

## Step 12

# Evaluate the Financial Return

An evaluation is undertaken to appraise the financial impact on the administration of the final contending design alternatives selected during the preceding step.

Only direct financial return is treated in this step. A poor financial rate of return means that indirect social and economic benefits may be needed for justification (refer to Step 2).

For simplicity, a discounted cash flow method is used, whereby a present worth (PW) calculation is applied to the annual cash flow of the project during the study period. This method is recommended, unless the administration or funding agency requires some other method. Any good text about engineering economics explains this method in detail.

### 12.1 Financial Appraisal

To determine the financial impact on the administration, answers to such questions as the following are needed:

- How much investment capital will be required initially to implement the project?
- How much capital for expansion and replacements will be needed in the future?
- What are the estimated operating and maintenance costs?
- What is the expected income from the project?
- Will subsidies be needed to supplement the income, and if so, approximately how much? (Socio-economic benefits may need to be quantified or qualified to justify subsidies — refer to Step 2.)
- Is the project financially feasible?

The alternatives being compared should provide equal service and should be terminated at the end of the study period with a residual value allowed. All cost burdens and incomes must be included.

**Investment Costs.** Initial and expansion costs include those for all different types of switching and transmission equipment, spares, test equipment, shipping, civil works, buildings, land, rights of way, installation, engineering, training, and project management.

**Operating Costs.** These include power consumption, maintenance staff, vehicle operating costs, factory repair, consumption of consumables, test equipment maintenance and calibration, rents and leases, etc.

**Residual Value.** Use straight line depreciation unless the administration's policy is different, and deduct salvage or removal costs if applicable. Refer to Figure 12.1 for determining typical average service lives.

**Income.** These include one-time service fees, monthly service charges, estimated long distance charges, subsidy (if necessary), etc.

A detailed cash flow should be developed for each contending alternative. Figure 12.2 and 12.3 show a typical cash flow worksheet and bar chart diagram. If the accumulated present worth of the cash flow at the end of the study period is a positive number, then the project is feasible (at the chosen discount or interest rate). However, if the number is negative, then subsidies are indicated. Subsidies to make the project feasible might be justified by the socio-economic benefits explained in Step 2 of this guide.