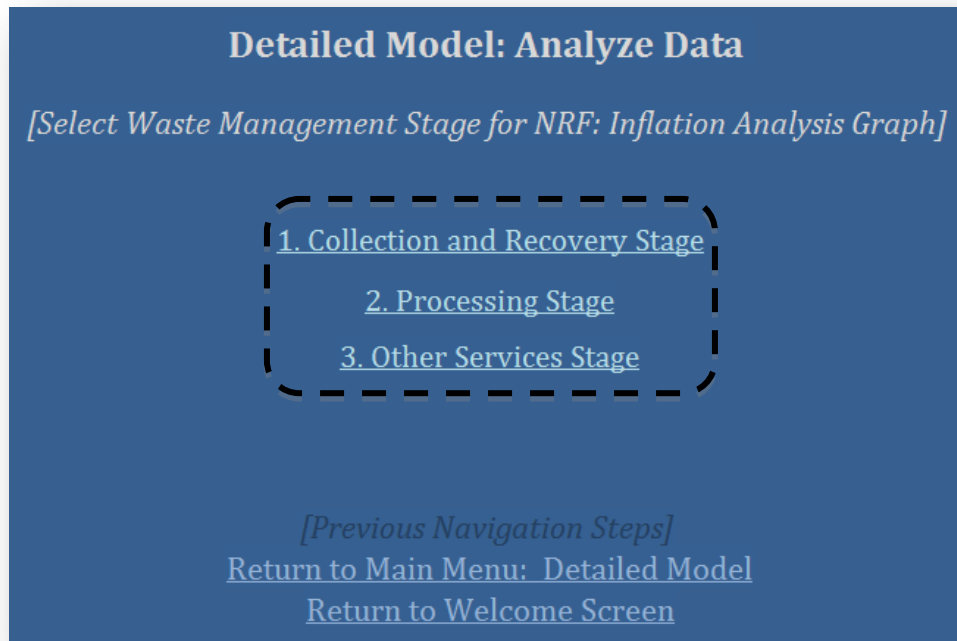
#### Picture 51: Select Inflation Analysis Graph



### 3.7.4: Select Stage for Inflation Analysis Graph: Detailed Model and Scenario Planning Model

After the type of graph is selected a screen displays the option to select the waste management stage. For the Processing Stage, there is the option of selecting among 11 Units for the desired graph. For the Other Services Stage, there is the option of selecting among 3 Units for the desired graph.

**Picture 52: Select Stage for Graph**



### **3.7.5: BCR Inflation Analysis Graph: Detailed Model and Scenario Planning Model**

The *Detailed Model NRF Inflation Analysis Graph* section includes information about how input factors (e.g. raw materials, labor, and output) change with different scenarios as shown by changes in inflation. For more information about how to interpret the graph please see “Interpreting the Results” section on page 77.

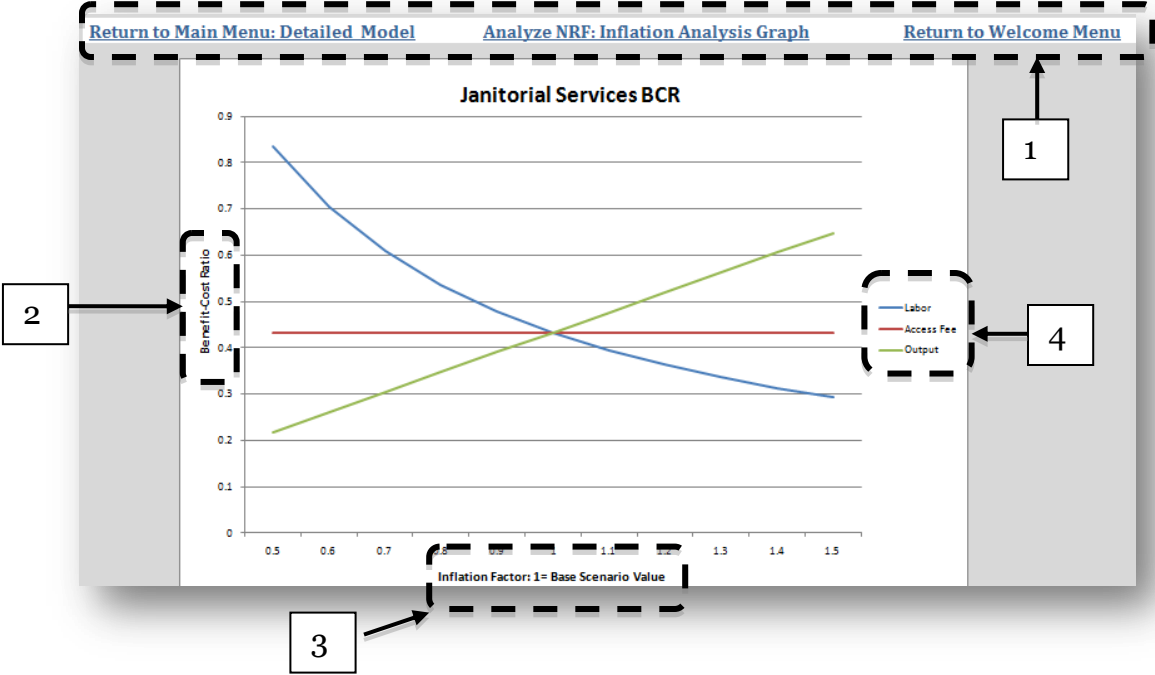
The four features of the *Inflation Analysis BCR Graph* inflation analysis graph :

1. Hyperlink menu: switch to NRF Graph or Main Menu
2. Benefit-Cost Ratio
3. Inflation Factor
4. Legend of Input factors

#### **Interpreting the Results**

The inflation analysis graph should be used with the “Interpreting the Results” section, which can be found on page 87.

Picture 53: BCR Inflation Graph



### **3.7.6: NRF Inflation Analysis Graph: Detailed Model and Scenario Planning Model**

The *Detailed Model NRF Inflation Analysis Graph* section includes information about how input factors (e.g. raw materials, labor, and output) change with different scenarios as shown by changes in inflation. For more information about how to interpret the graph please see “Interpreting the Results” section on page 77.

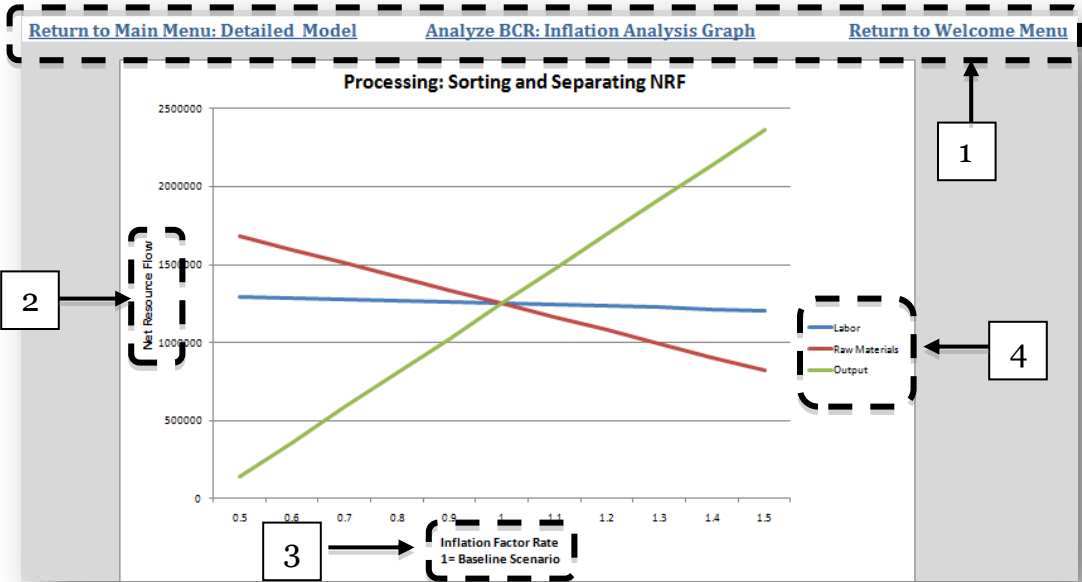
The four features of the *Inflation Analysis NRF Graph* inflation analysis graph :

1. Hyperlink menu: switch to BCR Graph or Main Menu
2. Net Resource Flow:
3. Inflation Factor
4. Legend of Input factors

#### **Interpreting the Results**

The inflation analysis graph should be used with the “Interpreting the Results” section, which can be found on page 87.

Picture 54: NRF Inflation Graph





# Step-by-Step Guide to WMAT

## Section 4.0: Interpreting the Results

## Section 4.0: Interpreting the Results

Interpreting The Results is a summary of all of the output indicators. Output indicators are numbers, percentages and ratios that summarize the Private Profitability Analysis (PPA) and the Social Cost-Benefit Analysis (SCBA). The names of the output indicators may be unfamiliar. This section will explain their meaning and offer guidelines for how they can be used in decision-making.

Interpreting The Results is split into two sections. The first section gives basic definitions and guidelines for use in decision-making. This section provides enough information for the output indicators to be meaningfully used.

The second section of Interpreting the Results offers the complex and mathematical definition of the output indicators. This section is only for those interested in the math behind the numbers; and this section does NOT need to be read. It is only for those who want a more in-depth understanding.

### 4.I: Basic Definitions and Use in Decision-Making

#### 4.1.1: Financial Indicators

The Financial Indicators refer to the financial health of the organization; and the indicators will help in business decision-making.

#### Benefit-Cost Ratio (BCR)

##### Basic Definition

The Benefit-Cost Ratio (BCR) is an indicator of financial profitability. The BCR calculates the present and future value of all benefits, and it also calculates the present and future value of all costs. The BCR combines all the current costs and benefits with all costs and benefits to come in the future. Therefore, the BCR is one number that represents the total projects costs and benefits.

##### Use in Decision-Making – Relative Value

The BCR is an indicator of the relative size of the benefits to the cost. The BCR does not provide the cash value of the costs or benefits, but instead the relative size of benefits as compared to costs.

The total benefits are divided by the total cost to create a ratio.

- (BCR > 1) If the BCR is greater than one, then the benefits are greater than the costs. If the benefits are greater than the costs, than the unit is profitable.
- (BCR < 1) If the BCR is less than one, then the benefits are less than the costs. If the benefits are less than the costs, than the unit is not profitable.

## Net Present Value (NPV)

### **Basic Definition**

The Net Present Value (NPV) is an indicator of financial profitability. The NPV calculates the present and future value of all benefits, and it also calculates the present and future value of all costs. The NPV combines all the current costs and benefits with all costs and benefits to come in the future. Therefore, the NPV is one number that represents the total projects costs and benefits.

### **Use in Decision-Making – Cash Value**

The NPV is an indicator of the absolute size of all benefits to costs. Therefore, the NPV represents the total money value of all benefits minus all costs.

- (NPV > 0) If the NPV is greater than zero, then the project is profitable. And the NPV shows exactly how much total profitability there is.
- (NPV < 0) If the NPV is less than zero, then the project is not profitable. And the NPV shows exactly how much total loss there is.
- (NPV = 0) If the NPV is equal to 0, then the project has no net benefits or costs.

### 4.1.2: Social Indicators

The Social Indicators refer to the social benefit that the organization provides. These indicators will help in negotiations with other organizations.

#### Total Employees in the Organization

This indicator is a simple totaling of all the employees that are in the organization. This indicator was calculated by taking all of the employees for each of the stages and units, and adding them all together.

If some employees work in more than one stage or unit, those employees should only be counted in the stage or unit that they work in most. If the same employee is said to be working in more than one stage or unit, this employee will be counted twice in the total. And that will make this indicator incorrect.

#### Total Monetary Benefit from Employment

##### Basic Definition

This indicator is the total social benefit created by the organization because it employs previously unemployed people. The calculation of this indicator is somewhat complicated, but it can be conceptualized as the amount of wealth created by the organization that would not have been in the economy without it.

This indicator rests on a few basic principles.

- The first principle is Employment Opportunity Cost. Opportunity Cost here refers to the amount of income that an employee *could* make, if he or she were working for another business.
- The second principle is the fact that education changes the average amount of income that a worker can earn in the labor market.
- The third principle is the fact that gender changes the average amount of income that a worker can earn in the labor market.

By combining these simple principles, a more complex conclusion can be drawn. The Opportunity Cost for an employee is different depending on that employees' level of education and gender. Therefore, if the total Employment Opportunity Cost for the organization is to be calculated, then each of the employees must be classified by education and gender.

The total Employment Opportunity Cost is used to calculate the Monetary Benefit from Employment. The Monetary Benefit from Employment is the difference between the all of the wages paid to all of the employees of the organization and the total Employment Opportunity Cost: or, in other word, the difference between what the employees ARE paid at the organization and what the employees COULD be paid in the wider labor market. These two sentences refer to the same thing.

Or, this idea could be thought of as an equation:

$$\begin{aligned} & \textit{Total Wages Paid to Employees} - \textit{Total Employment Opportunity Cost} \\ & = \textit{Total Monetary Benefit From Employment} \end{aligned}$$

### **Use in Decision-Making**

The Total Monetary Benefit from Employment is a negotiating tool. This number will not help in any financial or business decisions directly. Instead, this number can be shown to outsiders, such as city governments or international development firms, to prove to them that the organization is providing a significant social benefit.

City governments, international development firms and banks think and speak in numbers. The Total Monetary Benefit from Employment translates the existing social benefit that the organization provides into the language of numbers. Publishing this number widely, and being transparent about how it was calculated, will improve an organization's legitimacy.

## **Tonnes Diverted from the Landfill**

### **Basic Understanding**

The indicator Tonnes Diverted from the Landfill refers to the total amount of waste that the organization recycled, composted or produces into other goods. The waste that has been put to a new use would have gone to the landfill. Therefore, by measuring the tonnes that are put to a new use, it is possible to calculate the tonnes of waste that are diverted from the landfill.

### **Use in Decision-Making**

The Tonnes Diverted from the Landfill is a negotiating tool. This number will not help in any financial or business decisions directly. Instead, this number can be shown to outsiders, such as city governments or international development firms, to prove to them that the organization is providing a significant environmental benefit.

City governments, international development firms and banks think and speak in numbers. The Tonnes Diverted from the Landfill translates the existing environmental benefit that the organization provides into the language of numbers. Publishing this number widely, and being transparent about how it was calculated will improve and organization's legitimacy. Additionally, "green business" terms could be leverages to gain contracts.

## **Total Monetary Benefit of Tonnes Diverted from the Landfill**

### **Basic Understanding**

The total Monetary Benefit of the Tones Diverted from the Landfill is equal to the amount of money it *would* cost to dispose of the diverted tonnes in an environmentally sound way.

This calculates the amount of money that is saved for society (or the city government) by the organization. This money is saved because the organization is keeping waste out of the landfill, and society (or the city government) does not need to spend money to manage the waste.

### **Use in Decision-Making**

The Total Monetary Benefit of Tonnes Diverted from the Landfill is a negotiating tool. This number will not help in any financial or business decisions directly. Instead, this number can be shown to outsiders, such as city governments or international development firms, to prove to them that the organization is providing a significant environmental benefit.

City governments, international development firms and banks think and speak in numbers. The Total Monetary Benefit of Tonnes Diverted from the Landfill translates the existing social benefit that the organization provides into the language of numbers. Publishing this number widely, and being transparent about how it was calculated, will help greatly in giving the organization legitimacy.

## **Tonnes Kept Off the Streets**

Tonnes Kept off the Streets refers to the amount of waste that the organization prevents from being in the street. If the organization did not exist, waste would not be collected from the streets. Therefore, the total amount of waste that the organization collects from the homes, office buildings and from the streets – and then moves to either recycling or the landfill – is not ending up in the streets.

This can be thought of as a social benefit. First, there is the aesthetic benefit of not having waste on the street. Second, there is the public health benefit of not having people living next to waste. Third, there is the public health benefit of not having waste clogging sewers, and therefore, not having waste create drainage problems and standing water.

## **Total Monetary Benefit of Tonnes Kept Off the Streets**

### **Basic Understanding**

The Total Monetary Benefit of Tonnes Kept Off the Streets is the amount of money that it would cost, if the city government were to provide adequate waste services to every neighborhood in the city. City governments in developing countries do not provide waste services to every neighborhood. City governments provide waste management services only to Upper and Middle Class neighborhoods. This indicator calculates the amount of money the government would have to spend, if the government collected all the waste that the organization collects.

### **Use in Decision-Making**

The Total Monetary Benefit of Tonnes Kept Off the Streets is a negotiating tool. This number will not help in any financial or business decisions directly. Instead, this number can be shown to outsiders, such as city governments or international development firms, to prove to them that the organization is providing a significant environmental benefit.

City governments, international development firms and banks think and speak in numbers. The Total Monetary Benefit of Tonnes Kept Off the Streets translates the

existing social benefit that the organization provides into the language of numbers. Publishing this number widely, and being transparent about how it was calculated, will help greatly in giving the organization legitimacy.

## 4.2: Interpreting the Graphs

### **Basic Understanding of the Graphs**

The WMAT provides graphs as a visual representation of the output. Each unit has two accompanying graphs: one graph depicting the Benefit-Cost Ratio (BCR) and one graph depicting the Net Resource Flow (NRF). The graphs provide the same data that can be found elsewhere in the tool; but many people find a visual representation of data to be easier to understand. The following is a short description of each of the components of the graph.

### **Benefit-Cost Ratio and Net Resource Flow**

The Benefit-Cost Ratio (BCR) and Net Resource Flow (NRF) are output indicators. Output indicators are single numbers that provide information about the unit to help in decision making. A full description of BCR and an explanation of its use in decision making can be found on page 88. A full description of NRF and an explanation of its use in decision making can be found on page 111.

It is important to remember that BCR is a relative number. Any change in the BCR represents a change in the size of all benefits and costs *as compared to each other*.

It is important to remember that the NRF is an absolute number. Any change in the NRF represents the *actual change* of all benefits and costs.

### **Y-Axis: Benefit-Cost Ratio Graph**

The Y-Axis of the Benefit-Cost Ratio graph represents the Benefit-Cost Ratio (BCR). Directly in the center of the graph is the Y-Axis that represents the current BCR.

### **Y-Axis: Net Resource Flow Graph**

The Y-Axis of the Net Resource Flow graph represents the Net Resource Flow (NRF). Directly in the center of the graph is the Y-Axis that represents the current NRF.

### **X-Axis: Inflation Factor**

The X-Axis represents the inflation factor. The inflation factor represents the changes in price. An inflation factor of 1 is equal to current prices. If the inflation factor increases, then prices increase. If the inflation factor decreases, then prices decrease.

For example, an inflation factor of 1.2 represents costs that are 120% of the current costs; or put another way, an inflation factor of 1.2 represents costs that are 20% *higher* than the current costs. Here is a chart which represents these changes:

	Inflation Factor	Percent of Current Costs	Hypothetical Absolute Costs
	0.5	50%	\$ 100
	0.6	60%	\$ 120
	0.7	70%	\$ 140
	0.8	80%	\$ 160
	0.9	90%	\$ 180
<b>Current Costs</b>	<b>1</b>	<b>100%</b>	<b>\$ 200</b>
	1.1	110%	\$ 220
	1.2	120%	\$ 240
	1.3	130%	\$ 260
	1.4	140%	\$ 280
	1.5	150%	\$ 300

## Dependent Variables

The colored lines on the graph are the dependent variables. These lines (dependent variables) change depending on the X-Axis and the Y-Axis. It is important to remember that the dependent variable change only according to the X-Axis and the Y-Axis, they do not change in relation to each other.

Each dependent variable represents a different component of the unit. Not every graph will have the same lines because not every unit has the same dependent variables. Here are a list of the dependent variables that are in the graphs:

- Labor
- Raw Materials
- Access Fees
- Output

## Complex Understanding of the Graphs

### Sensitivity Analysis

By having the X-Axis be the inflation factor, the graphs represent a sensitivity analysis. A sensitivity analysis examines how BCR and NRF will change as the price of costs and benefits change. Unfortunately, because the independent variables (e.g. Labor or Raw Materials) do not change together, each of the lines should be interpreted separately. They are placed on the same graph as a way of quickly showing the differences in the steepness of the curves.



## Steepness of the Curves: Representing Sensitivity

Each line decreases or increases at a different rate. This rate is called the steepness of the curve. For example, if a curve is increasing rapidly, it will have a steep curve moving upwards. If a curve is increasing but slowly, it will have a less steep curve moving upwards.

The steepness of the curve is therefore a good representation of sensitivity to price changes. A curve that is very steep represents an independent variable that is very sensitive to price changes. A curve that is less steep represents an independent variable that is not very sensitive to price changes.

Knowing the sensitivity to price changes is helpful for future planning. For example, if the organization knows that raw materials are very sensitive to price changes, it should pay special attention to the price of raw materials. If there is a large change in price over a short period of time, the organization knows that major changes to the costs and benefits will occur. And with this knowledge the organization knows where to look when it is making decisions.

## 4.3: Complex Definitions and Mathematical Formulas

### Benefit-Cost Ratio (BCR)

#### Complex Definition

The BCR is a ratio that represents all current and future costs and benefits. Costs and benefits are treated with a discount rate. The discount rate has a glossary entry on page 95.

The mathematical formula for the BCR is as follows:

$$BCR = \frac{\sum_t \left[ \frac{B(t)}{(1+d)^t} \right]}{\sum_t \left[ \frac{C(t)}{(1+d)^t} \right]}$$

Where:

B = Benefits

C = Costs

d = Real discount rate

t = number of years from the base year

In this equation, all benefits and all costs are first treated with a discount rate. All benefits and all costs are then summed together. Finally, the total discounted benefits are divided by the total discounted costs. The result is the BCR.

### Net Present Value (NPV)

#### Complex Definition

The NPV is the difference between discounted benefits and discounted costs. The NPV is a number that represents all current and future costs and benefits. Costs and benefits are treated with a discount rate. The discount rate has a glossary entry on page 95.

The mathematical formula for the BCR is as follows. Each of these formulas expresses the same thing, only with a bit of algebra to help to express it in different forms.

$$NPV = \sum_t \frac{B(t)}{(1+d)^t} - \sum_t \frac{C(t)}{(1+d)^t}$$

$$NPV = \sum_t \left[ \frac{B(t) - C(t)}{(1+d)^t} \right]$$

Where:

B = Benefits

C = Costs

$d$  = Real discount rate  
 $t$  = number of years from the base year

In this equation, all benefits and all costs are first treated with a discount rate. All benefits and all costs are then summed together. Finally, the total discounted benefits are subtracted by the total discounted costs. The result is the NPV.

## Total Monetary Benefit from Employment

### Complex Definition

Now that the concept of Total Monetary Benefit from Employment has been explained, it is important to describe how the total Employment Opportunity Cost is calculated. This explanation will make the WMAT more transparent; but if what follows is confusing, it is not necessary for an understanding of the Total Monetary Benefit from Employment idea.

Total Employment Opportunity Cost is calculated by treating the wages of the various categories of employees (e.g. Completed Secondary School Women, Completed Secondary School Men, Less Than Secondary School Women, and Less Than Secondary School Women) to discount rates. These discount rates are a fraction that is less than 1.

By multiplying the wages of the categories of employees by a fraction that is less than one, an Employment Opportunity Cost is estimated. By mathematic definition, this Employment Opportunity Cost will be less than the wages earned by the employees. In other words, multiplying the wages by the discount rate, an estimate of what the employee could earn at another business is estimated.

The discount rates and opportunity cost used for each of the categories of employees are as follows:

Completed Secondary School Women = 1.00 = 100% of wages earned

Completed Secondary School Men = 1.00 = 100% of wages earned

Less Than Secondary School Women = .25 = 25% of wages earned

Less Than Secondary School Men = .50 = 50% of wages earned

The justification for each follows. First, it is assumed that any employee that has completed secondary school is capable of earning the same wages working for the waste organization as could be earned on the wider labor market. Or, in other words, by having an education, an employee has equal opportunity to gain income in the informal waste sector and in formal employment. Therefore, the discount rate for women and men who have completed secondary school is 1.00; or, in other words, there is no discount rate for

these employees. And because there is no discount rate for these employees, there is no Monetary Employment Benefit.

For women who have not completed a secondary education it is assumed that they have a double disadvantage in the labor market. Because they have not completed secondary school, they cannot compete for high wages; and because they are women, they will receive discrimination in the labor market. Therefore, the discount rate for women who have not completed secondary education is severe. And because the discount rate is very high, the Monetary Employment Benefit is very high.

For men that have not completed a secondary education it is assumed that they will have a disadvantage in the labor market. Because they have not completed secondary school, they cannot compete for high wages. Therefore, the discount rate for men who have not completed a secondary education is high. And because the discount rate is high, the Monetary Employment Benefit is high.

## Tonnes Diverted from the Landfill

### Complex Definition

The Tonnes Diverted from the Landfill is calculated in a simple way. The organization is able to measure the total tonnes of waste that the organization collects. The organization is then able to calculate the total tonnes of waste that is sent to the landfill in the final disposal stage. The difference between the total tonnes collected and the total tonnes disposed is the total tonnes diverted.

Or, put in the form of an equation, this concept can be expressed like this:

$$\begin{aligned} & \textit{Total Tonnes Collected} - \textit{Total Tonnes Disposed} \\ & = \textit{Total Tonnes Diverted from the Landfill} \end{aligned}$$

## Total Monetary Benefit of Tonnes Diverted from the Landfill

### Complex Definition

The total Monetary Benefit of Tonnes Diverted from the Landfill is calculated using the Tonnes Diverted from the Landfill. This tonnage is then multiplied by the “tipping fee” charged by environmentally sound country. A “tipping fee” is the amount per tonne that a landfill charges to dispose of waste.

The “tipping fee” from an environmentally sound country is used because it captures the total costs of waste disposal. The total costs of waste disposal include the cost of the land used, the cost of lining the landfill to prevent leakage, the cost of labor needed to manage the waste and the cost of covering the landfill when it is full. Additionally, an environmentally sound country requires that these costs be projected into the future to

make sure that funds are available to manage the landfill after it has stopped accepting more waste.

This price is often different from environmentally sound and non-environmentally sound landfills because the non-environmentally sound landfills cut costs through not performing everything that is needed to properly manage waste.

Therefore, the Total Monetary Benefit of Tonnes Diverted from the Landfill captures the total benefit to society, or the total money saved for the local government if it were to dispose of waste in an environmentally sound way.

As an equation, this concept can be thought of in this way:

$$\begin{aligned} & \textit{Total Tonnes Diverted from the Landfill} \\ & \times \textit{Environmentally Sound Tipping Fee} \\ & = \textit{Total Monetary Benefit of Tonnes Diverted from the Landfill} \end{aligned}$$

## Total Monetary Benefit of Tonnes Kept Off the Streets

### Complex Definition

The Total Monetary Benefit of Tonnes Kept Off of the Street is calculated by estimating the cost to the city government, if all waste was collected in the formal sector. This cost is then subtracted by all of the service fees that the organization collects. The difference represents all of the waste that the organization collects without of service fee, or below the actual cost of collection.

As an equation, this can be written like this:

$$\begin{aligned} & \textit{Cost to the Government to collect all of the waste in the city} \\ & \quad - \textit{service fees collected by the organization} \\ & = \textit{Total Monetary Benefit of Tonnes Kept Off the Streets} \end{aligned}$$

The Total Monetary Benefit of Tonnes Kept Off the Streets is considered a social benefit. If the government were to collect all the waste through the formal sector, the service would be paid for with taxes; and taxes are a social cost. Therefore, the organization performing services that the government would have to pay for through taxes is a social benefit.

# Step-by-Step Guide to WMAT

## Section 5.0: Additional Concepts

## 5.1: How to Use Excel

The Waste Management Analysis Tool (WMAT) uses the Microsoft Excel program to perform its analysis. This software becomes easier to use after understanding a few basic functions. The designers of the WMAT have simplified the program so that the user is asked only to input numbers into specific cells.

A short navigation tutorial is provided here. If the user has any questions that are not answered in this tutorial, please use Excel's built-in HELP function.

### **The HELP Function**

Excel has an extensive HELP function built into the software. Alternatively, the HELP function can be accessed by clicking on the 'question mark' icon in the upper right of the Excel screen.

### **Workbook**

A workbook refers to an entire Excel document. A workbook is sub-divided into tabs, and each tab contains many cells (see below).

### **Cells**

Excel is organized around cells. A cell refers to the boxes that are in the Excel window. In the WMAT, either numbers or words can be entered into cells. The WMAT is programmed to place these numbers and words into equations for analysis. The user will NOT be asked to enter any equations.

In the WMAT, a few cells are "unlocked", but most of the cells are "locked". A locked cell cannot be used. Locked cells provide data that has been processed. Next to each locked cell will be a label, indicating what the data means.

### **Rows and Columns**

Excel organizes all cells into rows and columns. Rows are all cells linked horizontally, and are labeled by numbers. Columns are vertically linked cells, and are labeled with letters.

The labels for each row can be found on the left side of the Excel screen. The labels for each column can be found on the top of the Excel screen, just below the menu bar.

Therefore, every cell can be named by its row and column. For example, if the WMAT asks data to be entered into "Cell 3A", it is referring to the cell in the third row (row 3) and the first column (column A).

### **Navigating Rows and Columns**

A workbook contains more rows and columns than can be displayed on the screen at one time. Navigating rows and columns is just like navigating a website. The scroll bar is used to move vertically and horizontally within the tab.

The vertical scroll bar (up and down) is found on the left-side of the screen. The horizontal scroll bar (left and right) is found on the bottom-right side of the screen.

## **Tabs**

Each sub-section of the workbook is referred to as a tab. The bottom-left of the screen contains the buttons for switching between tabs. By clicking on the tab button, it is possible to navigate between sections of the workbook.

## **Entering Data into Excel**

Entering data into Excel is simple, but it is important that you follow the correct steps.

- 1 – Click on the cell that you wish to enter data. A black border will highlight the cell that you will enter data in. Also, the cell's name (for example, G11) will be displayed in the "Name Box" on the top-left of the screen.
- 2 – Enter numbers or names into the cell. The numbers or names you enter will appear in the cell itself. If the numbers or the names are too long to be displayed in the cell, this will still work. The cell will keep the data anyway.
- 3 – Press enter. When you have finished entering the data, press enter to exit the cell. It is important to exit the cell before you attempt to click on another cell.

## **Hyperlinks**

The method of navigating through the WMAT Excel Workbook is through hyperlinks. Hyperlinks are cells that have a built in link to another cell. Clicking on a hyperlink will automatically send the WMAT Excel Workbook to another section. The hyperlink will be labeled with the name of the section that the WMAT Excel Workbook will move to, when clicked.

## **Error Messages**

Many of the "locked" cells in the WMAT are connected to "unlocked" cells. And the way that these cells are connected is through equations. If an error message appears in a "locked" cell, it is because one of the "unlocked" cells contains information that the computer cannot process.

### **#DIV/o!**

For example, a cell that has the error message #DIV/o! is trying to perform an equation that is not mathematically possible. In this case, the computer is being told to divide a number by zero. There are two likely causes for this error message. First, the data may not have been correctly entered into the computer. An "unlocked" cell that was supposed to contain information was left blank. Second, a zero may have been entered into an "unlocked" cell where it shouldn't be.

#####

If a cell fills with pound signs - ##### - then there is an error. This error occurs when the cell contains more numbers than is able to be displayed. To fix this error simply make the column of that cell wider. Once it is wide enough, the error message will disappear and the numbers will be displayed.



## 5.2: Tipping Fees

### Basic Definition

The “tipping fee” is the price that landfills charge for each tonne of garbage that is brought to dump. Tipping fees are different in every country, and may even be different for different landfills within the same country.

There are a variety of costs that influence a tipping fee. These costs include:

- Labor costs for treating and maintaining the waste
- The costs of land
- The cost of lining the landfill to prevent leakage
- Local and international regulations for proper waste management

### Tipping Fee as a Measure of Social Cost of Waste Disposal

The tipping fee is a good measure for the costs to environment and society of waste disposal. Many of the costs listed above are not just costs to the owner of the landfill. For example, the land used for the landfill cannot be used by anyone else, and is therefore a cost to society is lost land. Also, the cost of lining a landfill to prevent leakage is the cost of keeping people who live next to the landfill from getting sick. However, only landfills that treat waste in an environmentally sound way have useful tipping fees for estimating social costs.

Landfills that do not treat waste in an environmentally sound way do not take into account the full costs to society for waste management. This is because they are cutting corners somewhere, and making other parts of society pay the costs. For example, a landfill that does not install lining to prevent leakage is lowering their private cost, but the leakage from the landfill will make neighboring residents sick and that is a cost to society paid by someone else. Or, another example, landfills that do not plan to continue treating the waste after the landfill is full is not paying for future costs to society. Local and international regulations should require landfills to operate in an environmentally sound way, but often they are not enforced.

Another reason that tipping fees might not capture the total cost to society is subsidies. Landfills that have a subsidy have a lower tipping fee. Because the government subsidizes the landfill costs, the lower tipping fee does not fully capture the total costs to society. Subsidies are a way for governments to lower the tipping fees to encourage more waste collection. By lowering the cost with a subsidy, the government takes on some of society’s costs for waste management. And when a government takes on some of the costs of waste management, the tipping fee no longer reflects the total costs to society.

## Tipping Fee as Used in the Waste Management Analysis Tool (WMAT)

The Waste Management Analysis Tool (WMAT) asks for a tipping fee to calculate the Total Monetary Benefit of Waste Diverted from the Landfill.

Please see the Interpreting The Results section on page 77 for an explanation of this social measure.

Because the tipping fee entered into the WMAT calculates the total cost of waste disposal to society, there are a variety of tipping fees that may be entered. Each of these tipping fees has advantages and disadvantages. These advantages and disadvantages should be considered when using the WMAT Notebook and WMAT Excel Workbook.

Tipping Fee	Source	Advantages and Disadvantages
??	Local Landfill	<p>Advantage:</p> <ul style="list-style-type: none"> <li>States the tipping fee in known local costs</li> </ul> <p>Disadvantages:</p> <ul style="list-style-type: none"> <li>The local tipping fee may not be known or difficult to acquire</li> <li>The local landfill may be subsidized</li> <li>The local landfill may not dispose of waste in an environmentally sound way</li> </ul>
\$120	Germany	<p>Advantage:</p> <ul style="list-style-type: none"> <li>Landfills dispose of waste in an environmentally sound way</li> <li>Accounts for the total costs to society of waste disposal</li> </ul> <p>Disadvantages:</p> <ul style="list-style-type: none"> <li>Accounts for high European Union (EU) labor costs</li> <li>Accounts for high costs of land</li> </ul>
\$60	United States of America	<p>Advantage:</p> <ul style="list-style-type: none"> <li>Landfills dispose of waste in an environmentally sound way</li> <li>Accounts for the total costs to society of waste disposal</li> </ul> <p>Disadvantages:</p> <ul style="list-style-type: none"> <li>Accounts for high United States (US) labor costs</li> <li>Accounts for low costs of land</li> </ul>

## 5.3: Worker Education Levels

### 5.3.1: Labor: Completed Secondary School (CSS) and Less than Secondary School (LSS)

The Waste Management Analysis Tool (WMAT) asks for the education level of waste collectors to evaluate how competitive the workers are on the open labor market. The workers ability to compete on the open labor market is an important to calculating the **Total Monetary Benefit from Employment**.

#### Completed Secondary School (CSS)

The term secondary school has many meanings around the world. Children usually transfer to secondary school between the ages of 10 and 16 years, and finish between the ages of 16 and 18 years, though there is considerable variation from country to country.

The WMAT refers to secondary school any schooling that is between elementary school (primary school) and a university education. A worker can be classified as “Completed Secondary School” (CSS), if that worker has graduated from High School, vocational training or has received any University education (even if incomplete).

#### Less than Secondary School (LSS)

A worker can be classified as “Less than Secondary School,” if they have not yet graduated from High school or vocational training. If a worker’s education stopped at the Elementary school or the worker only partially completed secondary school, then they should be considered LSS.

#### Total Monetary Benefit from Employment

This is Social Cost Benefit Analysis indicator that is useful in negotiations with outside organizations. A basic definition of the indicator can be found on page 90; and an explanation of how CSS and LSS are used in calculation can be found on page 90.

## 5.4: Capital Expenditure

A capital expenditure is an item purchased by the organization that is durable over many years and has a significant cost.

An item is durable over many years if it can be used for more than one year, and its usability does not decline significantly.

An item has a significant cost if the organization has to plan ahead or move funds away from another project to purchase the item.

Here are some examples of common Capital Expenditures for waste collector organizations, and explanations for why they fit the category. Waste collector organizations will have many more Capital Expenditure than are listed here. These are just examples to help with the definition.

---

### **Truck**

- A truck is durable over many years because trucks can be used for 10-15 years; and the cost of repairs is much smaller than the initial purchase price.
- A truck is a significant cost because they are much more expensive than other items waste collectors purchase.

### **Aluminum Can Grinding Machine**

- An aluminum can grinding machine is durable over many years; and the cost of repairs is much smaller than the initial purchase price.
- An aluminum can grinding machine is a significant cost because they are more expensive than other items waste collectors purchase.

Here are some examples of things that are NOT Capital Expenditures and explanations for why they do NOT fit the category.

---

### **Brooms**

- Brooms are durable and may be used for many years;
- But brooms are NOT a significant purchase because they can be purchased when they break without planning ahead.

### **Waste Collection Barrels**

- Waste barrels may be used for many years;
- But waste barrels are NOT a significant purchase because they without planning ahead.

# Glossary of Terms and Concepts

# Glossary of Terms and Concepts

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Welcome to the Glossary of Terms and Concepts. This section is intended as a reference guide to the fundamental concepts underpinning the Private Profitability Analysis (PPA) and Social Cost-Benefit Analysis (SCBA).

## Benefit

A benefit is a positive output of a project or organization. Benefits can take two forms: *direct benefits* are revenues accrued from sales, and *indirect benefits* are those that are not accounted for in the financial sense. Direct benefits are relevant to the Private Profitability Analysis (PPA), because the PPA is strictly a measure of financial viability. Indirect benefits, such as the gains to society and the environment of recycling plastic bottles instead of putting them in a landfill, are accounted for in the Social Cost-Benefit Analysis (SCBA).

---

## Benefit-Cost Ratio (BCR)<sup>10</sup>

The Benefit-Cost Ratio (BCR) is used to determine whether a project will be sustainable in the future. The BCR reflects the ratio of *present value of benefits* (PVB) in proportion to the *present value of costs* (PVC). The equation for calculating BCR is as follows:

$$\text{PVB} / \text{PVC} = \text{BCR}$$

A profitable project will have a BCR value that is greater than 1, meaning benefits outweigh costs. If BCR is between 0 and 1, benefits are still gained, but these benefits are outweighed by costs—meaning losses are greater than profits.

The Benefit-Cost Ratio, together with Net Present Value and Internal Rate of Return, is one of the primary measures of project viability. Once the WMAT has calculated these values, the Interpreting The Results section will help you make sense of what this means for your organization.

---

## Capital

The term *capital* is often used in different ways, depending on the context in which it is used. For the purpose of the WMAT, capital is defined as a valuable physical asset, such as machinery, tools and equipment, or vehicles. Capital constitutes a resource that can be converted into cash if necessary; thus, accurately estimating what capital is worth in real economic terms is vital to performing a useful Private Profitability Analysis (PPA).

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<sup>10</sup> Wang, X. (2006). *Financial Management in the Public Sector*. Armonk, N.Y.: M.E. Sharpe

*Working capital* is subcategory of capital that often comprises an organization's most valuable assets. Similarly, a *capital expenditure* is a cost related to an organization's capital holdings.

---

## Capital Expenditure

Any costs that are incurred for the purchase of, the maintenance of, or the replacement of a capital asset are considered capital expenditures.

---

## Cost

A cost is the resource surrendered in order to produce a good or service. A cost can include resources such as time and labor, in addition to financial resources (i.e. money).

---

## Discounting<sup>11</sup>

Discounting refers to the procedure (using the *discount rate*) that allows resource flows (e.g. costs and revenues) to be compared over time. Discounting is important to deciding whether a project is worthwhile because it estimates the possible revenue that could be made in the future. For example, a \$100 investment made today (e.g. purchasing a new piece of machinery) will not be worth \$100 in five years. Similarly, the resale price of this machine five years from now then would not be comparable to today's price, because the money received will be worth less in the future. For example, just think about how something you can buy at the market today probably would not have cost the same amount 20 years ago. The act of discounting allows resources to be compared over time by expressing future costs and benefits in today's terms.

---

## Discount Rate

The discount rate is the weight applied in the discounting process indicating the rate at which benefits lose value over time.

---

## General Discount Factor

The formula for the General Discount Factor relies on an established discount rate. This rate will depend on both the interest being paid on loans for the project and the inflation rate. Obviously, the inflation rate fluctuates over time, so it is up to the user to give their best guess as to what the inflation rate will be in the future. The formula is as follows:

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<sup>11</sup> Curry, S. & Weiss, J.J. (1993). Project Analysis in Developing Countries. New York, N.Y.: St. Martin's Press.

$$\text{General Discount Factor} = 1/(1 + r)^t$$

Where:

r = discount rate

t = number of years over which discounting occurs

The General Discount Factor can then be applied to the Present Value (PV) of your investment or cost, and it will generate the Future Value (FV) at a given year. The formula is as follows:

$$FV = PV \times \text{GeneralDiscountFactor}$$

Or, the same equation, after a bit of algebra, can be written as this:

$$PF = FV_t / (1 + r)^t$$

The following table shows these formulas in action. This table refers to a hypothetical project where a \$100 piece of machinery was purchased in 2010. The table then shows two different scenarios: one where the discount rate is 10% and the other where the discount rate is 8%.

<b>Discounted Cost for Purchase of a \$100 Machine in 2010</b>						
Year	2010	2011	2012	2013	2014	2015
Net Cost in 2010	\$100	\$100	\$100	\$100	\$100	\$100
Discount Factor at 10%	1	0.91	0.83	0.75	0.68	0.62
Discounted Cost	\$100	\$90.91	\$82.64	\$75.13	\$68.30	\$62.09
Discount Factor at 8%	1	0.93	0.86	0.79	0.74	0.68
Discounted Coast	\$100	\$92.59	\$85.73	\$79.38	\$73.50	\$68.06

## Inventory

See Working Capital.

## Net Present Value (NPV)

When making financial projections into the future, the values of these costs and benefits are likely to be different than the values they hold today. In order to more accurately predict future costs and benefits, they must be converted into current terms. This Net Present Value (NPV) is used to determine whether a project will be financially sustainable in the future by comparing benefits to costs. The following guidelines are used to determine whether a project is financially practical:



- If NPV is greater than 0, the project is profitable and is worth implementing.
- If NPV is equal to 0, the project “breaks even,” meaning costs are equal to benefits, with no resulting profits or losses.
- If NPV is less than 0, the project’s costs are greater than its benefits, and proceeding with the project would result in financial losses.

NPV is correlated to the use of discount rates. When the discount rate is adjusted, the NPV value will also change—when the discount rate increases, the NPV will decrease.

Net Present Value, together with the concepts of Benefit-Cost Ratio and Internal Rate of Return, is one of the primary measures of project viability. Once the WMAT has calculated these values, the Interpreting The Results section will help you make sense of what this means for your organization.

---

## Net Resource Flow

A resource flow is the breakdown of revenues and expenses for an organization during a specific period of time (usually a year). The WMAT PPA shows net resource flow of an organization by comparing expenses to revenues and capital holdings in order to produce a financial picture of the organization.

---

## Private Profitability Analysis (PPA)

Private Profitability Analysis (PPA) is the simplest and most common form of cost-benefit analysis because it analyzes a project from the viewpoint of the producer (owner).

The overall purpose of a PPA is to determine the opportunity cost of undertaking a project: or, put another way, the PPA helps to determine if the future gains of the project outweigh the initial investments. If the future gains (benefits) are greater than the initial investments (costs), the opportunity cost is said to be low; and therefore the project should be undertaken. If the reverse is true, then the project should be avoided.

There are significant limits to this type of analysis. Most importantly, a PPA does not take into account who does and does not receive the benefits. It is assumed that everyone involved in the project, and many people only loosely associated with the project, will benefit equally.

---

## Rate of Change

The WMAT PPA uses the Rate of Change in the Scenario Planning model to reflect how expenses and revenues will respond to these changes.

The rate of change is the percentage of change to a cost or revenue from one year to the next. For example, if the organization currently pays \$150 per year for electricity, and it expects that the rate of change for next year will be 10%, then the organization can expect to pay \$170 for electricity next year.

If rate of change is a positive number (5%), then the cost or revenue is increasing.

If rate of change is a negative number (-5%), then the cost or revenue is decreasing.

Rate of change always indicates a change from the year directly before.

---

## Scenario

A scenario is any set of assumptions about how the business environment will change in the future. Only one scenario may be entered into the WMAT at one time. But the Scenario Modeling section allows for as many scenarios to be entered one after another.

It is suggested that many scenarios be entered into the WMAT; and that the scenarios be updated from time to time with new information about the business environment.

Entering many scenarios will show how sensitive the organization is to rates of change on different items.

---

## Shadow Price

Market prices often do not account for the greater impact of goods and services. For example, it could be argued that the price for petroleum severely undervalues the social costs involved in procuring, process, and using petroleum products such as gasoline, because environmental considerations are not built into the price consumers pay for this product. Shadow prices are applied in Social Cost-Benefit Analysis to reflect social costs not accounted for in a Private Profitability Analysis. The concept of a shadow price is closely related to opportunity cost in that it assigns economic value to something that is often considered valuable to third parties who are not concern with an organization's profitability.

---

## Social Cost-Benefit Analysis (SCBA)

Costs and benefits can be valued in more than just the financial sense. Whereas a Private Profitability Analysis (PPA) measures the economic values of costs and benefits, a project cost can be felt by society at large even though it does not result in a financial loss.

A Social Cost-Benefit Analysis considers the impact of a project by accounting for both costs and benefits to society as a whole over time, to determine whether such a project is socially sustainable. The goal of an SCBA is to weigh the social costs of your project against the social benefits that would be gained through its operation, in order to evaluate the real value of the project to all stakeholders.

---

## Variable Expenditures

A Variable Expenditure is a cost that changes along with changes in the amount of work the organization does. For example, gasoline usage is a variable expenditure that depends on how much the organization uses trucks.

If the cost does not change depending on the amount of work the organization does, then it is not a Variable Expenditure. For example, the cost of rent on a building is not a variable expenditure because it stays the same whether or not the organization is using all or only part of the building.

---

## Variable Revenues

A Variable Revenue is revenue that changes along with the changes in the amount of work the organization does. For example, the revenue from glass bottles sold to a junk shop is variable revenue; because if more bottles are collected, then more bottles will be sold.

---

## Working Capital

Materials that are used to in the process of waste management are considered working capital. These physical stocks are necessary to keep on hand to ensure continuous production; this is also commonly known as inventory. There are three types of working capital: raw materials, semi-finished goods and finished goods.

In the context of waste management, raw materials include the unprocessed waste collected and in stock, in addition to the materials purchased for use in the processing stage (such as detergents, chemicals, and dissolvents). Semi-finished goods are materials that have been partially processed, but must undergo further processing before they considered finished goods. Finally, finished goods have completed all stages of processing and are thus considered saleable. Inventory of each of these materials should be kept on hand in the event of a resource shortage or any other unforeseen circumstance, so that operations can continue.

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## References and Further Information

# References and Further Information

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# WAM Notebook: Basic Model

## Section 1: Revenue

1) List the items the organization produces:

Item #1	
Item #2	
Item #3	
Item #4	
Item #5	
Item #6	
Item #7	
Item #8	
Item #9	
Item #10	

2) What is the average selling price per unit of each item?

	Name of Product Sold	Price per unit sold	Average Units sold per week	Average Weeks Selling per year
#1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				

3) List any revenue earned from services provided:

	Services Provided	Unit	Fee per unit	Units Serviced per week	Average weeks serviced per year
#1	Waste Collection -- Street	per km			
#2	Waste Collection -- Household	per HH			
#3	Waste Collection -- Building	per building			
#4	Janitorial	per building			
#5	Construction Salvaging	per building			
#6					
#7					
#8					
#9					
#10					



4) List any grants or contributions received:

Grants or contributions are any sources of income received which do not need to be repaid.

	Grants or Contributions	Amount
#1	Membership Fees	
#2		
#3		
#4		
#5		
#6		
#7		
#8		
#9		
#10		

## Section 2: Current Expenditures

5) List the raw materials purchased per week

	Materials Purchased	Average Price per Tonne	Tonnes per Week	Weeks per per Year
#1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				

6) What types of workers are employed by the organization?

CSS = Completed Secondary School Education  
 LSE = Less than Secondary School Education

"Type of worker" refers specifically to the gender and education of the people working in the organization. For a detailed explanation of what this means, please refer page 105 in the WMAT Manual.

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			

- 7) How many days on average does a person work per week?
- 8) How many weeks per year does a person work?
- 9) How much does one person earn in one day?
- 10) How many tonnes of material are collected per week?
- 11) How many tonnes are sent to Final Disposal per week ?
- 12) What is the "tipping fee" per tonne at the landfill?

For an explanation of Tipping Fees, please see page 103 of the WMAT Manual.

For an explanation of environmental benefits, please see the Social Cost-Benefit Indicators section of "Interpreting Your Results", on page 87.

### Section 3: Capital Equipment Expenditures

13) In the table below, please list the capital equipment owned by the organization. List the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

For an explanation of what a capital expenditure is, please see page 109 in WMAT Manual.

	Name of Item	Year of Purchase	Purchase Price	Years Before Replacement
Item #1				
Item #2				
Item #3				
Item #4				
Item #5				
Item #6				
Item #7				
Item #8				
Item #9				
Item #10				

# Section 4: Past Expenditures

In the tables below, record the cost for each category over the last year.  
The organization may have zero expenses in some categories.

### FIXED EXPENSES:

Rent	
Phones	
Taxes	
Maintenance	
Supplies	
Loan Payments	
Training	
Accountant	
Scholarships	
Other	

For an explanation of the difference between fixed expenditures and variable expenditures, please see the Glossary entry for the term "Expenditures" on page 113.

### VARIABLE EXPENSES:

Payments to Workers	
Health Care Subsidies	
Housing Subsidies	
Fuel	
Access Fees	
Water	
Electricity	
Dumpsite and Incineration Fee	

Finished with data entry for the Basic Model

# WMAT Notebook: Detailed Model

## ADMINISTRATION

### Number of Workers

1) How many of each type of worker are employed in the Administration Unit?

CSS = Completed Secondary School  
LSE = Less than Secondary School Education

	CSS	LSE	Total
Women			
Men			
Total			

For an explanation of the Administration Stage, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to page 105.

### Wages, Salaries and Other Benefits

2) How many workers earn a daily wage?

2A) What is the wage paid per day?

2B) Average Number of Work Days per Week?

2) How many weeks worked per year?

3) How many workers earn a yearly salary?

3A) What is the average yearly salary?

4) How many people in Administration receive a health care subsidy?

4A) What is the cost of a health care subsidy per worker for one year?

5) How many people in Administration receive a housing subsidy?

5A) What is the cost of a housing subsidy per worker for one year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care **subsidy**.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

# Capital Equipment Expenditures

For an explanation of what a capital expenditure is, please see page 106 in the W/MAT Manual.

6) In the table below, please list the capital equipment used by Administration AND equipment that is shared among other stages (Collection and Recovery, Processing, Final Disposal)

List the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Past Expenditures

7) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

### FIXED EXPENSES:

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Accountant				
Scholarships				
Loan Payments				
Training				
Other				

### VARIABLE EXPENSES:

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Labor Payments				
Health Care Subsidy				
Housing Subsidies				
Fuel				
Permits				
Water				
Electricity				

### REVENUE

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Grants and Contributions				

# Waste Collection Services

## Number of Workers

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

1) How many of each type of worker are paid per tonne of material collected?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

1A) How much are workers paid per tonne of material collected?

2) How many of each type of worker are paid per day worked?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

2A) If workers are paid per day worked, how much is the daily wage?

3) If you offer subsidized health care, what is the cost per year?

3A) What is the cost of a health care subsidy per worker for one year?

4) How many workers receive a housing subsidy?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

# REVENUE

**If your organization is paid per kilometer of street cleaned,**

5A) What price is paid per kilometer?

5B) On an typical day, how many kilometers are served?

5C) On an typical day, how many tonnes of material are collected?

5D) How many DAYS PER WEEK does the organization provide collection services?

5E) How many WEEKS PER YEAR does the organization provide this service?

**6) Is your organization paid per household?**

If Yes, answer the following questions, If no, continue to Question 7:

6A) What price are you paid per household?

6B) On the typical day, how many households are served?

6C) On a typical day, how many tonnes of material are collected?

6D) How many DAYS PER WEEK does your organization provide collection services?

6E) How many WEEKS PER YEAR does your organization provide this service?

**7) Is your organization paid per building?**

If Yes, answer the following questions, If no, continue to Question 8:

7A) What price are you paid per building?

7B) On the average day, how many buildings are served?

7C) On a typical day, how many tonnes of material are collected?

7D) How many DAYS PER WEEK does your organization provide collection services?

7E) How many WEEKS PER YEAR does your organization provide this service?

## Sale of Materials

8) Does the organization sell the materials collected as "mixed materials" to an external business?

If no, continue to Question 9.

If yes, what price do you receive per tonne of "mixed materials"?

8A) On a typical day, how many tonnes of "mixed materials" are sold to an external business?

9) Does the organization keep the collected materials for use by another unit?

If no, continue to Question 10.

If yes, on a typical day, how many tonnes of "mixed materials" are passed on to another unit?

10) Does the organization discard any materials that are not valuable or useful?

If no, continue to Question 11.

If yes, on a typical day, how many tonnes of material are discarded for final disposal?

## Capital Equipment Expenditures

For an explanation of what a capital expenditure is, please see page 106.

11) In the table below, please list the capital equipment used by the Waste Collection Services Unit.

Only list capital equipment used only by this unit.

If equipment is shared by more than one unit, list the shared equipment in the Administration tab.

List the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced



# Past Expenditures and Past Revenue

12) In the tables below, record how much was spent in each category. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	Two Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	Two Years Ago	Two Years Ago	One Year Ago	Current Year
Payments to Workers				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>	Two Years Ago	Two Years Ago	One Year Ago	Current Year
External Sales				
Internal Sales				
Service Contract Fees				
Grants and Contributions				

# Waste Recovery

1) In a typical day, how many tonnes of material are recovered by all collectors?

2) How many days a week does the organization do this type of work?

3) How many weeks a year does the organization do this type of work?

This question accounts for all types of materials that are collected, regardless of whether they are sorted. For a detailed explanation of this Unit, please see the Step-By-Step Guide to WMAT on page 26.

## Payments to Workers and Other Benefits

4) How many of each type of worker are paid per tonne of material recovered?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>
<b>Men</b>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>
<b>Total</b>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>	<input style="width: 100%; height: 100%; border: 1px solid #c00000;" type="text"/>

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

5) How much are workers paid per one tonne of material collected?

6) How many workers receive a health care subsidy?

6A) What is the cost of a health care subsidy per worker for one year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

7) How many workers receive a housing subsidy?

7A) What is the cost of a housing subsidy for one person?

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

# Sale of Materials

Mixed materials are collected waste items that have not been sorted into specific categories of materials.

8) Does the organization sell the materials collected as "mixed materials" to an external organization?

8A) If yes, what price does the organization receive per tonne of "mixed materials"?

8B) On a typical day, how many tonnes of "mixed materials" are sold to an external business?

9) Does the organization keep the materials collected for use by another Unit?

9A) If yes, on a typical day, how many tonnes of "mixed materials" is passed onto to another unit?

10) Does the organization discard any materials that are not valuable or useful?

10A) If yes, on a typical day, how many tonnes of material are discarded for final disposal?

# Capital Equipment Expenditures

For an explanation of what a capital expenditure is, please see page 106.

11) In the table below, please list the capital equipment used by the Waste Recovery Unit. If you have equipment that is shared by more than one unit, list the shared equipment in the Administration tab.

List the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Past Expenditures and Past Revenue

11) In the tables below, record how much was spent in each category. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Payments to Workers				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

**REVENUE:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
External Sales				
Internal Sales				
Grants and Contributions				

# Sorting and Separating

## Labor

1) How many of each type of worker are employed in the sorting and separating unit?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) How many days on average does each person work per week?

3) How many weeks a year does the typical person work?

4) How many of the workers are paid per tonne of material sorted?

4A) How much are workers paid per tonne sorted?

4B) How many tonnes of material can one person sort on a typical day?

5) How many workers earn a daily wage for compensation?

5A) What is the average daily wage per worker?

6) How many workers in this unit receive a health care subsidy?

6A) What is the cost of a health care subsidy per worker for one year?

7) How many workers receive a housing subsidy?

7A) What is the cost of a housing subsidy per worker for one year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

# Inputs of Sorting and Separating

Materials received from Collection Units on a typical day:

	Tonnes	Price	Cost
Waste Collection Services =			
Recovery =			

8) Enter average number of tonnes of "mixed materials" purchased from external collectors PER WEEK.

8B) Enter the price per tonne paid for raw materials purchased from external collectors

## Outputs of Sorting and Separating

9) Enter the tonnes of materials sorted per week.

The 12 most common sorted materials are already named. Change as needed.

Name of Material	Tonnes Sorted per Week
White paper	
Newspaper	
Mixed paper	
Cardboard	
Glass	
Tin cans	
Aluminium cans	
Steel cans	
PET plastic	
HDPE plastic	
LDPE plastic	
Organic waste	

# Capital Expenditures of the Sorting Unit

For an explanation of what a capital expenditure is, please see page 106.

10) In the table below, please list the capital equipment used by the Sorting Unit. If you have equipment that is shared by more than one unit, list the shared equipment in Administration section.

List the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Working Capital

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

11) How many days does it take the Sorting Unit to turn a day's worth of collected mixed materials into separated materials for sale?

12) If operations ended today, how many days worth of finished goods would you have in storage?





# Past Expenditures and Past Revenue

15) In the tables below, record how much was spent in each category. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Payments to Workers				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

**REVENUE**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
External Sales				
Internal Sales				
Grants and Contributions				

# Recycling

## Number of Workers

1) How many of each type of worker are employed in the Recycling Unit?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

## Payments to Workers and Other Benefits

2) How many days on average does each person work per week?

3) How many weeks worked per year?

4) How many of the workers are paid per output?

4A) How much are workers paid per piece of output created?

4B) How much output does a typical worker produce per day?

5) How many workers earn a daily wage?

5A) What is the average daily wage per worker?

6) How many workers in the Recycling Unit receive a health care subsidy?

6A) What is the cost of a health care subsidy per worker for one year?

7) How many workers receive a housing subsidy?

7A) What is the cost of a housing subsidy per worker for one year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of the Recycling Unit

For an explanation of what a capital expenditure is, please see page 106.

10) In the table below, please list the capital equipment used by the Recycling Unit. If you have equipment that is shared by more than one unit, list the shared equipment in the table at the top of the processing tab.

List the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item Is Replaced

## Revenue

11) List the items that the Recycling Unit produces. What is the average selling price per tonne of each item?

Name of Product Sold	Average Tonnes Recycled per Week	Average Price per Tonne Sold	Weekly Revenue	Yearly Revenue

# Working Capital

12) How many days does it take the Recycling Unit to turn raw materials into a finished good for sale?

13) If operations ended today, how many days worth of finished goods would you have in storage?

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

# Minor Expenditures and Past Revenue

14) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Total Payments to Workers				
Raw Materials				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

**REVENUE**

Name of Product	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Grants & Contributions				

# Production

## Number of Workers

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

1) How many of each type of worker are employed in Production Unit?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
Women			
Men			
Total			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

## Payments to Workers and Other Benefits

2) How many days on average does each person work per week?

3) How many weeks a year does the typical person work?

4) How many workers are paid per piece of output?

4A) How much money are workers paid per output?

4B) How many units on average does each worker create per day?

5) How many workers earn a daily wage for compensation?

5A) What is the average daily wage per worker?

6) How many workers in the Production Unit receive a health care subsidy?

6A) What is the cost of a health care subsidy per worker for one year?

7) How many workers receive a housing subsidy?

7A) What is the cost of a health care subsidy per worker for one year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of the Production Unit

For an explanation of what a capital expenditure is, please see page 106.

10) In the table below, please list the capital equipment used by the Production Unit. If equipment is shared by more than one unit, list the shared equipment in the Administration Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

## Revenue

11) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Made Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

## Working Capital

12) How many days does it take the Production Unit to turn raw materials into a finished good for sale?

13) If operations ended today, how many days worth of finished goods would you have in storage?



# Minor Expenditures and Past Revenue

14) In the tables below, record how much you spent in each category for the years listed. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Total Payments to Workers				
Raw Materials				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

**REVENUE:**

Name of Product	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Grants & Contributions				

# Composting

## Number of Workers

1) How many of each type of worker are employed in Composting?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 24.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

## Payments to Workers and Other Benefits

4) How many of the workers are paid by output produced?

5) How much money are workers paid per piece of output created?

6) How many units of output on average does worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in Composting Unit receive health care subsidy?

10) What is the cost of a health care subsidy per worker for one year?

11) How many workers receive a housing subsidy?

12) What is the cost of a housing subsidy per worker for one year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of the composting Unit

14) In the table below, please list only the capital equipment used by the Composting Unit. If you have equipment that is shared by more than one unit, list the shared equipment in the Administration Unit.

For an explanation of what a capital expenditure is, please see page 105.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Revenue

15) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Made Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

# Working Capital

16) How many days does it take the Composting Unit to turn raw materials into a finished good for sale?

17) If operations ended today, how many days worth of finished goods would you have in storage?

# Minor Expenditures and Past Revenue

18) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Total Payments to Workers				
Raw Materials				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

**REVENUE:**

Name of Product	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Grants & Contributions				

# Processing Unit 5:

## Number of Workers

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

1) How many of each type of worker are employed in this processing unit?

CSS = Completed Secondary School  
 LSE = Less than Secondary School Education

	CSS	LSE	Total
Women			
Men			
Total			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

## Payments to Workers and Other Benefits

4) How many workers are paid per piece of output?

5) How much are workers paid per unit output?

6) How many units of output does a worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in this unit receive a health care subsidy?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

10) How much does a health care subsidy cost per year per worker?

11) How many workers receive a housing subsidy?

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

12) How much does a housing subsidy cost per year per worker?



## Capital Expenditures of this unit

For an explanation of what a capital expenditure is, please see page 106.

15) In the table below, please list the capital equipment used only by this unit. If you have equipment that is shared by more than one unit, list the shared equipment in the Administration Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

## Revenue

16) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Made Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

## Working Capital

17) How many days does it take this unit to turn raw materials into a finished good for sale?

18) If operations ended today, how many days worth of finished goods would you have in storage?



# Minor Expenditures and Past Revenue

19) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Total Payments to Workers				
Raw Materials				
Health Insurance				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
<b>Name of Product</b>				
Grants & Contributions				

## Processing Unit 6:

### Number of Workers

1) How many of each type of worker are employed in this processing unit?

	CSS = Completed Secondary School	LSE = Less than Secondary School Education	
	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

### Payments to Workers and Other Benefits

4) How many workers are paid per piece of output?

5) How much are workers paid per unit output?

6) How many units of output does a worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in this unit receive a health care subsidy?

10) How much does a health care subsidy cost per year per worker?

11) How many workers receive a housing subsidy?

12) How much does a housing subsidy cost per year per worker?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



## Capital Expenditures of this unit

15) In the table below, please list the capital equipment used only by this unit. If you have equipment that is shared by more than one unit, list the shared equipment in the Administration Unit.

For an explanation of what a capital expenditure is, please see page 106.

Also list the year each item was purchased, how much the item costs, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

## Revenue

16) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Produced Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

## Working Capital

17) How many days does it take this unit to turn raw materials into a finished good for sale?

18) If operations ended today, how many days worth of finished goods would you have in storage?

# Minor Expenditures and Past Revenue

19) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
<b>Total Payments to Workers</b>				
Raw Materials				
Health Insurance				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
<b>Name of Product</b>				
Grants & Contributions				

## Processing Unit 7:

### Number of Workers

1) How many of each type of worker are employed in this processing unit?

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

### Payments to Workers and Other Benefits

4) How many workers are paid per piece of output?

5) How much are workers paid per unit output?

6) How many units of output does a worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in this unit receive a health care subsidy?

10) How much does a health care subsidy cost per year per worker?

11) How many workers receive a housing subsidy?

12) How much does a housing subsidy cost per year per worker?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of this unit

For an explanation of what a capital expenditure is, please see page 106.

15) In the table below, please list the capital equipment used only by this unit. If you have equipment that is shared by more than one unit, list the shared equipment in the table at the Administration Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Revenue

16) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Produced Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

# Working Capital

17) How many days does it take this unit to turn raw materials into a finished good for sale?

18) If operations ended today, how many days worth of finished goods would you have in storage?



# Minor Expenditures and Past Revenue

19) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Total Payments to Workers				
Raw Materials				
Health Insurance				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

**REVENUE:**

Name of Product	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Grants & Contributions				

## Processing Unit 8:

### Number of Workers

1) How many of each type of worker are employed in this processing unit?

	<b>CSS</b>	<b>LSE</b>	<b>Total</b>
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

### Payments to Workers and Other Benefits

4) How many workers are paid per piece of output?

5) How much are workers paid per unit output?

6) How many units of output does a worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in this unit receive a health care subsidy?

10) How much does a health care subsidy cost per year per worker?

11) How many workers receive a housing subsidy?

12) How much does a housing subsidy cost per year per worker?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of this Unit

For an explanation of what a capital expenditure is, please see page 106.

15) In the table below, please list the capital equipment used only by this unit. If you have equipment that is shared by more than one unit, list the shared equipment in the table at the top of the Administration Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Revenue

16) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Produced Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

# Working Capital

17) How many days does it take this unit to turn raw materials into a finished good for sale?

18) If operations ended today, how many days worth of finished goods would you have in storage?

# Minor Expenditures and Past Revenue

19) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Total Payments to Workers				
Raw Materials				
Health Insurance				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
<b>Name of Product</b>				
Grants & Contributions				

## Processing Unit 9:

### Number of Workers

1) How many of each type of worker are employed in this processing unit?

**CSS = Completed Secondary School**

**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

### Payments to Workers and Other Benefits

4) How many workers are paid per piece of output?

5) How much are workers paid per unit output?

6) How many units of output does a worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in this unit receive a healthcare subsidy?

10) How much does a health care subsidy cost per year per worker?

11) How many workers receive a housing subsidy?

12) How much does a housing subsidy cost per year per worker?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of this unit

For an explanation of what a capital expenditure is, please see page 106.

15) In the table below, please list the capital equipment used only by this unit. If you have equipment that is shared by more than one unit, list the shared equipment in the table at the top of the Administration Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Revenue

16) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Made Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

# Working Capital

17) How many days does it take this unit to turn raw materials into a finished good for sale?

18) If operations ended today, how many days worth of finished goods would you have in storage?



# Minor Expenditures and Past Revenue

19) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Total Payments to Workers				
Raw Materials				
Health Insurance				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
<b>Name of Product</b>				
Grants & Contributions				

# Processing Unit 10:

## Number of Workers

1) How many of each type of worker are employed in this processing unit?

CSS = Completed Secondary School  
LSE = Less than Secondary School Education

	CSS	LSE	Total
Women			
Men			
Total			

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 106.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

## Payments to Workers and Other Benefits

4) How many workers are paid per piece of output?

5) How much are workers paid per unit output?

6) How many units of output does a worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in this unit receive a health care subsidy?

10) How much does a health care subsidy cost per year per worker?

11) How many workers receive a housing subsidy?

12) How much does a housing subsidy cost per year per worker?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of this unit

For an explanation of what a capital expenditure is, please see page 105.

15) In the table below, please list the capital equipment used only by this unit. If you have equipment that is shared by more than one unit, list the shared equipment in the table at the top of the Administration Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Revenue

16) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Produced Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

# Working Capital

17) How many days does it take this unit to turn raw materials into a finished good for sale?

18) If operations ended today, how many days worth of finished goods would you have in storage?

# Minor Expenditures and Past Revenue

19) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Total Payments to Workers				
Raw Materials				
Health Insurance				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
<b>Name of Product</b>				
Grants & Contributions				

# Processing Unit 11:

## Number of Workers

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

1) How many of each type of worker are employed in this processing unit?

CSS = Completed Secondary School  
LSE = Less than Secondary School Education

	CSS	LSE	Total
Women			
Men			
Total			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

## Payments to Workers and Other Benefits

4) How many workers are paid per piece of output?

5) How much are workers paid per unit output?

6) How many units of output does a worker create per day?

7) How many workers are given a wage for compensation?

8) What is the average daily wage per worker?

9) How many workers in this unit receive a health care subsidy?

10) How much does a health care subsidy cost per year per worker?

11) How many workers receive a housing subsidy?

12) How much does a housing subsidy cost per year per worker?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of this unit

For an explanation of what a capital expenditure is, please see page 106.

15) In the table below, please list the capital equipment used only by this unit. If you have equipment that is shared by more than one unit, list the shared equipment in the table at the top of the Administration Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Revenue

16) How many units are produced on average per month?

Name of Product Sold	Price per item	Number of Items Made Per Week	Revenue Per Week	Revenue Per Year

Raw materials, semi-finished goods, and finished goods kept on hand are called working capital. Please see the Glossary entry for this term on page 113.

# Working Capital

17) How many days does it take this unit to turn raw materials into a finished good for sale?

18) If operations ended today, how many days worth of finished goods would you have in storage?



# Minor Expenditures and Past Revenue

19) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
<b>Total Payments to Workers</b>				
Raw Materials				
Health Insurance				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>				
<b>Name of Product</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Grants & Contributions				

# FINAL DISPOSAL

## Number of Workers

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

1) How many of each type of worker are employed in final disposal?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for final disposal?

3) What is the average number of weeks worked per year for final disposal?

If the unit is charged per tonne of material,

4) How many tonnes of material does the organization deliver to a dumpsite per week?

5) How much is the fee per tonne?

6) How many tonnes of material does the organization incinerate?

7) What is the average cost per tonne for incineration?

8) If dumpsites charge different fees per tonnage collected, enter the different amounts below:

	Name of site	Fee per trip	Number of trips per week	Yearly Fee per site
<b>Site #1</b>				
<b>Site #2</b>				
<b>Site #3</b>				
<b>Site #4</b>				

**Total cost of dumpsite delivery and incineration**

# Payments to Workers and Other Benefits

9) How much do you pay workers per day?

10) How many workers in this unit receive a health care subsidy?

11) What is the cost of a health care subsidy per year per worker?

12) How many workers receive a housing subsidy?

13) What is the cost of a housing subsidy per year per worker?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

For an explanation of what a capital expenditure is, please see page 106.

# Capital Equipment Expenditures

14) In the table below, please list the capital equipment used by Final Disposal.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Past Expenditures

15) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
<b>Total Payments to Workers</b>				
Health Insurance				
Housing Subsidies				
<b>Dumpsite &amp; Incineration Fee</b>				
Fuel				
Access Fees				
Water				
Electricity				

# Janitorial Services

## Number of Workers

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

1) How many of each type of worker are employed in janitorial services?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
<b>Women</b>			
<b>Men</b>			
<b>Total</b>			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

## Payments to Workers and Other Benefits

4) What is the average daily wage of a janitorial services worker?

5) How many workers in this unit receive a health care subsidy?

5A) What is the cost for a health care subsidy for one person per year?

6) How many workers receive a housing subsidy?

6A) What is the cost for a housing subsidy for one person per year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

# Inputs of Janitorial Services

7) List the supplies purchased for this janitorial services.  
In the table below, enter the price per ton unit for each supply.

Materials	Average Price per Unit	Average Number of Units Purchased Per Week

# Contracts for Janitorial Services

8) What price are you paid per building cleaned?

8A) How many buildings are served per week?

For an explanation of what a capital expenditure is, please see page 106.

# Capital Expenditures of the Janitorial Services Unit

9) In the table below, please list the capital equipment used by the Janitorial Services Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Minor Expenditures and Past Revenue

10) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

<b>FIXED EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

<b>VARIABLE EXPENSES:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Payments to Workers				
Health Care Subsidies				
Housing Subsidies				
Fuel				
Access Fees				
Water				
Electricity				

<b>REVENUE:</b>	<b>Three Years Ago</b>	<b>Two Years Ago</b>	<b>One Year Ago</b>	<b>Current Year</b>
Service Fees				
Grants and Contributions				

# Construction Services

## Number of Workers

For an explanation of this unit, please see the Step-By-Step Guide to WMAT on page 26.

1) How many of each type of worker are employed in construction services?

**CSS = Completed Secondary School**  
**LSE = Less than Secondary School Education**

	CSS	LSE	Total
Women			
Men			
Total			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for construction services?

3) What is the average number of weeks worked per year for construction services?

## Payments to Workers and Other Benefits

4) What is the average daily wage of a construction services worker?

5) How many workers in this unit receive a health care subsidy?

5A) What is the cost for health care subsidy for one person per year?

6) How many workers receive a housing subsidy?

6A) What is the cost for a housing subsidy for one person per year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.

## Contracts for Construction Services

7) What price are you paid per building salvaged before demolition?

7A) On the average day, how many buildings are cleaned?





# Other Services: Enter Name Here

## Number of Workers

For an explanation of this Stage, please see the Step-By-Step Guide to WMAT page 26.

1) How many of each type of worker are employed in other services?

CSS = Completed Secondary School  
 LSE = Less than Secondary School Education

	CSS	LSE	Total
Women			
Men			
Total			

"Type of worker" refers specifically to the gender and education of the people working in the Administration Unit. For a detailed explanation of what this means, please refer to Glossary entry for Employee Education Levels on page 105.

2) What is the average number of days worked per week for this unit?

3) What is the average number of weeks worked per year for this unit?

## Payments to Workers and Other Benefits

4) What is the average daily wage for a worker?

5) How many workers in this unit receive a health care subsidy?

5A) What is the cost for a health care subsidy for one person per year?

6) How many workers receive a housing subsidy?

6A) What is the cost for a housing subsidy for one person per year?

A health care subsidy includes any benefit a worker may receive that is intended to cover health care related costs. For example, financial help in paying for a worker's doctor's visit would be a health care subsidy.

A housing subsidy can include any contributions made toward a worker's housing, such as rent, mortgage payments or home insurance.



# Capital Expenditures of this Service Unit

For an explanation of what a capital expenditure is, please see page 106.

11) In the table below, please list the capital equipment used by this Service Unit.

Also list the year each item was purchased, how much the item cost, and how many years before the item needs to be replaced.

Name of Item	Year Purchased	Purchase Price	Years Before Item is Replaced

# Minor Expenditures and Past Revenue

12) In the tables below, record how much you spent in each category for years listed. Your organization may have zero expenses in some categories.

**FIXED EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Rent				
Phones				
Taxes				
Maintenance				
Supplies				
Loan Payments				
Training				
Other				

**VARIABLE EXPENSES:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Total Payments to Workers				
Health Care Subsidies				
Housing Subsidies				
Raw Materials				
Fuel				
Access Fees				
Water				
Electricity				

**REVENUE:**

	Three Years Ago	Two Years Ago	One Year Ago	Current Year
Service Fees				
Grants and Contributions				

Finished with data entry for the Detailed Model