

## Trainer Instructions: Financial Feasibility Analysis

*From: Energizing Cleaner Production – a Guide for Trainers, UNEP/InWEnt, 2007*

<b>Title</b>	<b>FINANCIAL FEASIBILITY ANALYSIS</b>
<b>Background</b>	Often the feasibility analysis of options is carried out by company staff or consultants who have a sound technical knowledge but may be less familiar with finance. In addition, management of companies, especially small companies, may use the “Simple Payback” calculation to evaluate a proposed option. For options that require higher investments and have a longer payback period it can also be useful to determine the Net Present Value calculation to help in decision making. A session on how to carry out the financial feasibility analysis of options can therefore be useful to many course participants.
<b>Objective</b>	To obtain an understanding of how to determine the financial feasibility of options.
<b>Minimum duration and approach</b>	<ul style="list-style-type: none"> <li>▪ One session (1.5 hours)</li> <li>▪ Recommended approach: the workshop exercises are included in the PowerPoint presentation. Therefore spend <ul style="list-style-type: none"> <li>- 20 minutes to go through slides 1 – 20</li> <li>- 5 minutes to explain cash flow calculations in workshop exercise question 1 (It is suggested to go through the exercise as a group since there is not enough time to do this exercise individually)</li> <li>- 5 minutes on workshop exercise question 2</li> <li>- 20 minutes on slides 21 – 35</li> <li>- 30 minutes on workshop exercise questions 3 and 4, including the discussion of the answers</li> <li>- 10 minutes on slides 36 - 42</li> </ul> </li> <li>▪ Presentation: 42 slides</li> </ul>
<b>Contents</b>	<ul style="list-style-type: none"> <li>▪ Introduction to financial feasibility step</li> <li>▪ Cash flow</li> <li>▪ Profitability indicators: Simple Payback, Return on Investment (ROI), Net Present Value (NPV) and Internal Rate of Return (IRR)</li> </ul>
<b>Assessment of participants</b>	<ul style="list-style-type: none"> <li>▪ Pose questions during the session. Ask participants which profitability indicators they have used in the past and why. There are also some slides with questions for participants.</li> <li>▪ Carry out the workshop exercise. It is about the PLS Company, a medium-sized firm that produces rolls of printed, laminated film. The company bought a quality control (QC) camera system for the print line to detect printing errors earlier and thus reduce the scrap rate. The objective of this exercise is to conduct a profitability assessment for the project using two different profitability</li> </ul>

indicators. Participants are given background information about the company and the following four questions:

**Question 1: Calculation of annual cash flows (15 minutes)**

*You will first need to calculate the annual operating costs associated with the manufacturing inputs to the print step as well as waste management costs for the solid scrap waste from the print step. These costs need to be calculated both before installation of the QC camera (“business as usual”), and after installation of the QC camera. Then the annual savings, i.e., reduction in annual operating costs, can then be calculated. Use the materials balance information and the Cash Flow Worksheet given on the following page to calculate the “before” and “after” operating costs for the project. At the bottom of the worksheet, calculate the total annual operating costs “before” and “after” installation of the QC camera. Finally, calculate the total savings for the project, i.e., the total reduction in operating costs.*

**Question 2: Calculation of Simple Payback to evaluate profitability (5 minutes)**

*A Simple Payback calculation represents the number of years it will take for the cash inflows from an investment project to “pay back” the initial investment. It is calculated by dividing the total initial investment by the first-year savings from the project.*

*Simple Payback = initial investment / first year savings*

*The total initial investment cost for the QC camera system (for purchase, installation, and employee training, etc.) is US\$ 105,000. Use the annual savings calculated in Question 1 above to calculate Simple Payback for this project.*

*PLS uses a simple payback hurdle rate of three years. In other words, if the simple payback for a project is less than three years, then PLS considers the project to be profitable. Based on the simple payback calculated, is the QC camera project profitable or not?*

**Question 3: Calculation of NPV to evaluate project profitability (15 minutes)**

*Question 2 asked for the calculation of the simple payback indicator to assess the profitability of the QC camera project. Net Present Value (NPV) is another profitability indicator that is a bit more complicated to calculate, but can be more reliable and accurate. Recall that the definition of NPV is:  $NPV_n =$  the sum of the present values of all project cash flows over the first  $n$  years. For example:  $NPV_3 =$  the sum of the present values of all project cash flows over the first 3 years.*

*Recall that if the NPV for a project is greater than zero, the project is considered to be profitable over the time period of interest. If NPV is less than zero, the project is considered NOT to be profitable over that time period. See the attached handout entitled “Performing Net Present Value (NPV) Calculations” for assistance in doing the NPV calculation.*

	<p><i>The average discount rate for investment projects at the PLS company is 15%. Use this discount rate to calculate NPV<sub>3</sub> for the QC camera project. Based on the NPV calculated, would you say that the QC camera project is profitable at the end of three years or not?</i></p> <p><b><u>Question 4: Compare simple payback and NPV (5 minutes)</u></b></p> <p><i>You have now calculated both simple payback and NPV<sub>3</sub> for the QC camera project. Record your results in the table below, and compare the results from the two indicators. What do you think about the relative values of simple payback and NPV as profitability indicators?</i></p> <p>Suggestions on how to run the workshop:</p> <ul style="list-style-type: none"> <li>▪ Explain the questions when the presentation slide comes up during the PowerPoint presentation.</li> <li>▪ Completing the workshop exercises will probably go faster if participants work in pairs.</li> <li>▪ Note that session planning does <u>not</u> include time for participants to answer question 1 by themselves. There is only 5 minutes allocated for an explanation by the trainer of cash flows without and with the QC camera system. Therefore it is recommended to include question 1 only if more time is available.</li> <li>▪ Question 2 is relatively easy, but it is still recommended that participants have a few minutes to do the calculation themselves. The Simple Payback is used frequently.</li> </ul>
<p><b>Other comments</b></p>	<ul style="list-style-type: none"> <li>▪ This session is largely based on <i>from “Profiting from Cleaner Production”, in Strategies and Mechanisms for Promoting Cleaner Production Investments in Developing Countries. UNEP.</i></li> <li>▪ Depending on the familiarity of the audience with profitability indicators, the trainer can decide whether to include this session in the course or not.</li> </ul>