

The Economics of SFI

Why traditional economics doesn't work - some of the questionable assumptions

(Source: Rogers 1991; Daly & Cobb 1994)

Assumptions about Consumers:

- Rational consumers act consistently on preferences
- Successive units of a commodity add less and less to consumer satisfaction and hence add less and less to utility (diminishing marginal utility of consumption)
- Preferences must be independent of the purchases of others (no keeping up with the Joneses)

Assumptions about Producers:

- Producers pursue the principle of profit maximization rationally
- Production processes must not be such that successive units of production are cheaper (decreasing returns to scale)
- There is no physical interdependence among production processes (no externalities)

Assumptions about the Structure of the Market:

- Markets must be "perfect", i.e., (a) Producers and consumers have complete information about quality, prices, and availability of goods and services; and (b) Both producers and consumers are small, relative to the size of the market
- Resultant distribution of income is "appropriate"
- Labor, capital, and other resources are relatively free to move from location to location; no spatial constraints
- There is full employment of labor and resources

Other Inappropriate Assumptions of Economics

- Natural capital has no value in reserve; it is not accounted for until it is harvested by humans
- All resources are completely fungible, i.e., every natural resource has a feasible and equivalent technological substitute
- Nature consists of limitless resources and sinks
- All risks are monetarily compensable

How do we normally think about project costs?

First Costs:

Site acquisition

Construction

- Materials
- Labor
- Equipment
- Contingencies
- Financing

Ongoing Costs:

Operations

- Materials
- Labor
- Energy

Maintenance

- Equipment
- Labor
- Materials

Systems Repair/Replacement

- Equipment
- Labor
- Materials

End-of-Service-Life Costs:

Decommissioning

- Labor
- Equipment
- Materials

Adaptive Reuse

- Labor
- Equipment
- Materials

Demolition/Deconstruction/Disposal

- Labor
- Equipment
- Materials
- Fees

Environmental Cost Terms

- Regulatory/compliance costs - the costs incurred to comply with federal, state, or local environmental laws
- Voluntary costs - costs incurred that are not necessary for compliance but rather go beyond compliance
- Grey-area costs - costs that are not solely or clearly environmental in nature, but may also be viewed, in whole or part, as health and safety costs, risk management costs, production costs, operation costs, etc.
- Up Front costs - a.k.a. first cost of acquiring a facility
- Operational costs - costs incurred during the operating lives of processes, products, systems, and facilities
- Back-end costs - include environmental costs that arise following the useful life of processes, products, systems, or facilities
- Conventional costs - costs typically recognized in capital budgeting processes, e.g., capital equipment, raw material, supplies, and equipment
- Direct costs - Costs that are clearly associated with a given cost center
- Usual costs = conventional costs
- Hidden costs - the result of assigning environmental costs to overhead pools or overlooking future or contingent costs
- Overhead - often used synonymously with hidden costs; all costs that are not directly allocated as direct costs
- Exit costs - the cost of proper closure at the end of the life cycle
- Contingent costs - environmental costs that are not certain to occur in the future, a.k.a. environmental liabilities, liability costs, or contingent liabilities
- Future (or prospective) costs - environmental costs that are certain to occur in the future
- Less tangible costs - includes relationship costs, image costs, etc.

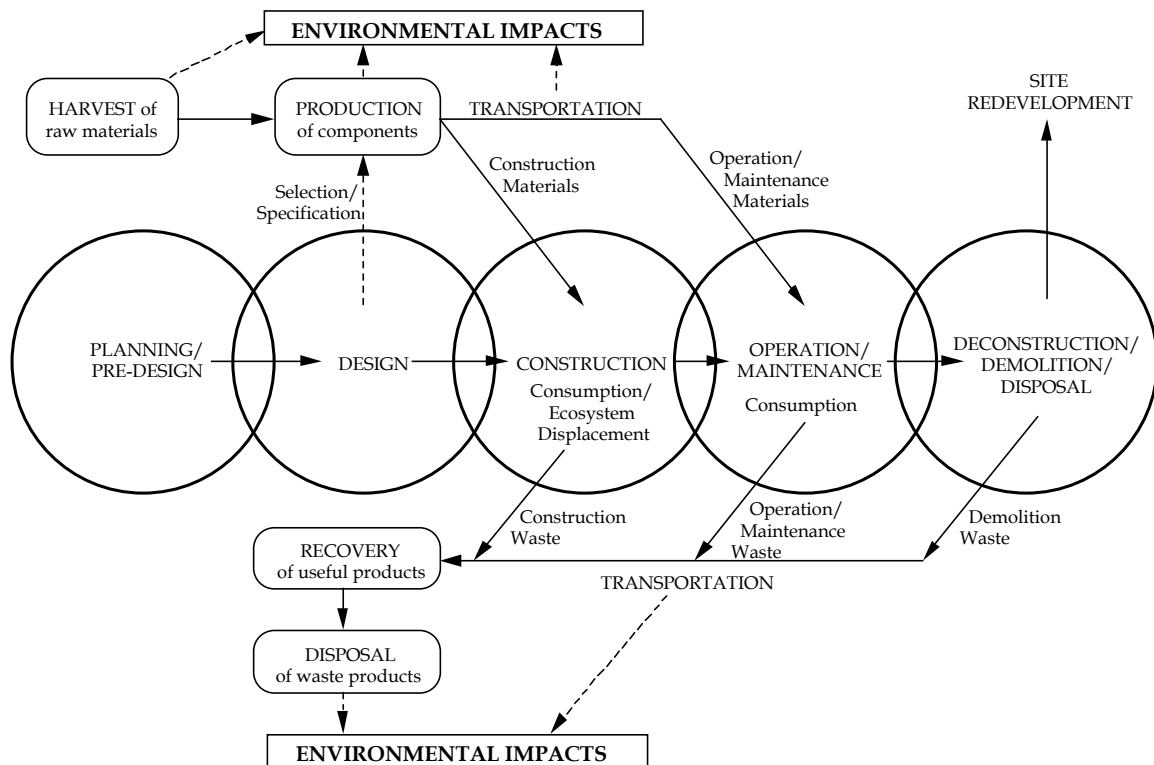
First Cost = the costs we are accustomed to estimating and associating with the cost of a project.

Life Cycle Cost = all of the costs that can be associated with a building from its inception to eventual end-of-service-life

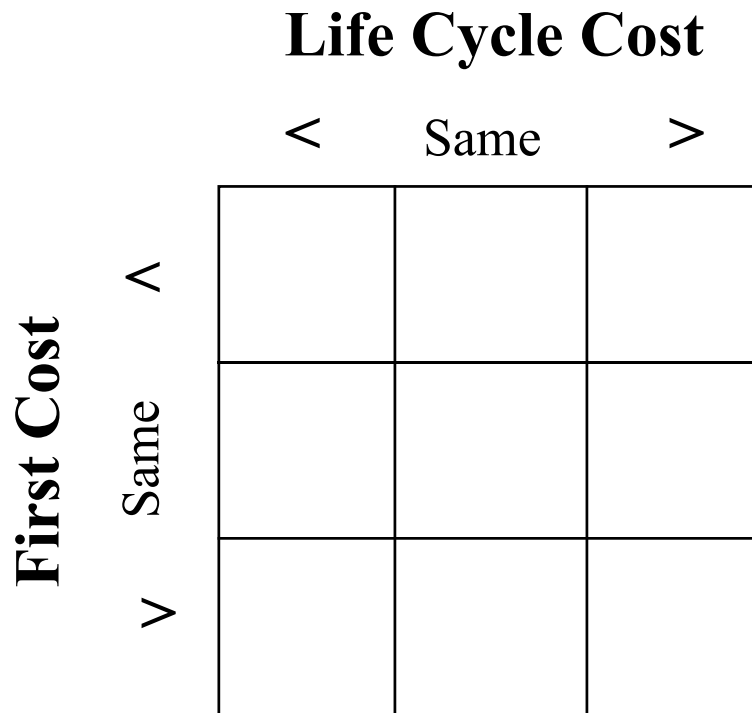
Internal Cost = the cost of something to the company

External Cost = the cost of something to society as a whole, a.k.a. externality

Scope of Life Cycle Costing:



Where on the following grid do we expect sustainable facility projects to fall?



What are the acceptable areas of the grid in terms of meeting the economic expectations of the project stakeholders?

Toward what corner of the grid should we strive to move in order to overcome economic barriers to project sustainability?

Are there ways to design and implement projects that help move their cost in this direction?

Kinds of Cost:

- Traditionally considered quantifiable costs
- Nontraditional quantifiable costs
- Qualitative costs

Revised Whole Project Cost Model

