

Deciding on, Financing, and Implementing Projects

Projects

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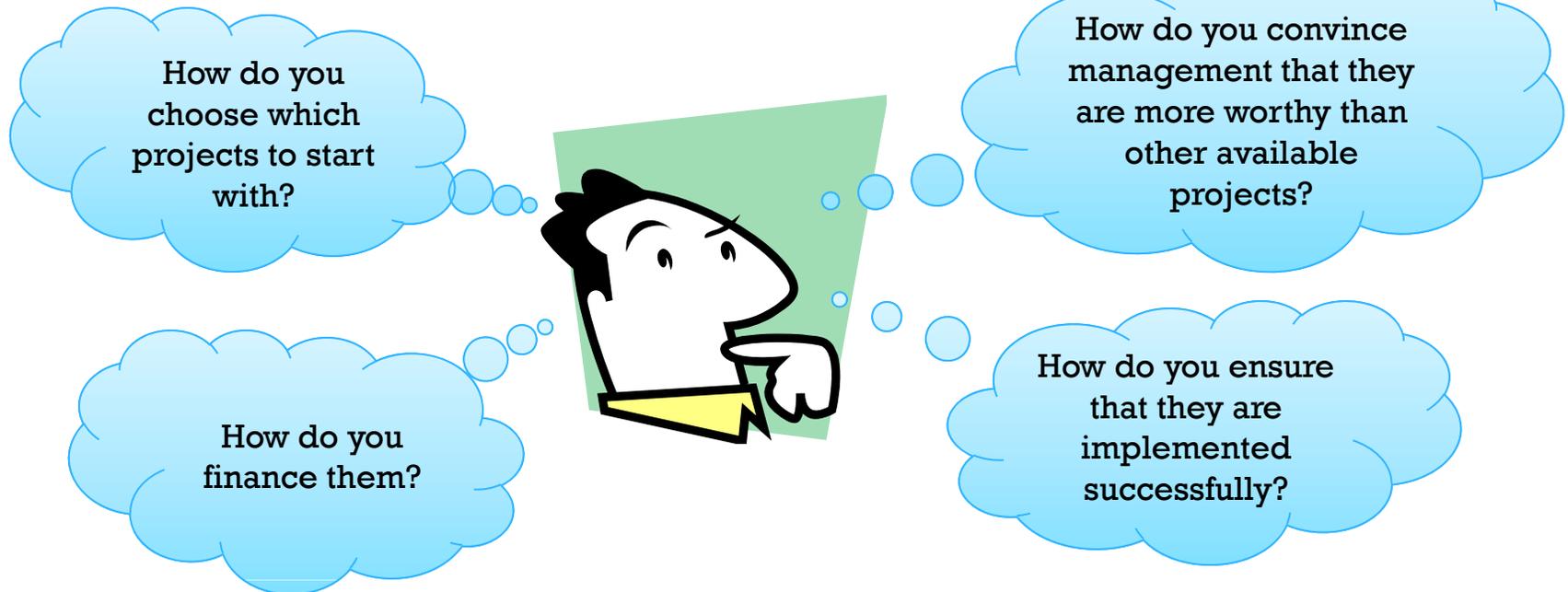
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Realizing Opportunities

- At this point, you've probably identified a number of projects that you think could lower your environmental impact while having a positive financial impact.
- But if you don't follow through and implement the projects, you won't get any benefits.
- You may be wondering:



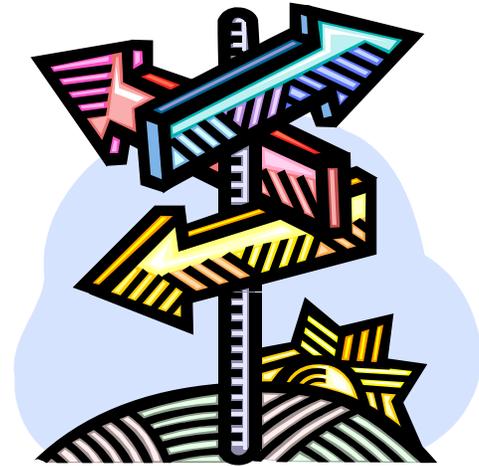
Realizing Opportunities

- You first need to **choose the right projects** based on financial analysis and your company's unique position.
- In this lesson, you will learn about
 - analyzing project costs and benefits to make decisions and get projects approved,
 - financing projects,
 - and successfully implementing them.



Some Overarching Questions to Consider When Evaluating Potential Projects¹

- Will the project provide a **significant improvement** in environmental or social performance?
- Is the issue it addresses **important to my stakeholders**?
- Will the project be **technically achievable**?
- Is it **economically feasible**, and does it **add value** to the company?



¹ United Nations Environment Programme and Delft University of Technology “Design for Sustainability A Step-by-Step Approach.”



The Importance of Project Analysis

- Often, the people who are most familiar with the opportunities in sustainability projects and responsible for those projects are often **unfamiliar with accounting and financial decision making practices**.¹ They aren't the ones making the financial decisions.
- And **sustainability projects have to compete** with other investments the company could make. Decision makers may see them as costs rather than opportunities to be seized.
- In an Accenture survey, 72% of CEOs said they thought companies should **include sustainability issues in discussions with financial analysts**.²
- Therefore, it's important for those promoting sustainability projects to be able to back up their projects with real analysis. You need to be able to **speak the language of accounting and finance** to get your projects approved.³



¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments

² Accenture and the United Nations Global Compact "A New Era of Sustainability: UN Global Compact-Accenture CEO Study 2010."

³ David Bent. "Six Key Lessons on Mapping Out a Business Case for Sustainability Initiatives."



Evaluating Projects

Traditional cost accounting methods used to make business decisions aren't designed to assess pollution prevention or other sustainability projects.

Sustainability projects can be different because they:¹

- **Include Hidden Costs and Benefits**
 - Many of the costs affected by pollution prevention and energy efficiency projects are **hidden** in the overhead category.
 - This means that when you analyze an environmental project, you may underestimate the potential benefits or costs.
- **May Take Longer to Reap Benefits**
 - Traditional accounting may not evaluate a pollution prevention project over a **timeframe** that is long enough to see the true benefits.
 - Often, if it takes more than two years to see a return on investment for a project, it will be difficult to convince decision makers to finance the project.²
- **Have Qualitative Benefits**
 - Sustainability projects have benefits that may be **less tangible**, such as improved reputation. These benefits can not always be quantified for decision makers.

Why traditional evaluation methods may need to be adjusted for sustainability projects¹:

- Hidden Costs
- Evaluation timeline
- Qualitative benefits

¹ "Financial Analysis of Pollution Prevention Projects" Ohio EPA and "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments." NEWMOA

² EPA Small Business Division, "Practical Guide to Environmental Management for Small Business"



How Sustainability Projects can Affect Costs

In the lesson on making the business case, you learned about some of the ways sustainability can benefit a company. Let's now take a closer look at how a sustainability project can affect different costs.¹

Start up Costs

- Purchasing new equipment
- Remodeling
- Changes to meet building codes

Changeover Costs

- Old materials you won't use after project
- Training
- Trial period, downtime

Operating Costs

- Energy
- Water
- Labor
- Materials
- Change in productivity

Management and Compliance Costs

- Waste management
- Reporting
- Lower regulatory permitting category
- Permits

Avoided Costs

- Costs you would have incurred without the project – i.e. materials you would have bought

¹ EPA Small Business Division, "Practical Guide to Environmental Management for Small Business"



Basic Project Assessment Process

**1**

Collect all relevant cost data to understand the full costs¹

- Identify cost generators
- Detailed current costs by process
- Detailed costs after project
- Proposed costs of implementing the project

2

Analyze Projects using profitability measure

- Payback Period
- Net Present Value (NPV)
- Internal Rate of Return (IRR)

3

Prepare a justification package

- Make the case for your project
- Provide supporting information and data
- Link the project to company mission and goals
- present the project to company decision makers²

¹Ohio EPA "Financial Analysis of Pollution Prevention Projects"

² NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



1: Types of Costs to Include in Analysis¹

In order to understand how a project would affect your costs, you need to **compare the full cost before and after the project.**

Direct or
Visible

Hidden or
Indirect

Contingent
Liability

Less
Tangible

Initial²

Let's take a look at each of these costs in more detail.

¹ GEMI "Finding Cost-Effective Pollution Prevention Initiatives: Incorporating Environmental Costs Into Business Decision Making"

² NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



Direct or Visible Costs

- Direct or visible costs are costs that are specifically linked to a project, product or process.¹
- They are some of the easiest costs to identify and measure.

Examples of Direct or Visible Costs:²

- Labor of workers involved in production process
- Materials that go into the product
- Wasted materials
- Other materials or inputs that enter the process

¹ GEMI "Finding Cost-Effective Pollution Prevention Initiatives: Incorporating Environmental Costs Into Business Decision Making"

² Ohio EPA "Financial Analysis of Pollution Prevention Projects"



Hidden Costs

Types of Costs¹

Cost Pool	Description
Direct Labor	<i>Workers involved directly in the production process</i>
Direct Materials	<i>Materials that are part of the product</i>
Overhead	
Indirect Labor	<i>Any other work that's not production</i>
Indirect Materials	<i>Materials not in the finished product</i>
Facility Costs	<i>For the building, such as rent, heating, lighting</i>
Corporate Expenses	<i>Administration costs, including things like marketing and sales expenses</i>

Costs included in **Overhead** aren't allocated to specific processes or products or are allocated using a generic proxy, so they are "**hidden**". It can, therefore, be difficult to determine the true costs of a specific process or product.

¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



Hidden Environmental Costs



- Many times, environmental costs should be allocated to a specific process, but aren't because they are "hidden" in the overhead. In such cases, you could **underestimate the costs or benefits** of changing that process.
- Traditionally, company decision making processes have not taken into account all environmental costs or savings. This can lead to the **rejection of sustainability projects that have merit.**¹

Environmental Costs Typically Included in Overhead²

- Monitoring and Reporting
- Waste Management and Disposal
- Capital Depreciation
- Employee Training
- Utilities (electricity and water)
- Permits and Fees
- Equipment
- Fines and Penalties
- Equipment Cleaning
- Legal support¹
- Sampling and Testing¹

Utilities can be a major cost, but it can be hard to allocate your utilities costs to your different processes accurately. The next lesson will give you more advice on how to do this for specific utilities.

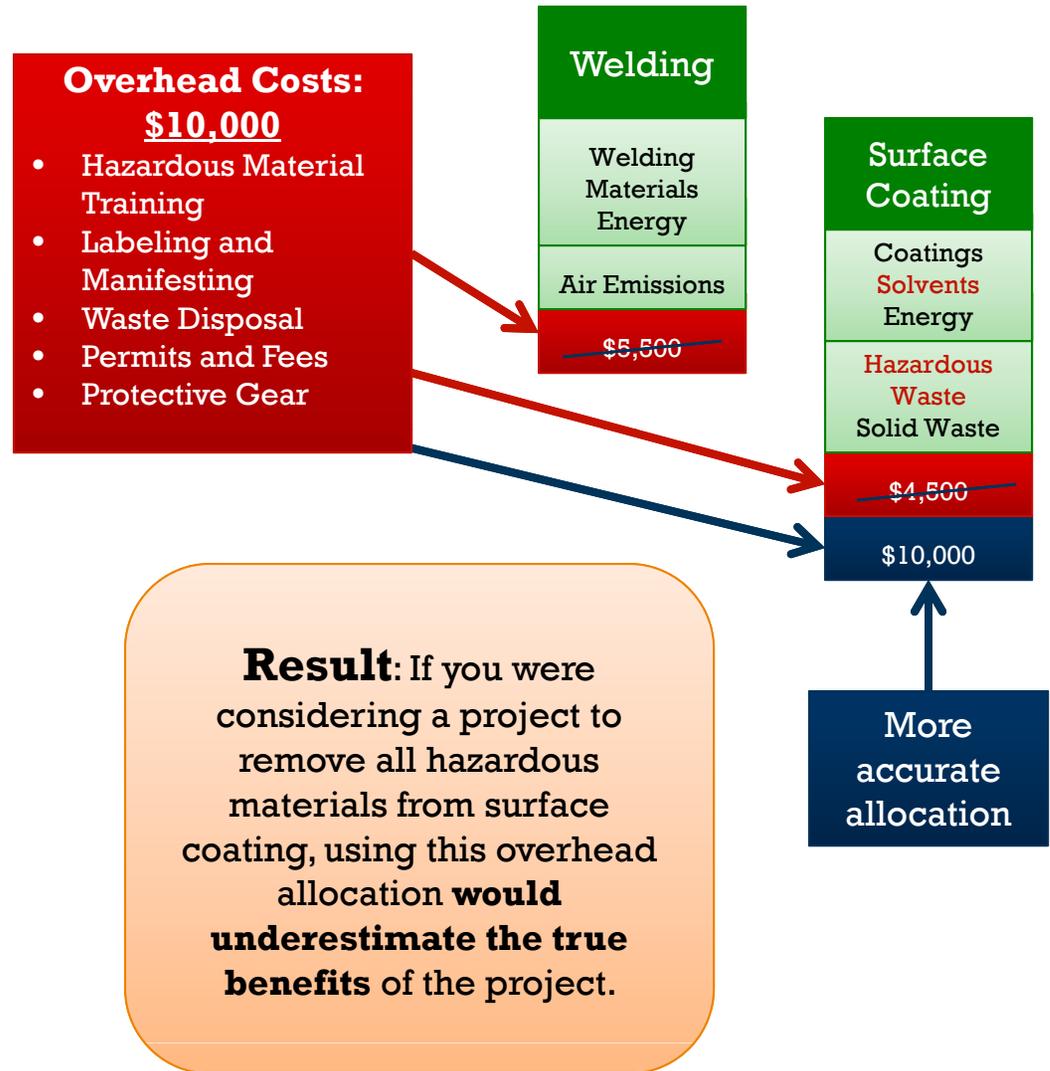
¹ GEMI "Finding Cost-Effective Pollution Prevention Initiatives: Incorporating Environmental Costs Into Business Decision Making"

² NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



“Hidden” Costs Example¹

- Imagine a facility with two processes, welding and surface coating.
- Only the surface coating process uses hazardous materials and produces hazardous waste.
- Overhead costs for resulting from the hazardous materials could be allocated to both processes using a proxy (such as labor hours), resulting in the costs shown in the **red** boxes.
- In reality, the surface coating process is really responsible for the costs, resulting in the cost allocation in the **blue** box.



¹ NEWMOA “Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments



Contingent Liability Costs

- These are costs that could come from potential company liabilities such as:
 1. Costs of accidental pollutant releases
 2. Costs for legal damages or settlements¹
- These costs can be **difficult to estimate** because it is impossible to know when and how often liability costs will be incurred and the costs themselves are difficult to estimate.
- One way to help estimate the costs is to **review your company's past experience or the experience of other companies in your industry** and use that to forecast liabilities.¹



Types of Liability Costs:²

- Disposal
- Transportation
- Remediation
- Property damage
- Civil actions
- Fines and penalties
- Criminal liability
- Tort suits

¹ GEMI "Finding Cost-Effective Pollution Prevention Initiatives: Incorporating Environmental Costs Into Business Decision Making"

² Ohio EPA "Financial Analysis of Pollution Prevention Projects"



Less Tangible Costs

There are a number of costs and benefits related to sustainability that are more difficult to quantify. However, these issues may be important when making decisions about a project.¹ It is important to try to include qualitative or less tangible issues in your analysis.

Health and safety of workers

- Would a project affect the costs related to keeping your workers safe? Would it improve the working environment?

Productivity

- Would the project increase or decrease worker or machine productivity?

Public image

- What effect would the project have on the company's image? Would it improve community relations or customer perceptions?

Market Share²

- Would being a better corporate citizen attract new customers? Would you be able to market your products as being more sustainable?

Quality of process or product

- What effect would undertaking a project have on the quality of the process or the product itself? Would it lead to less rework?

¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"

² Ohio EPA "Financial Analysis of Pollution Prevention Projects"



Initial Costs

- Initial costs are the **costs when you start a project.**
- You may need to buy new equipment or different materials, train employees on new processes, or make other changes to the process.
- To analyze the project, you will **compare the initial costs to the savings from the project.**

Typical Initial Costs:¹

- Purchasing Equipment
- Delivery
- Installation
- Training
- Engineering and contractors
- Utility connections
- Materials

¹ NEWMOA “Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments



Finding Cost Data

- Finding adequate cost data can be a difficult process. A good practice is to **start with the easiest costs to find** and move up from there.²
- There are a number of **departments in your company** where you can get relevant data to help make financial decisions.
- Another good way of learning about costs is to **conduct interviews with employees** on both the production and environmental teams. They may have a better understanding of where costs lie.³
- The UN also has a **checklist of data sources**.

Sources Include:¹

- Material, energy and water bills
- Inventory data
- Sales invoices and shipping records
- Environmental legal cost information
- Overhead accounting data
- Equipment operating manuals
- Production schedules
- Environmental emissions
- Waste shipping and disposal data

¹ "Profiting from Cleaner Production: Checklists for Action." United Nations Environment Program Division of Technology, Industry and Economics.

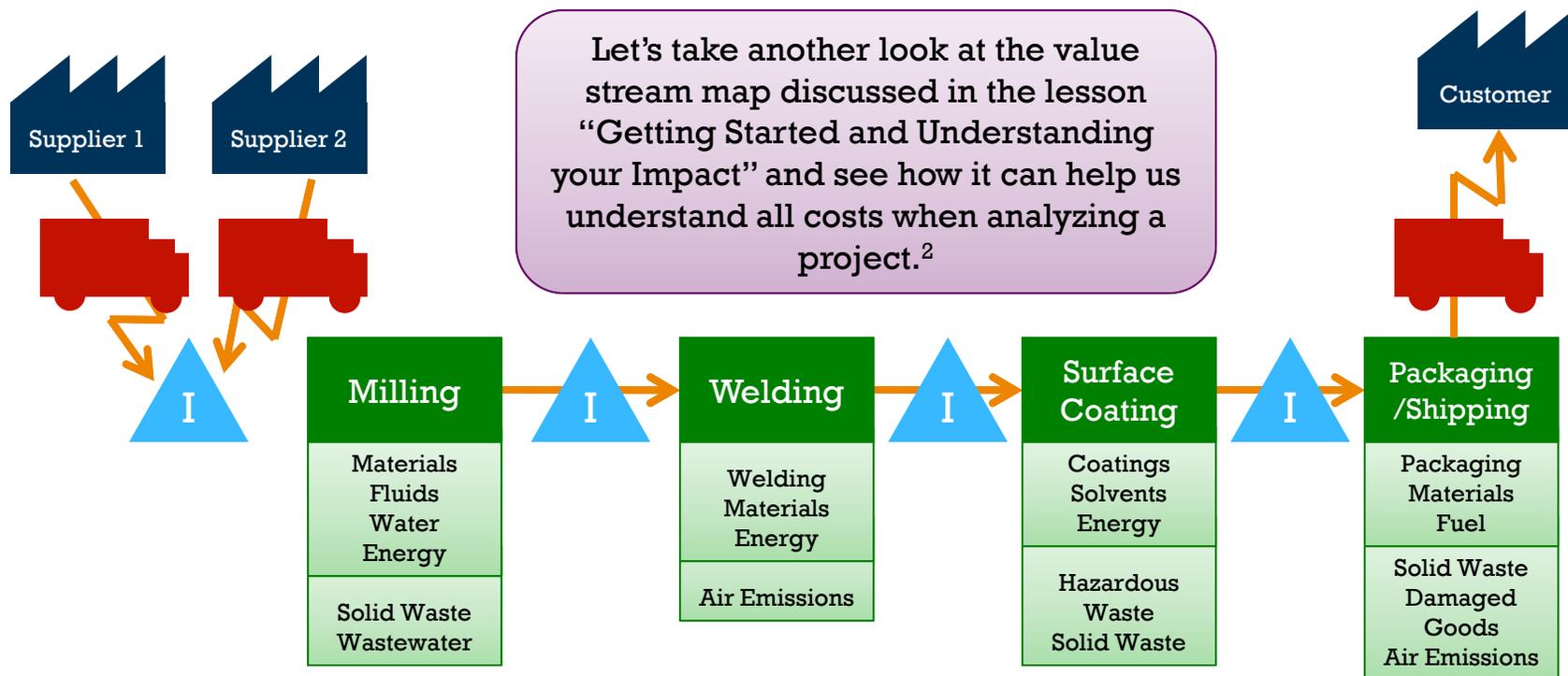
² Washington Department of Ecology "Cost Analysis for Pollution Prevention."

³ Ohio EPA "Financial Analysis of Pollution Prevention Projects"



Mapping Your Processes

- A good way to make sure you aren't missing any costs is to make a **process flow diagram or a value stream map** and locate all the potential environmental impacts and costs.¹ These were also discussed in the lesson "Getting Started and Understanding your Impact."
- For more information on how to integrate environmental data into value stream maps please see the [Lean and Environment Toolkit](#) or [this useful guide](#) from the Green Suppliers Network.



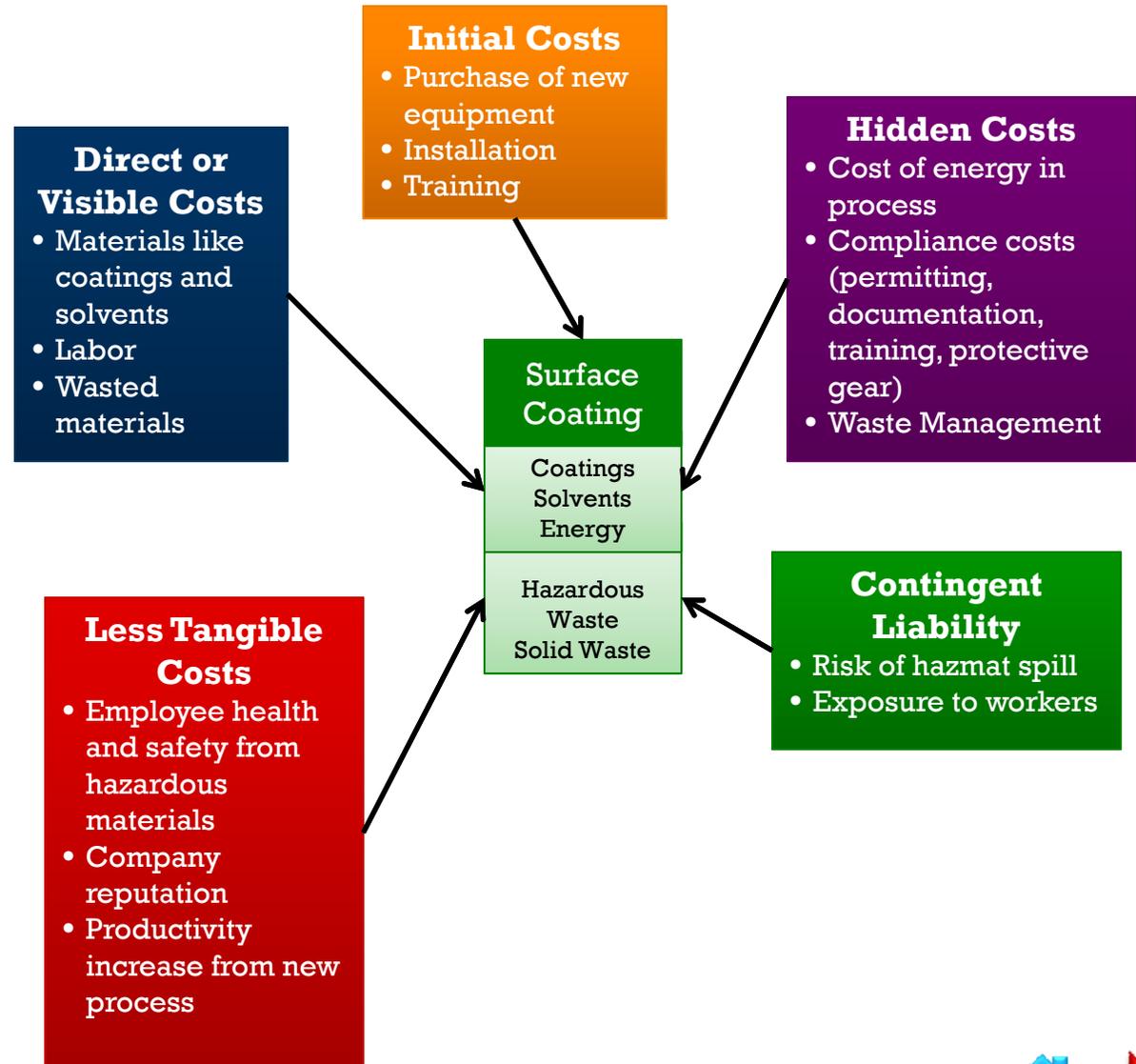
¹ Ohio EPA "Financial Analysis of Pollution Prevention Projects"

² Adapted from "Lean and Clean Value Stream Mapping," Green Suppliers Network, and "The Lean and Environment Toolkit," EPA.



Process Costs Example

- Here we see some of the **potential types of costs to be included when analyzing the change to the surface coating process.**
- On the next slide, we will see how some of these costs would be quantified.



Hypothetical Project Cost Example

Cost	Before Project	After Project	Incremental Change
Initial Costs (New Equipment acquisition, installation, training, etc.)	n/a	\$75,500	(\$75,500)
Operating Cash Flows (one year)	Before Project	After Project	Savings
Raw Materials (Change type of coating)	\$65,600	\$46,800	\$18,800
Solvents (No longer Needed)	\$12,500	\$0	\$12,500
Energy (New Process requires more energy)	\$5,000	\$8,500	(\$3,500)
Hazardous Materials Management and Waste Removal (No longer needed for this process)	\$6,500	\$0	\$6,500
Other Costs	\$6,500	\$2,800	\$3,700
Total Operating Cash Flows	\$96,100	\$58,100	\$38,000

Initial Cost

***Tradeoffs:** for this project, many costs fall, but energy costs increase. You will need to decide if the tradeoffs are worth undertaking.

Annual Savings

So we've identified an initial cost of \$75,500 and annual savings of \$38,000.

In a few slides, we will use these numbers to conduct a **project profitability assessment** to determine whether the project should be implemented.



Resources for Analysis



- Conducting a cost analysis is a complicated process. We've only shown you the basics in this lesson. Here are a few guides to help you get started.
 - [This chapter](#) from the EnergyStar Building Manual discusses how to conduct investment analysis for a project.
 - [This guide](#) from the Northeast Waste Management Officials' Association provides a detailed guide to analyzing the financial benefits of projects including detailed examples of financial analysis.
 - [This guide](#) from the Global Environmental Management Initiative discusses how to use Full Cost Accounting to analyze sustainability issues.



Financial Analysis: Tips for Success



- Look for **spreadsheets and computer programs** that can help you determine the profitability of a project.
- You need to estimate cash flows for the **lifetime of your project** (the timeframe when it will add value). This will vary from project to project but is typically **3 to 10 years**.¹
- Cash flows may be the same each year or they may be different each year.
- Use **after-tax cash flows** in your analysis. Cash flows can increase taxable income, and depreciation of the initial investment can lower taxable income.¹
- Consider **second order effects and their costs**. For example, a new piece of machinery might lower energy costs, but it may also produce less heat, reducing the need for air conditioning.²

¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments

² EnergyStar Building Manual Chapter 3 Investment Analysis



2: Project Profitability Assessment

There are several common ways to assess the profitability of a project.¹ These methods will help you determine whether a proposed project will add economic value to the company.

Click on the boxes below to learn about each type of profitability assessment.

Payback Period

**Net Present Value
(NPV)**

**Internal Rate of
Return (IRR)**

- These methods involve looking at the cash flow generated by your project. In the case of sustainability projects, this is usually through cost savings. The **result is a single number that allows you to understand how profitable** the project is.
- Your company may have a method that it typically applies when analyzing investments.²

¹ Ohio EPA "Financial Analysis of Pollution Prevention Projects"

² EnergyStar Building Manual Chapter 3 Investment Analysis



Payback Period

- Payback period is one of the most common ways of analyzing the financial feasibility of a project
- The payback period of a project is the **amount of time it takes to generate cash flows equal to the initial costs to implement**
- The longer the payback period, the more likely it is that something could interfere with the project. Therefore, longer payback periods are riskier, and shorter payback periods can indicate less risk.¹

Drawbacks of Using Payback Period

- Stops analysis once payback is reached, so you don't get a clear picture of results over the lifetime of the project.¹
- Doesn't take into account the **time value of money**—the idea that an amount of money received today is worth more than the same amount received in the future²
- Doesn't work well when cash flows vary from year to year.³
- Companies often **require shorter payback periods** than sustainability projects can produce.

¹ EnergyStar Building Manual Chapter 3 Investment Analysis

² Ohio EPA "Financial Analysis of Pollution Prevention Projects"

³ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



Payback Period Example

So if the project costs \$5,000 to implement with annual cost savings of \$10,000 a year, the payback period would be six months

Looking at our example of the surface coating process:

Initial Investment = \$75,500
Annual Savings = \$38,000

Payback Period = $\frac{\$75,500}{\$38,000} = 1.99 \text{ years}$

Payback Period¹

=

Initial Investment
Annual Savings

¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



Net Present Value

- Net Present Value (NPV), unlike payback period, **accounts for the time value of money**. It calculates what a future cash flow would be worth today.
- This means that cash flows are discounted so that cash flows in the near future are worth more than cash flows later on using a discount rate.¹
- The NPV is calculated by **adding the present values of all the cash flows** (positive and negative)²
- If the **NPV is greater than 0, the investment is worthwhile**.
- NPV can be used to decide among several possible projects. The best financial decision would be to choose the investment with the greatest NPV.

Choosing the Discount Rate

- The **Discount Rate** starts with the **cost of capital for your company, adjusting for the risk of the project in question**. This is the interest rate or other cost of financing the company could receive. The cost of capital depends on the different capital sources your company could receive (debt or equity) and what would provide the required return to shareholders.³

¹ EnergyStar Building Manual Chapter 3 Investment Analysis

² Ohio EPA "Financial Analysis of Pollution Prevention Projects"

³ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



Net Present Value Example

- The easiest way to calculate NPV is through the use of a spreadsheet or calculator that can calculate NPV.¹
- Going back to our surface coating example, let's **assume a cost of capital here of 10%**, a **project lifetime of 5 years**, and constant annual savings.

Year	Cash Flow	PV of Cash Flows
0	(\$75,500)	(\$75,500)
1	\$38,000	\$34,546
2	\$38,000	\$31,403
3	\$38,000	\$28,549
4	\$38,000	\$25,954
5	\$38,000	\$23,594
		\$68,546

Positive NPV

Present Value¹

$$= \frac{\text{Future Value}}{(1+r)^T}$$

r= discount rate

T=number of periods in which interest is earned

NPV =
Present Value of all Cash
Inflows -
Present Value of Cash
Outflows

¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments



Internal Rate of Return

- The Internal Rate of Return (IRR) is related to NPV. IRR is **the discount rate that will give your project an NPV of 0.**¹
- Like NPV, it's better to calculate IRR it with a spreadsheet
- Once you have the IRR, you compare it with the company's discount rate. **If the IRR is higher than the discount rate, the investment is considered worthwhile.**¹
- If you don't have an established discount rate, you can compare the project IRR to IRRs for projects the company has completed.¹

Drawbacks of Using IRR

- If you are trying to decide between two investments, a higher IRR may not be a better choice. It doesn't distinguish between projects of different sizes.²
- Some projects can have multiple IRRs if there are follow on costs

¹ EnergyStar Building Manual Chapter 3 Investment Analysis

² Ohio EPA "Financial Analysis of Pollution Prevention Projects"



Internal Rate of Return Example

- To calculate IRR by hand would be a process of trial and error. It's best to use a spreadsheet or calculator.
- Here's a simple example done by trial and error to show you how it would work.¹

Example of project costing \$100,000 that will have a return of \$125,000 in one year. Trying discount rates of 10, 25, and 30%.

10%	25%	30%
$NPV = \frac{\$125,000}{(1+.10)} - \$100,000$	$NPV = \frac{\$125,000}{(1+.25)} - \$100,000$	$NPV = \frac{\$125,000}{(1+.30)} - \$100,000$
NPV = \$13,636	NPV = \$0	NPV = -\$3,846
	IRR = 25%	

In this example, if your discount rate is less than 25%, then the project would be considered viable.

¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments"



3: Making the Case

- In order to get your chosen project implemented, you need to sell the project to decision makers and prove that it makes business sense.
- In an industry survey conducted by the Aberdeen Group, **46% of companies said that budget issues were still a challenge** when it came to sustainability projects and more than **40% said it was difficult to make an adequate business case.**¹
- So it's critical that you be able to demonstrate the value of sustainability initiatives to your company's decision makers.



¹ "The ROI of Sustainability: Making the Business Case" Jhana Senxian and Cindy Jutras. Aberdeen Group.



Presenting to Decision Makers

- Every company makes capital budgeting decisions differently, usually after a technical, financial and qualitative analysis.
- You will probably have to prepare a **justification package**, with information to support your proposed project, based on your company's process.¹



Things to Include when Presenting the Project:¹

- Technical specifications and requirements
- Financial benefits
- Less tangible benefits
- How the project is linked to company mission, strategy and goals

¹ NEWMOA "Improving Your Competitive Position: Strategic and Financial Assessment of Pollution Prevention Investments

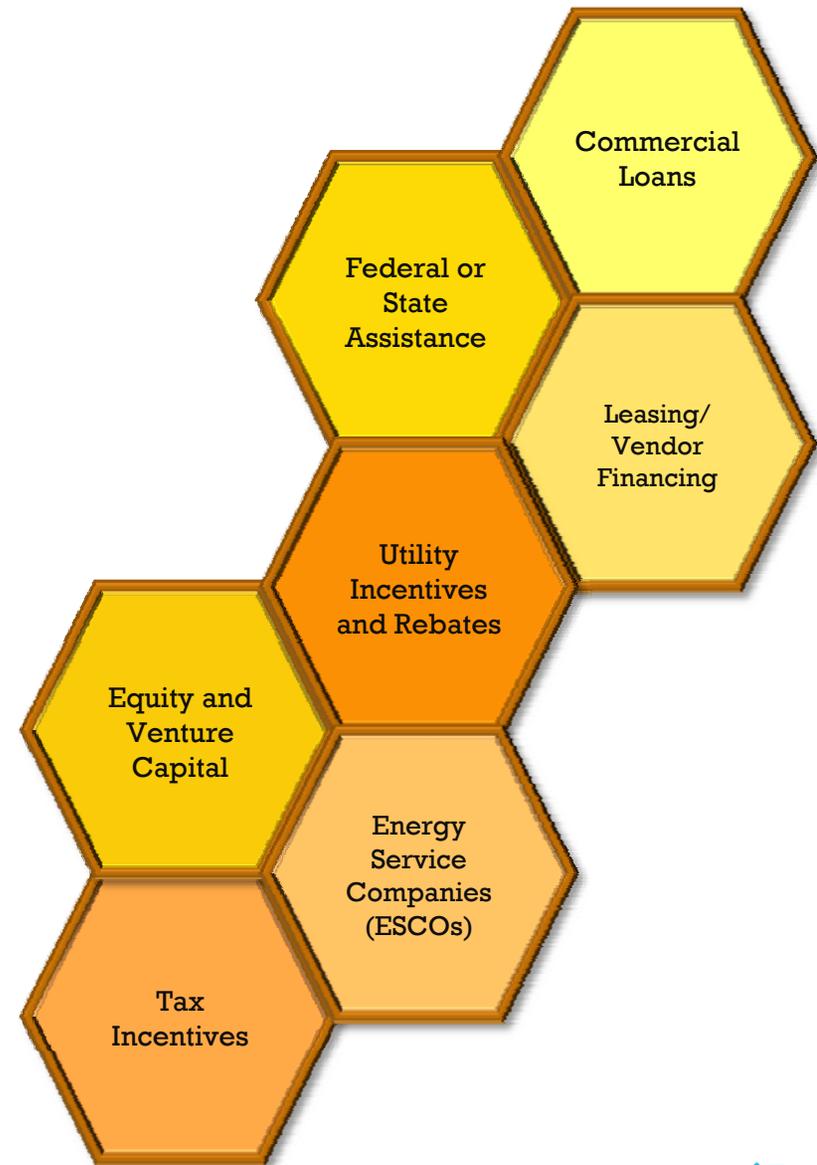


Financing Environmental Investments

Once you've decided on a project, you may be able to finance it using **retained earnings**, but you may also need to look outside the company for financing. When considering financing for your project, it's important to **find the appropriate financing vehicle for your specific situation.**¹

You should consider things like the size of your company, the kind of project you need to fund, your cash flow, other financial considerations. It is important to start with a cash flow projection to help you determine whether you need to seek outside financing. It will also be required for any loan.²

Click on each of the types of financing for more information



¹ NIST MEP "Quick Reference Guide to Growth Financing"

² Department of Energy "Financing Options, Techniques, and Strategies"



Federal or State Programs

One option for financing sustainability projects is to seek federal or state help. These include **loan guarantees, revolving funds, special bond programs and certain grants**.

However, federal loan and loan guarantee programs are not necessarily designed to help with sustainability projects, so you need to link your needs to the criteria listed in the program.¹

A **loan guarantee** is when one party (the guarantor) promises to pay back part of the loan in the case that the loan recipient defaults. In government-backed loans, the government serves as the guarantor. This makes the loan less risky for the lender.

Loan Guarantees from the Small Business Administration (SBA)²

- The **Basic 7(a) Loan Program** is the main method SBA uses to fund small businesses. The funds can be used for a variety of things including purchasing equipment, building renovations, and leasehold improvements. There are specific 7(a) loans that fund the purchase of pollution control equipment.
- The **Express Loan Program** allows certain SBA partner lenders to expedite 7(a) loan applications in less than 36 hours.



Example

- Larry and Margaret Brown, owners of Weston Transfers and Jack's Septic, wanted to expand their businesses into waste collection and recycling. By applying for and receiving a 7(a) loan, they were able to do so. They now have contracts with the state and local governments.³

¹ Department of Energy "Financing Options, Techniques, and Strategies"

² NIST MEP "Quick Reference Guide to Growth Financing"

³ Small Business Association. "Small Business Owner Receives 7(a) Loan"



Federal or State Programs



- Some states have loan guarantee programs similar to the SBA 7(a) program.¹
- Many states have **financing programs** to help manufacturers and other businesses. These are usually through state and **local economic development agencies**.
- You may also be able to gain access **Revolving Loan Funds**, pools of public and private sector money at the federal and state levels. However, to be eligible, you usually have to demonstrate that you've exhausted all other options for financing.¹

This site allows you to search for loans and grant programs for manufacturers federally and by state.

This site from the Department of Energy allows you to search for state incentives and resources for energy efficiency.

¹ NIST MEP "Quick Reference Guide to Growth Financing"



Federal or State Programs

Tax-Exempt Bond Programs

(Industrial Development Revenue Bond Programs)¹

- These can often be found at the state or local level.
- Bonds are issued by the government agency on behalf of a business.
- The bonds are sold on the open market, and the business pays back the bond and the interest.
- These programs can be a good way of getting longer-term financing than is typically available through a commercial loan.



Example

- After winning a contract with the Department of Defense, Lockheed Martin Air Dock in Ohio wanted to redevelop a brownfield site that needed environmental remediation and improve its equipment.
- The Summit County Port Authority (SCPA) structured a 20 year operating lease for the real estate and a 7 year lease for the manufacturing equipment. Lockheed Martin paid 85% of the lease, while the city of Akron paid 15%. Lockheed also received \$17 million in funds to fund the improvements, and the cleanup was funded by the EPA and the state of Ohio.²

¹ NIST MEP "Quick Reference Guide to Growth Financing"

² Summit County Port Authority. "Lockheed Martin Air Dock"



Commercial Loans

Commercial loans (debt financing) can be an attractive financing method for certain projects, especially equipment purchases.

However, lenders have **strict standards for issuing credit**, and debt financing can be a complex process.¹

Additionally, debt financing requires **good credit, low project risk, collateral assets and down payments**.²

It also may be difficult to get a loan for the full time period of the project. It is relatively difficult to secure a long-term commercial loan.

Lenders are likely to have many concerns when considering loans for sustainability projects. These are discussed on the next slide.



Example

- Helios Solar Works received a commercial loan of \$650,000 from the Milwaukee Economic Development Corporation and \$1.3 million from Investor's Bank to finance the purchase of robotic manufacturing equipment to make their solar panels.³

¹ Allison Houlihan "Financing Energy Efficiency Improvements" Practice Guide #21 Summer 2008 Southeast Regional Environmental Finance Center

² NIST MEP "Quick Reference Guide to Growth Financing"

³ Journal Sentinel. "Loan to Helios increases; solar firm lands big European Contract"



The Lender's Point of View

- Although financing an environmental investment is much like any other project, lenders will often have some specific concerns regarding **risk**.
- Many factors affect the decision to lend. You may really have to work to educate the lender on your industry, the project you're proposing and its level of risk. [This guide](#) from the Northeast Waste Management Officials' Association offers suggestions.
- Lenders are likely to be very conservative, and you must work to mitigate their perceived risk.²

Lender Concerns¹

- **Credit:** What is the borrower's credit history?
- **Cash Flow:** What is the cash flow from the proposed project?
- **Collateral:** What collateral is the company offering, and will it hold its value?
- **Character:** What is the borrower's reputation, status in the community, etc.?
- **Capacity:** What is the company's ability to repay the loan? This is documented with financial records.

¹ NIST MEP "Quick Reference Guide to Growth Financing"

² Department of Energy "Financing Options, Techniques, and Strategies"



Understanding Potential Lenders

- When approaching a lender about a loan for a sustainability project, it is important to understand the lender's perspective and background.
- Think about the following questions.¹



- Who makes the bank's lending policies? Are they local or national?
- What kinds of projects does the bank specialize in? You may want to find a bank that often works with manufacturers or one that has a focus on sustainability.
- Will the lender understand and be comfortable with the new technologies you want to finance?
- Has the lender financed similar projects to yours?
- Are there any issues or red flags that would make the lender less likely to approve the project?

¹ Department of Energy "Financing Options, Techniques, and Strategies"



Leasing and Vendor Financing

Many manufacturers find leasing attractive because it can help them **avoid higher up front costs** when purchasing new equipment.¹

Leasing is **essentially a method of borrowing** where the liability does not usually appear on the company balance sheet. It can then free up the company's equity for other uses, and may give the company additional borrowing power.²

With leasing, you **don't get the tax benefits from the depreciation** of the equipment, but you do get tax benefits from the lease payments.³

Two basic kinds of leases⁴

Finance or Capital Lease

- In a capital lease, the company is essentially buying the equipment in installments.
- The lessor owns the equipment until the end of the lease.
- These kinds of leases are often offered by leasing companies, utilities, energy service companies and contractors that install equipment.

Operating Lease

- In an operating lease, the lessor owns the equipment and leases it to the lessee for a specific period of time.
- At the end of the lease, the lessee can return the equipment, purchase it, extend the lease, etc.
- These leases are often offered by vendor financing companies and equipment manufacturers.

¹ Allison Houlihan "Financing Energy Efficiency Improvements" Practice Guide #21 Summer 2008 Southeast Regional Environmental Finance Center

² Department of Energy "Financing Options, Techniques, and Strategies"

³ NIST MEP "Quick Reference Guide to Growth Financing"

⁴ Energy Star. "Energy Star Building Manual." Chapter 4.



Leasing and Vendor Financing

Leases are **typically faster and easier to set up** than many other financing methods.¹

In the case of some environmental investments, such as energy efficiency projects, the cost savings from the project can sometimes be higher than the lease payment.

Leasing can also often include the costs of installation and license fees.

Leases can also be better when the equipment will become obsolete quickly.²



Some Drawbacks to Leasing²

- Can cost more than purchasing over the lifetime of the equipment
- Don't get the tax deduction for depreciation
- Equipment not counted as an asset, so you can't use it as collateral
- Some leases appear as a liability on the balance sheet.

¹ Energy Star. "Energy Star Building Manual." Chapter 4.

² NIST MEP "Quick Reference Guide to Growth Financing"



Utility Rebates and Incentives

Sometimes energy and water utilities provide companies with rebates or other incentives to improve energy or water efficiency or water treatment.

These incentives include rebates on the purchase or installation of efficient equipment, design help, and low-interest financing. Utilities may also offer plant assessments.¹

You may be able to find a link between broader sustainability projects and energy efficiency to get funding from a utility.

Talk with your utility account manager to find out if the utility offers any rebates or incentives.



Example

- Through ComEd's 'SmartIdeas' incentive program, Armacell LLC was able to retrofit their manufacturing plant in Holland, IL with energy saving improvements to their water cooling system. After a \$100,000 incentive, the project cost \$148,523. With the incentive, the company's payback period reduced from 2.4 years to 1.7 years and saved the company 1,596,269 kWh a year.²

¹ Allison Houlihan "Financing Energy Efficiency Improvements" Practice Guide #21Summer 2008 Southeast Regional Environmental Finance Center

² ComEd. "Case Study: A Custom/Process Chiller Project"



Venture or Equity Capital

- Strategic investors and similar groups can provide companies with equity capital. These investors look for companies that can be made more efficient or will grow quickly.¹
- Although venture capital is often focused on high-tech industries, companies in growth sectors can also attract this kind of capital.
- Much of the available venture capital comes from informal investors such as “angel investors,” rather than formal credit sources such as banks. Angel investors are often successful entrepreneurs interested in helping new businesses through financing and advice. There are networks that help link angel investors to companies.²
- However, it can still be hard to locate venture capitalists and determine the kinds of projects they want to invest in.
- The Small Business Investment Company (SBIC) is a program from the SBA that provides small businesses with equity financing.



Example

- OPXBIO, a biotechnology manufacturer that aims to create biobased chemicals, raised \$36.5 million to fund development of biobased acrylic acid (BioAcrylic). The majority of this funding came from venture capital groups, including Mohr Davidow Ventures, Braemar Energy Ventures, Altira Group, and X/Seed Capital.³

¹ NIST MEP “Quick Reference Guide to Growth Financing”

² Department of Energy “Financing Options, Techniques, and Strategies”

³ Green Venture Capital. “OPXBIO Raises \$36.5 Million in Series C Financing”



Energy Service Companies (ESCOs)

- **Energy Service Companies (ESCOs)** are companies that provide energy management and energy efficiency improvements and installation for companies. They develop and manage the energy efficiency projects for other companies or organizations.¹
- ESCOs don't usually expect up-front payment. Their payment comes from the energy savings clients realize.
- This kind of financing is also called "**performance contracting**" because the performance of the contract, the energy savings, is how the project is financed and how the ESCO gets paid.²



Example

- DÜRR Systems Inc, a paint and assembly systems company, replaced its 20 year old boiler in the production area with a new energy efficient one with help from Cambridge Engineering, Inc . DÜRR reduced its natural gas usage by 23%, cut energy use, reduced carbon dioxide emissions by 300 tons per year, and improved the surrounding air quality. The project had a payback period of 3 years.³

¹ Energy Star. "Energy Star Building Manual." Chapter 4.

² Allison Houlihan "Financing Energy Efficiency Improvements" Practice Guide #21 Summer 2008 Southeast Regional Environmental Finance Center

³ EnergyStar. "Service and Product Provider Success Story"



How Performance Contracts Work

- The ESCO conducts an audit and designs a project to reduce energy use.
- The ESCO implements and manages the project.¹
- It bills the contracting company (manufacturer) for a negotiated portion of the energy cost savings. This can happen in one of three ways:²
 - **Shared Savings** – Savings are shared between the ESCO and the manufacturer according to agreed percentages.
 - **Paid from Savings** – the ESCO receives a guaranteed amount with the manufacturer receiving the rest
 - **Guaranteed Savings** – the manufacturer receives a guaranteed amount with the ESCO receiving the rest

Potential Drawbacks of working with ESCOs¹

You have to pay out a percentage of the savings.

You may have to have substantial energy savings opportunities for ESCOs to be interested

Contracts can be difficult to arrange

Energy savings can be difficult to measure accurately

¹ Energy Star. "Energy Star Building Manual." Chapter 4.

² Allison Houlihan "Financing Energy Efficiency Improvements" Practice Guide #21 Summer 2008 Southeast Regional Environmental Finance Center



Tax Incentives

- There are numerous sustainability related tax incentives businesses can take advantage of. Most are for energy efficiency or renewable energy projects.
- While they aren't financing methods, these incentives can lower the costs of implementing a sustainability project.
- [This site](#), the Database of State Incentives for Renewables and Efficiency, allows you to search for tax and other incentives for renewable energy and energy efficiency



Example

- Novozymes, a bioinnovation company, received a \$28.4 million dollar federal Advanced Energy Manufacturing Tax Credit. The company received the credit to construct its new enzyme manufacturing facility in Blair, Nebraska. The facility will produce enzymes used to make advanced biofuels and will create more than 100 green jobs for the state.¹

¹ Energy Boom. "Novozymes gets \$28.4 million Tax Credit to Advance Biofuels Production, Create Green Jobs."



Financing: Additional Resources

- Choosing the best way to finance sustainability projects is a complicated process. Here are some guides that provide more information:
 - The NIST Manufacturing Extension Partnership’s [“Quick Reference Guide to Growth Financing”](#) provides a great overview of general financing options as well as links to specific financing opportunities.
 - [Chapter 4](#) of the Energy Star program’s Building Manual walks you through various ways of financing projects.
 - And [this guide](#) from the Southeast Regional Environmental Finance Center compares the various financing methods and explains how suitable they are for these types of projects.



Where to Go for Help



- UNEP has put together [a series of worksheets](#) to help you with the decision making and financing process.
- Energy Star provides a [Building Upgrade Value Calculator](#), a [Cash Flow Opportunity Calculator](#), and a [Financial Value Calculator](#) that can be useful when considering energy projects.
- The Department of Energy has a [State Incentive and Research Database](#) with links to utility, state, local, federal, and nonprofit incentives.



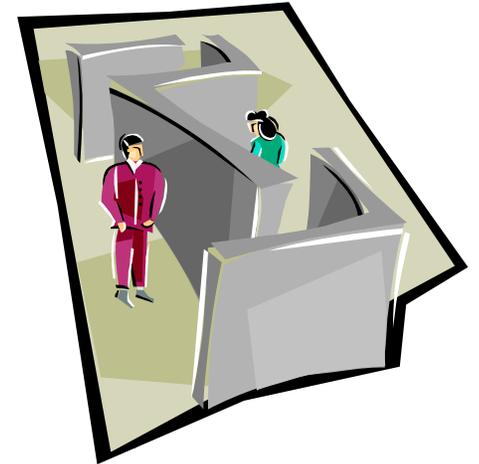
Search Terms

- Financial Assistance
- How-to Guides



Common Barriers to Success

- Surveys of companies have shown that there are a number of major barriers to the success of sustainability programs:
 - Budget constraints
 - Demonstrating a business case
 - Lack of necessary information¹
 - Flawed execution and difficulty changing corporate thinking and embedding the sustainability program throughout all operations.
 - Measuring sustainability²
 - Having an integrated approach to sustainability
 - Competition between companies' strategic priorities³



¹ “The ROI of Sustainability: Making the Business Case” Jhana Senxian and Cindy Jutras. Aberdeen Group.

² MIT Sloan, “The Business of Sustainability”

³ Accenture and the United Nations Global Compact “A New Era of Sustainability: UN Global Compact-Accenture CEO Study 2010.”



Tips for Success

- The more familiar you are with the concepts of sustainability, the more likely you are to find value for your company in it.
- In the Accenture survey, 96% of CEOs said that **companies should fully integrate sustainability into their operations and strategies**. 81% said that their companies had already done so.¹
- If your company doesn't have an established sustainability program, **start small**. Begin with smaller projects, building credibility and support. This will help you get buy-in for larger projects.²
- Ensure that you are using good metrics and document your results.



¹ Accenture and the United Nations Global Compact "A New Era of Sustainability: UN Global Compact-Accenture CEO Study 2010."

² David Bent, "How to Build a Business Case for Sustainability: Four Tips on Getting Buy-In from Finance." GreenBiz.



Tips for Success

- One way to help ensure success of sustainability projects is to **build support for your sustainability program across the company.**
 - Taking a life cycle approach may affect many of the departments or functions in your company .You will need input from departments like product development, marketing, production, procurement, and purchasing.
 - One way of building support is to create cross-functional teams
 - Sustainability needs to be ingrained in every practice of the company to be successful
 - Seek input from employees throughout the enterprise. For example, production employees may have ideas on ways to improve the product or manufacturing processes and may be able to supply necessary data for sustainability metrics.¹



¹ UNEP “Life Cycle Management: A Business Guide to Sustainability”



Engaging Your Workforce

- Educating and engaging your employees on sustainability is key for the successful implementation of a sustainability program.¹
- Why? **Your employees make decisions about your business** every day. These decisions can have profound effects on your company's sustainability.
- Employees also **know your business well**. They can be great sources of insight and ideas on how you can enhance your sustainability. They are best positioned to identify inefficiencies and develop solutions.¹
- **Environmental Management Teams** can be a great way to engage employees across your business units and actively involve them in the sustainability efforts while leveraging their individual expertise.²
- Remember that a company's **environmental policy** is the first way you communicate your sustainability commitment to your employees.²



¹ National Environmental Education Foundation, "The Business Case for Environmental and Sustainability Employee Education"

² EPA Small Business Division, "Practical Guide to Environmental Management for Small Business"



Things You Can do to Get Employees Involved

- Help justify investment in employee education by **linking it to company objectives.**
- Use **educational pilot programs.**
- Show employees how their environmental work is **making a difference** in the company's performance.¹



¹ National Environmental Education Foundation, "The Business Case for Environmental and Sustainability Employee Education."



Decision Making and Financing - Checklist



- ✓ Collect all relevant cost data
 - ✓ Process before any changes
 - ✓ Process after proposed project
- ✓ Use profitability measures to analyze cost data
- ✓ Prepare a justification package with project documentation
- ✓ Present proposed project to decision makers
- ✓ Investigate available financing methods
- ✓ Counteract major barriers to success
 - ✓ Integrate sustainability across the organization
 - ✓ Collect better information and metrics
 - ✓ Start with small projects
 - ✓ Engage employees throughout the company

