

MEASURING

**ROI**  
RETURN ON INVESTMENT

IN ENVIRONMENT,  
HEALTH,  
AND SAFETY

A GUIDE TO EVALUATING  
EHS PROGRAMS,  
WITH CASE STUDIES

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 Scrivener  
Publishing

WILEY

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Co-published by John Wiley & Sons, Inc. Hoboken, New Jersey, and Scrivener Publishing LLC, Salem, Massachusetts.

Published simultaneously in Canada.

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Cover design by Kris Hackerott

*Library of Congress Cataloging-in-Publication Data:*

ISBN 978-1-118-63978-8

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

## The ROI Methodology: A Tool to Measure and Improve

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### *Abstract*

In this chapter we introduce the ROI Methodology in some detail, showing how it has evolved into five different components. The first component is the results framework, which represents the types of data. These levels of data are important in the evaluation. As described earlier, results are measured at five levels (reaction, learning, application, impact and ROI). They correspond to five levels of objectives and five levels of needs assessment. Together, these make up the results framework. Next is the step-by-step process to plan a study at the impact and ROI levels, collect the data, analyze the data, and report results. This is the process model. Third Next are the operating standards and philosophy, which serve as guiding principles for the process. These twelve standards are conservative, making results CEO and CFO friendly. They also guarantee consistency and efficiency. The fourth component is applications and practice. To date, this is the most used evaluation system in the world, with applications throughout many functions, including EHS. The final component is implementation, which addresses the issues of building capability, developing appropriate processes to manage resources, efficiently evaluating programs and communicating results. This chapter essentially serves as a summary of the rest of the book.

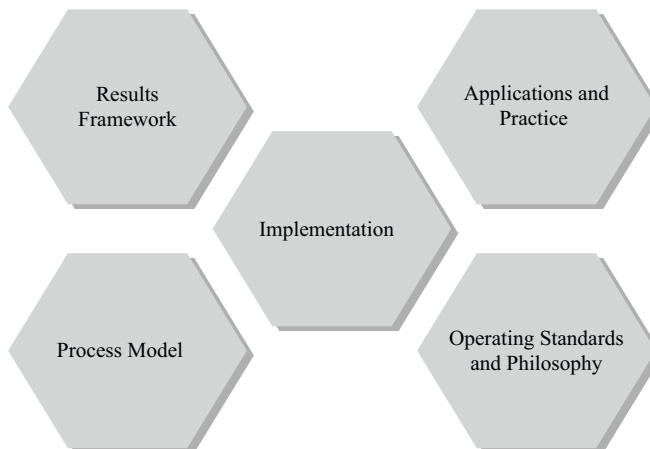
**Keywords:** Results, framework, levels of evaluation, needs assessment, objectives, process model, guiding principles, converting data to money, roi analysis, benefit-cost ratio

## 4.1 A Brief Overview

The process for showing the value of EHS initiatives, including measuring the ROI, is comprehensive and systematic. It includes five key components: a results framework, a process model, operating standards and philosophy, applications and practice and implementation (Figure 4.1). Together, these five components ensure that a practice of accountability is sustainable. This chapter briefly describes the components of the ROI Methodology that are necessary to achieve the level of accountability demanded for environmental, health and safety. Detailed information on these components is presented throughout the remainder of the book.

## 4.2 Results Framework

The richness of the ROI Methodology is inherent in the results framework. This framework represents a variety of types of data, categorized by levels, which are measured and monitored during an EHS project's implementation. Each level represents a link in the chain of impact that occurs as projects are launched. People react and acquire the requisite knowledge, skill and information and apply that knowledge and information. As a consequence, positive impact occurs. Figure 4.2 shows the levels of data and



**Figure 4.1** The Key Components of the ROI Methodology.

Level	Measurement Focus	Typical Measures
0: Inputs  ↓	Inputs into the project, including costs, project scope and duration	Types of projects Number of projects Number of people Hours of involvement Cost of projects
1: Reaction and Perceived Value  ↓	Reaction to the project, including the perceived value of the project	Relevance Importance Value Appropriateness Fairness Commitment Motivation
2: Learning and Awareness  ↓	Acquisition of knowledge, skill and/or information to prepare individuals to move the project forward	Skills Knowledge Capacity Competencies Confidence Awareness Attitude
3: Application and Implementation  ↓	Use of knowledge, skill and/or information and system support to implement the project	Extent of use Actions completed Tasks completed Frequency of use Behavior change Success with use Barriers to application Enablers to application
4: Impact  ↓	Immediate and long-term consequences of application and implementation expressed as business measures usually contained in the records	Productivity Accidents / Incidents Quality/Waste Costs / Fines / Penalties Time/Efficiency CO2 emissions Brand / Public image Profits / Growth Customer satisfaction
5: ROI	Comparison of monetary benefits from project to the project costs	Benefit-cost ratio (BCR) ROI (percentage) Payback period

Figure 4.2 Levels and Types of Data.

describes their measurement focus. Subsequent chapters provide more detail on each level, including how to collect and analyze the data and how to report the data so they are meaningful to stakeholders.

### **4.2.1 Level 0: Input**

Level 0 represents the input to a project and includes measures such as the number of people involved, hours of involvement, focus of the project, cost of the project, project duration and project resources. These data represent the activity about a project versus the contribution of the project. Level 0 data also represent the scope of the effort, the extent of commitment and the support for a particular project. For some, this equates to value. However, commitment as defined by involvement expenditures is not evidence that the organization, environment, employees or society are reaping value.

### **4.2.2 Level 1: Reaction and Perceived Value**

Reaction and perceived value (Level 1) marks the beginning of the project's outcome value stream. Reaction data capture the degree to which stakeholders react favorably or unfavorably to the project. The interest in and passion for, EHS initiatives are essential leading indicators of project success. The key is to capture the measures that reflect the content and intent of the project, focusing on issues such as perceived value, relevance, importance and appropriateness.

An adverse reaction to an EHS project usually means that it will not achieve the desired level of success. At this level, project participants identify their intended next actions, make suggestions to advance success and identify potential barriers to success. Data at this level provide the first sign of achievable project success. These data also present project leaders with information they need to make adjustments to project implementation, thereby increasing the chances of positive results.

### **4.2.3 Level 2: Learning and Awareness**

The next level involves measuring learning. For every process, program or project there is a learning component. For some—such as projects for new technology, new systems, new competencies, new processes and new procedures—this component is substantial. Other projects, such as workplace and personal protection, have a learning component. Even the implementation of a new EHS policy includes a learning component to ensure successful execution. Regardless of the initiative, measurement of learning is essential to

success. Measures at this level focus on skills, knowledge, capacity, competencies, confidence, attitude and awareness.

#### **4.2.4 Level 3: Application and Implementation**

This level measures the extent to which the project is properly applied and implemented. Effective implementation is a must if economic, environmental and societal outcomes are the goals. This is one of the most important data categories because it is here, in the execution of a project, where breakdowns usually occur. Research has consistently shown that in almost half of all projects, participants and users are not doing their parts to make it successful. At this level, measures of success include the extent of the use of technology, task completion, changes in behavior, frequency of use of knowledge, skills and information, success with use, procedures followed and actions completed. Data collection also requires the examination of barriers and enablers to successful implementation of the EHS project. Application and implementation data provide a picture of how well the organizational system supports the successful transfer of knowledge, skills, processes and information to action that leads to the desired outcomes.

#### **4.2.5 Level 4: Impact**

Perhaps the most important level of data for understanding the immediate and long-term consequences of the project is collected at Level 4. These data will attract the attention of the sponsor and other executives as well as consumers, suppliers and distributors. This level shows the energy used, waste reduced, time saved, accidents prevented, efficiencies realized, customers satisfied, health costs reduced and employees satisfied, connected to the project. For some, this level reflects the ultimate reason the project exists, to drive environmental health, safety and/or societal impact. Without this level of data, many stakeholders assert, there is no project success.

When this level of measurement is achieved, it is necessary to isolate the effects of the project on the specific measures. Without this extra step, the link between the project and subsequent outcomes is not evident, diminishing the ability to make decisions about project-specific issues.

#### 4.2.6 Level 5: Return on Investment

Impact measures are identified and converted to currency in order to compare the monetary value to the investment, which results in the financial return on investment (ROI). This metric places benefits and costs in equal terms: money. Normalizing benefits and costs enables project owners and other stakeholders to see how resource expenditures compare to benefits. This financial metric is typically stated in terms of a benefit-cost ratio (BCR), ROI (percentage) and/or payback period. This level of measurement requires two important steps: first, the impact data (Level 4) must be converted to monetary values; second, the cost of the project must be captured.

While some stakeholders may suggest that calculating the actual ROI on an EHS initiative diminishes the intangible value of such a project, two important benefits emerge from this process. First, by knowing the ROI, stakeholders concerned with the economic components of EHS see that financial resources are allocated appropriately. Appropriate use of financial resources leads to organization viability and longevity. Second, when an EHS project reaps positive benefits in one plant or region, the results may be used to justify implementation in another plant region. Funds from projects with a positive ROI can be used to help fund the not-so-successful projects or those with longer-term outcomes. It is also helpful to remember that when projects are properly developed and implemented, the chances for a positive ROI are high.

#### 4.2.7 Intangible Benefits

Along with the five levels of outcome results and the initial level of activity (Level 0), there is a sixth type of outcome data—not a sixth level—developed through the processes described in this book. These sixth types of data are the intangible benefits or those impact measures that are purposefully not converted to money. A decision to not convert benefits to money is made when the conversion consumes too many resources or the process is not credible. Yet intangibles are still important measures of success. For initiatives, intangibles may include stress, job engagement, teamwork, brand awareness, reputation, customer satisfaction, employee satisfaction and public image.



### 4.3 Results Framework and Business Alignment

Our research suggests that the number one reason projects fail is lack of alignment with the business. The results framework supports this alignment by connecting the project needs with its objective and the evaluation of its success. The first opportunity to obtain business alignment is in the initial analysis.

#### 4.3.1 Initial Analysis

Initial analysis of stakeholder needs sets the stage for deciding on the best project(s) to pursue given those needs and the available resources. This initial analysis represents the first phase in aligning projects with the business. It begins with the determination of the payoff needs – the potential opportunity or problem that is worth solving.

##### 4.3.1.1 Payoff Needs

From the start, several steps should be taken to make sure that the project or initiative is necessary. As shown in Figure 4.3, this is the

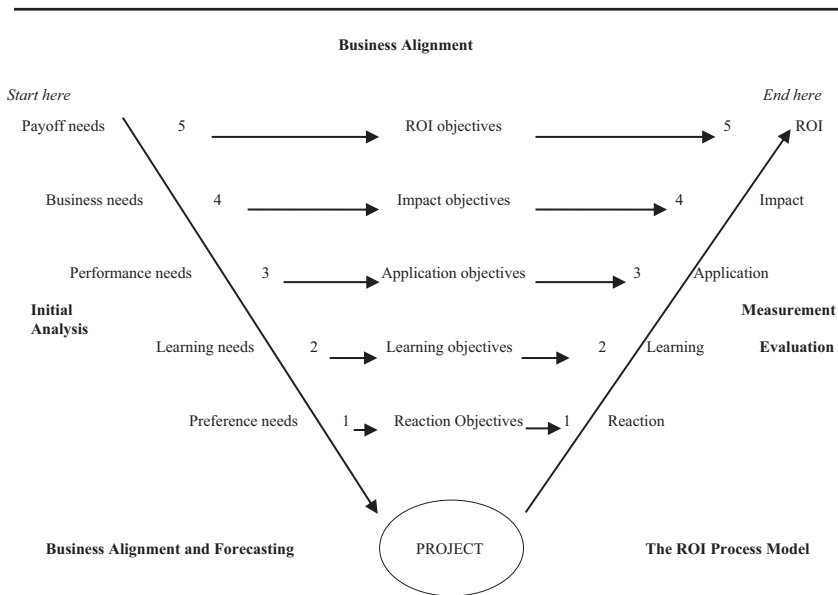


Figure 4.3 The V-Model.

beginning of the complete, sequential model that we often refer to as the V-model. This model is at the heart of the results framework. The first step in this analysis examines the potential payoff of solving a problem or taking advantage of an opportunity. Is this a problem worth solving? Is the project worthy of implementation? For some situations the answer is obviously yes, because of the project's critical nature, its relevance to the issue at hand or its effectiveness in tackling a major problem that affects the organization. An excessive injury rate, a serious CO<sub>2</sub> emissions problem or rising health care costs, for example, are worth pursuing. Potential payoff opportunities may be short-term or long-term.

#### 4.3.1.2 *Business Needs*

The next step is to ensure that the project is connected to one or more key business measures. Key measures that must improve as a reflection of the overall success of the project are defined. Business needs may be long-term, but they often represent more immediate outcomes to the organization, such as cost savings due to accident reduction, health care cost containment and more efficient energy use. These measures are in the system now, in operating reports, key performance indicators, performance scorecards or goals for individuals, departments, functions or organizations.

#### 4.3.1.3 *Performance Needs*

Next, the performance needs are examined. What must change in terms of behaviors, habits, application or implementation to address the business needs? This step aligns the project with the business and may involve a series of analytical tools to determine the cause of the problem or the changes necessary to take advantage of an opportunity. This step appears to be complex, but it is really a simple approach. A series of questions helps:

- What is keeping the business measure from being where it needs to be?
- If it is a problem, what is its cause?
- If it is an opportunity, what is hindering the measure from moving in the right direction?

This step is important because it provides the link to project or initiative. A simple example may explain. A safety incentive

program in a steel company provided cash payments to employees in a work unit for working three months without a medical treatment case. The program focused on the actions and behaviors of employees, including watching out for coworkers. By identifying a simple performance need (the behavior of employees), this initiative addressed a business need (accident costs) with a substantial payoff. The result is the reduction in medical treatment injuries from 116 to 18 in each plant's performance and a savings of almost \$400,000 per plant (*Phillips and Phillips, 2007*).

#### 4.3.1.4 *Learning Needs*

To change performance behaviors and habits, people need to know what they must do, how to do it and when to do it. What specific skills, knowledge or information must be acquired so the performance can change? Sometimes it is just a matter of making people aware of the consequences of their behaviors. Every solution involves a learning component and this step defines what the people involved must know to make the project successful. The required knowledge may be as simple as understanding a policy or as complicated as developing a new set of competencies.

#### 4.3.1.5 *Preference Needs*

The final step is identifying the structure of the project and the desired reaction to the project. How should the information be presented to ensure that needed knowledge is acquired, performance changes are addressed and the business needs met? This level of analysis involves issues surrounding the perceived value, necessity, importance, scope, timing and budget for project implementation and delivery. It details the desired reaction from stakeholders. Will they perceive it as necessary and important? This step represents preference needs or the preferred approach for the project.

### 4.3.2 **Project Objectives**

Collectively, these steps define the issues that lead to project initiation. Still, the actual positioning comes with the development of clear, specific objectives or targets that are communicated to all stakeholders. Objectives represent each level of need and define how stakeholders will know that the need has been met. If the criteria of success are not communicated early and often, project

participants will simply go through the motions and there will be little change. Developing detailed objectives with clear measures of success positions each project to achieve its ultimate goal. Objectives provide the connection between organizational needs and project accountability.

### 4.3.3 Forecasting

Using stakeholder needs and project objectives as the basis, developing a forecast may be useful in making adjustments or choosing alternative solutions. This forecast can be simple, relying on the individuals closest to the situation or it can involve a more detailed analysis of the situation, expected outcomes and potential risks. Recently, forecasting has become a critical tool for project sponsors who need evidence that the project will be successful before they are willing to commit to funding.

## 4.4 Benefits of Developing the Chain of Impact

Developing data represented in the results framework—including five levels of results along with inputs (Level 0) and intangible measures—provide a variety of benefits, including the following:

- Describing the chain of impact that occurs as people become involved in EHS projects
- Showing project results from multiple perspectives
- Demonstrating how immediate and long-term outcomes are achieved
- Providing information as to why and how outcomes are or are not achieved
- Providing project owners data they can use to make improvements with implementation
- Holding stakeholders accountable for success of all project stages
- Providing stakeholders the data they need to make decisions about the project and the organization

At first, the thought of collecting and analyzing such a comprehensive set of data may seem daunting. However, without this set of information, explaining the basis for an ROI calculation will be a

challenge. In addition, decisions about projects and their subsequent success require more than an economic metric. By reviewing data that represent the chain of impact, stakeholders can understand how project implementation evolves, what changes are necessary to improve or sustain success and how the project contributes to the overall good of the organization. Chapter 5 discusses this in greater detail.

To simplify the collection and analysis of data in the results framework, a step-by-step process model is required. This is presented next.

## 4.5 The ROI Process Model

The second component of the ROI Methodology is the process model. This ten-step process, shown in Figure 4.4, develops the data representing the chain of impact. The process begins with the project objectives and concludes with reporting of data. The model assumes that proper analysis is conducted to define stakeholders' needs prior to project implementation.

### 4.5.1 Planning the Evaluation

The first phase of the ROI process model is evaluation planning. This phase involves understanding the purpose of the evaluation, determining the feasibility of the planned approach, planning data collection and analysis and outlining the details of the project.

#### 4.5.1.1 *Evaluation Purpose*

Evaluations of EHS projects are conducted for a variety of reasons:

- To improve the quality of projects and outcomes
- To determine whether a project has accomplished its objectives
- To identify strengths and weaknesses in project implementation
- To enable the cost-benefit analysis
- To assist in the development of future projects or programs
- To determine whether the project was the appropriate solution
- To establish priorities for project funding

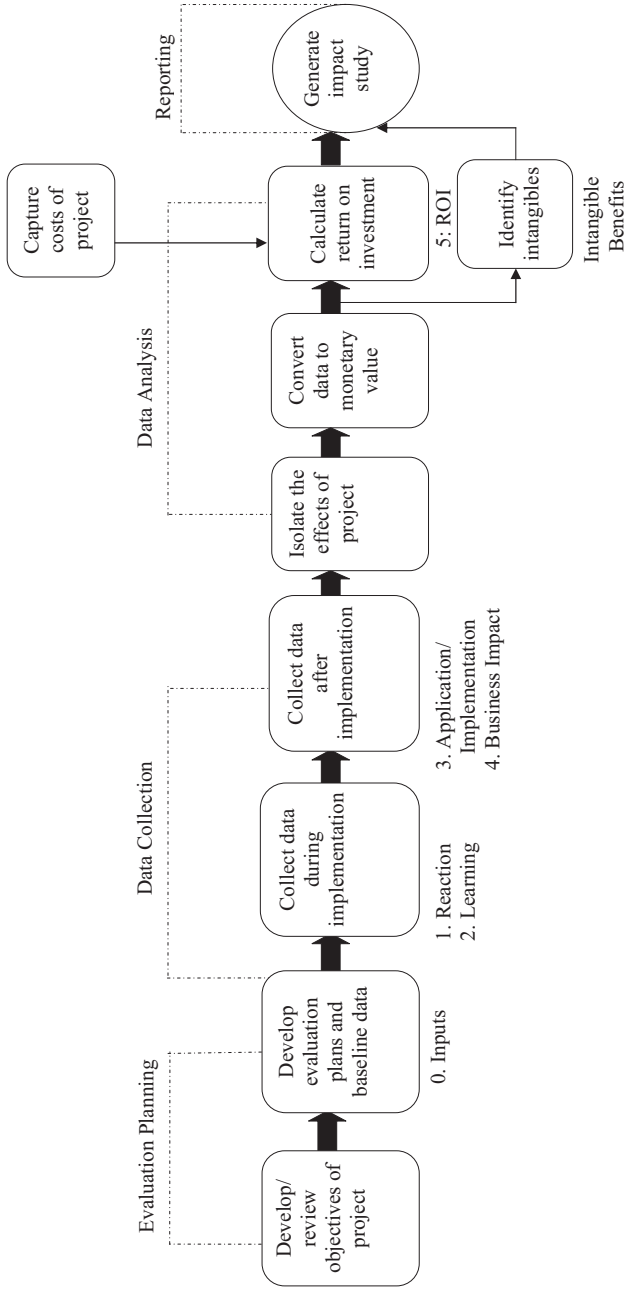


Figure 4.4 The ROI Process Model.

Prior to developing the evaluation plan, the purposes of the evaluation should be considered because they will often determine the scope of the evaluation, the types of instruments used and the kinds of data collected. As with any project, making the purpose of the evaluation clear will give it focus and help to gain support from others.

#### 4.5.1.2 *Feasibility*

An important consideration in planning an ROI study is the determination of the levels to which the program will be evaluated. Some project evaluations will stop at Level 2, measuring learning and awareness. Other evaluations will stop at Level 3, application, where analysis will determine the extent to which participants are applying what they learned through a project launch. Other projects will be evaluated at Level 4, business impact, where the consequences of application are monitored and measures directly linked to the project are examined. If the ROI calculation is needed, the evaluation will proceed to Level 5, converting project benefits to money and comparing them to project implementation costs. Evaluation at Level 5 is intended for projects that are expensive, high profile and have a direct link to operational and strategic objectives.

The feasibility of an EHS project is determined through the initial analysis and the development of project objectives. The objectives are defined along the same five levels as the needs assessment:

- Reaction objectives (Level 1)
- Learning objectives (Level 2)
- Application and implementation objectives (Level 3)
- Impact objectives (Level 4)
- ROI objectives (Level 5)

Specific objectives take the mystery out of what each project should achieve. They also serve as the basis for comparing results. If application and impact objectives are unavailable, they must be developed using input from a variety of stakeholders.

With a clear purpose and project feasibility, evaluation planning continues with the development of the data collection plan, the ROI analysis plan and the project plan. Appropriate up-front attention

to these planning documents will save time later when data are actually collected.

#### 4.5.1.3 *Data Collection Plan*

Table 4.1 shows a completed safety management program data collection plan for project safety leaders in large construction projects. The two-day program focused on a variety of actions and activities to improve a variety of safety and health measures.

The data collection plan provides a place for the major elements and issues regarding data collection. Broad objectives are appropriate for planning. Specific, detailed objectives are developed later, before the project is designed. Entries in the *measures* column define the specific measure for each objective while entries in the *methods* column describe the technique used to collect the data. In the *sources* column, the source of the data is identified and the *timing* column indicates when the data are collected. Finally, the *responsibilities* column identifies who will collect the data.

#### 4.5.1.4 *ROI Analysis Plan*

Table 4.2 shows a completed ROI analysis plan for the safety management program for project safety leaders described in the previous section. This planning document captures information on key items that are necessary to develop the actual ROI calculation. In the first column, impact measures are listed. In some cases this column includes application measures. These items will be used in the ROI analysis.

The method employed to isolate the project's effects is listed next to each data item in the second column. Data conversion methods are included in the third column. Cost categories that will be captured for the project are outlined in the fourth column. Normally, the cost categories are consistent from one project to another. Intangible benefits expected from the project are outlined in the fifth column. This list is generated from discussions about the project with sponsors and subject-matter experts. Communication targets are outlined in the sixth column. Finally, other issues or events that might influence project implementation and its outputs are highlighted in the seventh column. Typical items include the capability of participants, the degree of access to data sources, the engagement of stakeholders and unique data analysis issues. The



comments column is for notes and issues important to the team and the evaluation project implementation.

The ROI analysis plan is combined with the data collection plan, illustrating how the evaluation will develop from beginning to end and includes the calculation of the ROI.

#### 4.5.1.5 *Project Plan*

The final planning document is the project plan for the safety management program, as shown in Table 4.3. A project plan consists of a description of the project and brief details, such as duration, target audience and number of participants. It also shows the timeline of the project, from the planning of the study through the final communication of the results. This plan becomes an operational tool to keep the project on track

Collectively, the three planning documents provide the direction necessary for the ROI study. Most of the decisions regarding the process are made as these planning tools are developed. When the project team spends time up front to plan an evaluation, the project becomes a methodical, systematic process. Planning is a crucial step in the ROI Methodology, in which valuable time allocated to planning will save precious time later.

### 4.5.2 **Collecting Data**

Data collection is central to the ROI Methodology. Both hard data (representing output, quality, cost and time) and soft data (including job satisfaction, customer satisfaction and public image) are collected. A variety of data collection methods are employed, including:

- Surveys
- Questionnaires
- Tests
- Observations
- Interviews
- Focus groups
- Action plans
- Performance contracts
- Business performance monitoring

Table 4.1 Data collection plan.  
 Program: Safety Management Program      Responsibility: \_\_\_\_\_      Date: \_\_\_\_\_

Level	Objective(s)	Measures/Data	Data Collection Method	Data Sources	Timing	Responsibilities
1	<b>Reaction</b> <ul style="list-style-type: none"> <li>Obtain favorable reaction to program and materials on</li> <li>Need for program</li> <li>Relevance to project</li> <li>Importance to project</li> <li>Identify planned actions</li> </ul>	<ul style="list-style-type: none"> <li>Average rating of 4.0 out of 5.0 on feedback items</li> <li>100% submit planned actions</li> </ul>	<ul style="list-style-type: none"> <li>Standard questionnaire</li> </ul>	<ul style="list-style-type: none"> <li>Participant</li> </ul>	<ul style="list-style-type: none"> <li>End of program</li> </ul>	<ul style="list-style-type: none"> <li>Facilitator</li> </ul>
2	<b>Learning</b> After attending this session, participants should be able to: <ul style="list-style-type: none"> <li>Establish safety audits</li> <li>Provide feedback and motivate employees</li> <li>Measure safety performance</li> <li>Solve safety problems</li> <li>Counsel problem employees</li> <li>Conduct safety meetings</li> </ul>	<ul style="list-style-type: none"> <li>Achieve an average of 4 on a 5 point scale</li> </ul>	<ul style="list-style-type: none"> <li>Questionnaire</li> </ul>	<ul style="list-style-type: none"> <li>Participant</li> </ul>	<ul style="list-style-type: none"> <li>End of program</li> </ul>	<ul style="list-style-type: none"> <li>Facilitator</li> </ul>

Level	Objective(s)	Measures/Data	Data Collection Method	Data Sources	Timing	Responsibilities
3	<b>Application/Implementation</b> <ul style="list-style-type: none"> <li>Apply skills in appropriate situations</li> <li>Complete all steps of action plan</li> </ul>	<ul style="list-style-type: none"> <li>Ratings on questions (4 of 5)</li> <li>The number of steps completed on action plan</li> </ul>	<ul style="list-style-type: none"> <li>Questionnaire</li> <li>Action plan</li> </ul>	<ul style="list-style-type: none"> <li>Participant</li> <li>Participant</li> </ul>	<ul style="list-style-type: none"> <li>Three months after program</li> <li>Three months after program</li> </ul>	<ul style="list-style-type: none"> <li>Safety and Health Team</li> </ul>
4	<b>Business Impact</b> <ul style="list-style-type: none"> <li>Identify three safety and health measures that need improvement</li> </ul>	<ul style="list-style-type: none"> <li>Varies</li> </ul>	<ul style="list-style-type: none"> <li>Action plan</li> </ul>	<ul style="list-style-type: none"> <li>Participant</li> </ul>	<ul style="list-style-type: none"> <li>Three months after program</li> </ul>	<ul style="list-style-type: none"> <li>Safety and Health Team</li> </ul>
5	<b>ROI</b> 20%	Comments: Several techniques will be used to secure commitment to provide data on the questionnaire and action plan. _____ _____ _____ _____				

Table 4.2 Caption TK

Program: <u>Safety Management Program</u>		Responsibility: _____		Date: _____			
Data Items (Usually Level 4)	Methods for Isolating the Effects of the Program/ Process	Methods of Converting Data to Monetary Values	Cost Categories	Intangible Benefits	Communication Targets for Finale Report	Other Influences/ Issues During Application	Comments
<ul style="list-style-type: none"> <li>• Three safety and health measures identified by project safety leader</li> </ul>	<ul style="list-style-type: none"> <li>• All Participant estimation</li> </ul>	<ul style="list-style-type: none"> <li>• Standard values</li> <li>• Expert input</li> <li>• Participant estimation</li> </ul>	<ul style="list-style-type: none"> <li>• Needs assessment</li> <li>• Program development</li> <li>• Program materials</li> <li>• Travel &amp; lodging</li> <li>• Facilitation &amp; coordination</li> <li>• Participant salaries plus benefits while in the program</li> <li>• Extra project expenses related to program</li> <li>• Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Job Engagement</li> <li>• Job satisfaction</li> <li>• Stress</li> <li>• Image</li> <li>• Brand</li> </ul>	<ul style="list-style-type: none"> <li>• Project manager</li> <li>• Participants</li> <li>• Safety and Health team</li> <li>• Operating executives</li> <li>• Director, Safety and Health</li> <li>• Senior VP Human resources</li> </ul>		
Clie Client Signature: _____ Date: _____							

**Table 4.3** Project Plan.

	Month						
	F	M	A	M	J	J	A
Decision to conduct ROI study							
Plan evaluation							
Design and test instruments							
Collect data							
Tabulate data							
Conduct analysis							
Write report							
Print report							
Communicate results							
Initiate improvements							
Complete implementation							

The important challenge in data collection is to select the method or methods appropriate for the setting and the specific project, within the time and budget constraints of the organization. Data collection is covered in more detail in Chapters 6 and 7.

### 4.5.3 Isolating the Effects of the Project

An often-overlooked issue in evaluation is the process of isolating the effects of the project. In this step, specific strategies are explored that determine the amount of output performance directly related to the project. This step is essential because many factors influence performance data and it is often necessary to identify contribution of certain key factors. The specific strategies of this step pinpoint the amount of improvement directly related to the EHS project, which results in increased accuracy and credibility of ROI calculations. The following techniques have been used by organizations to address this important issue:

- Control groups/comparison groups
- Trendline analysis

- Forecasting and recession models
- Participants' estimates
- Managers' estimates
- Senior manager's estimates
- Experts' input
- Customer input

Collectively, these techniques provide a comprehensive set of tools to handle the important and critical issue of isolating the effects of an EHS project. Chapter 8 addresses this issue in detail.

#### **4.5.4 Converting Data to Monetary Values**

To calculate the ROI, Level 4 impact data are converted to monetary values and compared with project costs. This requires that a value be placed on each unit of measure connected with the project. Many techniques are available to convert data to monetary values. The specific technique selected depends on the type of data and the situation. The techniques include:

- Use of standard values for output data
- Use the cost of quality, usually as a standard value
- Time savings converted to participants' wage and employee benefits
- An analysis of historical costs and records
- Use of internal and external experts
- Search of external databases
- Use of participant estimates
- Use of manager estimates
- Soft measures mathematically linked to other measures

This step in the ROI process model is necessary in developing the numerator of the ROI equation. Converting benefits to money normalizes the benefits so a comparison can be made to the costs. The process is challenging, particularly with soft data, but it can be methodically accomplished using one or more of these strategies. Because of its importance, this step in the ROI Methodology is described in detail in Chapter 9.

### 4.5.5 Identifying Intangible Benefits

In addition to tangible, monetary benefits, intangible benefits (those not converted to money) are identified for most projects. Intangible benefits include items such as:

- Improved teamwork
- Enhanced communications
- Increased brand awareness
- Improved reputation
- Enhanced public image
- Increased employee engagement

During data analysis, every attempt is made to convert all data to monetary values. All hard data such as output, quality, cost and time are converted to monetary values. The conversion of soft data is attempted for each data item. However, if the process used for conversion is too subjective or inaccurate and the resulting values lose credibility in the process, then the data are listed as an intangible benefit with the appropriate explanation. For some projects, intangible, nonmonetary benefits are extremely valuable and these often carry as much influence as the hard data items. Chapter 10 describes in more detail the issue of intangible benefits.

### 4.5.6 Tabulating Project Costs

An important part of the ROI equation is the calculation of project costs, which make up the denominator of the ROI equation. Tabulating the costs involves monitoring or developing all the related costs of the EHS project targeted for the ROI calculation. Among the cost components to be included are:

- Initial analysis costs
- Cost to design and develop the project
- Cost to acquire equipment and technology, if necessary
- Cost of all project materials
- Cost of the facilities for the project
- Travel, lodging and meal costs for the participants and team members
- Participants' salaries (including employee benefits)

- Administrative and overhead costs, allocated in some convenient way
- Operating costs
- Evaluation costs

The conservative approach is to consider the fully loaded costs of a project. Chapter 10 addresses this step in the ROI Methodology.

#### 4.5.7 Calculating the Return on Investment

Return on investment is reported using a variety of metrics. Standard calculations include the benefit-cost ratio (BCR), ROI percentage and payback period. The BCR is calculated as the project benefits divided by the project costs, shown in formula form below:

$$\text{BCR} = \frac{\text{Project Benefits}}{\text{Project Costs}}$$

The ROI is based on the net project benefits divided by project costs, then multiplied by 100 to develop the percentage. The net benefits are calculated as the project benefits minus the project costs. In formula form, the ROI becomes:

$$\text{ROI (\%)} = \frac{\text{Net Project Benefits}}{\text{Project Costs}} \times 100$$

This is the same basic formula used in evaluating other investments, in which the ROI is traditionally reported as earnings divided by investment. In addition, it may sometimes be necessary to calculate the payback period. Payback period requires that the project costs be compared to annual project benefits. In equation form, the payback period is calculated as:

$$\text{Payback Period} = \frac{\text{Project Costs}}{\text{Annual Project Benefits}}$$



A simple example of the benefit-cost ratio, ROI and payback period illustrate the calculations. An energy savings project for a city's municipal buildings involves replacing current bulbs with energy-saving bulbs. A three-year benefit stream is selected at the beginning of the project based on the expected life of the new bulbs. The project benefits for the three years are \$570,000 (\$190,000 per year) and the fully loaded cost of replacement is \$350,000.

$$\text{BCR} = \$570,000 / \$350,000 = 1.63:1$$

$$\text{ROI} = \$220,000 / \$350,000 \times 100 = 63\%$$

$$\text{Payback Period} = \$350,000 / \$190,000 = 1.84 \text{ years or 22 months}$$

The ROI calculation of net benefits (\$570,000 minus \$350,000) divided by total costs brings an ROI of 63 percent. This is what is earned after we get back the \$350,000 spent on the project. The ROI calculation accounts for the project costs and shows the resulting net gain.

The BCR calculation uses the total benefits in the numerator. Therefore, the expressed BCR of 1.63:1 does not account for replacing the expended costs. This is why, when using the same values, the BCR will always be 1 greater than the ROI. The BCR of 1.63:1 in this example means that for every dollar spent, \$1.63 is gained. One dollar has to pay for the investment, so the net is \$0.63 (as expressed in the ROI calculation). The payback period shows that it takes about twenty-two months to pay back the project's investment.

For short-term projects in which an immediate payoff is expected, consider the first-year benefits only. This approach is the most conservative approach to accounting for project costs. With a project investment for which the payoff may not occur for two or three years post-project implementation, consider the time value of the investment and benefits stream. Again, this is a conservative accounting of financial resources. These calculations, along with other issues pertinent to developing the ROI, are described in Chapter 10.

#### 4.5.8 Reporting

The final step in the ROI process model is reporting, a critical step that often lacks the degree of attention and planning required to ensure its success. The reporting step involves

developing appropriate information in impact studies and other brief reports. At the heart of this step are the different techniques used to communicate to a wide variety of target audiences. In most ROI studies, several audiences are interested in and need the information. Careful planning to match the communication method with the audience is essential to ensure that the message is understood and that appropriate actions follow. Chapter 11 is devoted to reporting evaluation results developed through the ROI Methodology. Chapter 11 also describes development of a scorecard, a macro-level reporting of success for all sustainability initiatives.

## **4.6 Operating Standards and Philosophy**

An organization's philosophy and standards can have an important influence on how stakeholders perceive the quality of data. This is the third component necessary to create a sustainable evaluation practice. Consistency and replication of studies is the output of evaluation standards. Progress and assumptions inherent in an evaluation process should not vary depending on the individual conducting the evaluation. In addition, instilling a philosophy of conservative assumptions will ensure that results do not overstate the project contribution to outcomes, often, positioning decision makers to make unnecessary and inappropriate overinvestments in a project. Table 4.4 shows the twelve guiding principles that serve as standards of use for the ROI Methodology.

The guiding principles serve not only to consistently address each step of the evaluation process, but also to provide a conservative approach to the analysis. A conservative approach may lower the actual ROI calculation, but it will build credibility and buy-in with the key stakeholders, especially CEOs, managing directors, top administrators and CFOs.

## **4.7 Case Application and Practice**

The fourth component necessary for a sustainable measurement practice is case application and practice. This component puts theory to practice. While the results framework serves as the basis

**Table 4.4** Twelve Guiding Principles of the ROI Methodology.**Guiding Principles**

1. When conducting a higher-level evaluation, collect data at lower levels.
2. When planning a higher-level evaluation, the previous level of evaluation is not required to be comprehensive.
3. When collecting and analyzing data, use only the most credible sources.
4. When analyzing data, select the most conservative alternative for calculations.
5. Use at least one method to isolate the effects of a project.
6. If no improvement data are available for a population or from a specific source, assume that no improvement has occurred.
7. Adjust estimates of improvement for potential errors of estimation.
8. Avoid use of extreme data items and unsupported claims when calculating ROI.
9. Use only the first year of annual benefits in ROI analysis of short-term projects.
10. Fully load all costs of a project when analyzing ROI.
11. Intangible measures are defined as measures that are purposely not converted to monetary values.
12. Communicate the results of ROI Methodology to all key stakeholders.

for the ROI Methodology and the process model and standards are systematic, it is the practice and use of the process that is important. Application quickly shows the power of this methodology.

The ROI Methodology is the most used evaluation system in the world. Over 3,000 professionals and managers have achieved the designation of Certified ROI Professional (CRP) through the ROI Institute. In addition, 3-5,000 ROI studies are conducted each year from 60 countries, through ROI Institute global partners.

## 4.8 Implementation

A variety of environmental issues and events must be addressed early to ensure the successful implementation of the ROI process, which is also central to the success of other components described

in this chapter. Specific topics or actions important to successful implementation include:

- A policy statement concerning results-based EHS projects
- Procedures and guidelines for different elements and techniques of the evaluation process
- Formal meetings to develop staff skills with the ROI Methodology
- Strategies to improve management commitment to and support for the ROI Methodology
- Mechanisms to provide technical support for data collection, design, data analysis and evaluation strategy
- Specific techniques to place more attention on results

In addition to implementing and sustaining ROI use, the process must undergo periodic review. An annual review is recommended to determine the extent to which the process is adding value. This final element involves checking satisfaction with the process and determining how well it is understood and applied. Essentially, this review follows the process described in this book to determine the ROI on ROI. Chapter 12 is devoted to this important topic.

## **4.9 Benefits of Applying the ROI Methodology**

The approach to evaluating the success of EHS projects presented in this book has been used consistently and routinely by thousands of organizations in the past decade. It has been more prominent in some fields and industries than in others such as performance improvement, quality, human resources, meeting and events and marketing. Much has been learned about the success of this methodology and what it can bring to the organizations using it. Along with the benefits described earlier in the book, specific benefits of applying the ROI Methodology are as follows.

### **4.9.1 Aligning Projects with the Business**

The ROI Methodology ensures alignment with the business, which is enforced in three steps. First, even before the project is initiated, the process ensures that alignment is achieved up front, at the time the EHS project is validated as the appropriate solution. Second,

by requiring specific, clearly defined objectives at the impact level, the project focuses on the ultimate outcomes, in essence driving the business measure by its design, delivery and implementation. Third, in the follow-up data, when the outcome measures may have changed or improved, a method is used to isolate the effects of the project on those data, consequently proving the connection to that business measure (i.e., showing the amount of improvement directly connected to the project and ensuring there is business alignment).

#### **4.9.2 Validating the Value Proposition**

In reality, most EHS projects are undertaken to deliver value, whether value is defined in business, environmental or societal terms. The definition of value may on occasion be unclear or may not be what a project's various sponsors, organizers and stakeholders desire. Consequently, there are often value shifts. When the values are finally determined, the value proposition is detailed. Using the ROI Methodology, organizations can forecast the value in advance and if the value has been delivered, thereby verifying the value proposition agreed to by the appropriate parties.

#### **4.9.3 Improving Processes**

This is a process improvement tool by design and by practice. It collects data to evaluate how projects are, or are not, working. When EHS projects are not progressing as they should, data are available to indicate what must be changed to make the projects more effective. When things are working well, data are available to show what else could be done to make them better. Continuous feedback and process improvement are inherent to the ROI Methodology.

#### **4.9.4 Enhancing Image**

Many functions and even entire professions are criticized for being unable, or unwilling, to deliver what is expected. For this, their public image suffers. The ROI Methodology is one way to help build the respect a function organization or profession needs. By showing value defined by all stakeholders and by using evaluation results, EHS project owners communicate to stakeholders their successes

and their desire to continuously improve. This methodology shows a connection to the bottom line and the greater good.

#### **4.9.5 Improving Support**

Securing support for EHS projects is critical. Many projects enjoy the support of key stakeholders who allocate resources to make the projects viable. Unfortunately, some stakeholders may not support certain projects because they do not see the value the projects deliver in terms they appreciate and understand. Having an accountability approach that shows how a project or program is connected to business goals and objectives can change this support level.

#### **4.9.6 Justifying or Enhancing Budgets**

Some organizations have used the ROI Methodology to support existing proposed budgets. Because the process shows the monetary value expected or achieved with specific projects, the data can often be leveraged into budget requests. When a particular function is budgeted, the amount budgeted is often in direct proportion to the value that the function adds. If little or no credible data support the contribution, the budgets are often trimmed, or at least not enhanced. Bringing accountability to the level achieved through use of the ROI process is one of the best ways to secure future funding.

#### **4.9.7 Building Partnerships with Key Executives**

Almost every function attempts to partner with operating executives and key managers in the organization. Unfortunately, some managers may not want to be partners. They may not want to waste time and effort on a relationship that does not help them succeed. They want to partner only with groups and individuals who can add value and help them in meaningful ways. Showing the projects' results will enhance the likelihood of building these partnerships, by providing the initial impetus for making the partnerships work.

#### **4.9.8 Earning a Seat at the Table**

Many functions are attempting to earn a seat at the table, however defined. Typically, this means participating in the strategy- or decision-making process and in high-level discussions at the top

of the organization. Department and project leaders hope to be involved in strategic decision-making, particularly in areas that will affect the projects and programs in which they are involved. Showing the actual contribution and getting others to understand how projects add value can help earn the coveted seat at the table, because most executives want to include those who are genuinely helping the business by providing input that is valuable and constructive. Application of the ROI Methodology may be the most important action toward earning the seat at the table.

## 4.10 Final Thoughts

The ROI Methodology is an accountability process designed to collect and report multiple types of data that are crucial to the evaluation of environment, health and safety projects:

- Inputs (Level 0)
- Reaction and perceived value (Level 1)
- Learning and awareness (Level 2)
- Application and implementation (Level 3)
- Impact (Level 4)
- ROI (Level 5)
- Intangible benefits

By developing these data and following a step-by-step process grounded in conservative standards, EHS project owners can be confident their results will be perceived as credible. In addition, this process will ensure that projects are aligned with business from the outset. The remainder of the book will describe how to develop data, attribute results to the EHS project and develop the ROI for EHS initiatives.