



Evaluators Workshop: Scoping and Assessing Program Resource Utilization when Evaluating Federal Programs

**Presented by Dr. Greg Mason and Dr. Simon Roy
March 27, 2013**

**Centre of Excellence in Evaluation,
Treasury Board Secretariat and the
Canada School of the Public Service**




Core Issue 5 (CI5)

Demonstration of Efficiency and Economy:

Assessment of resource utilization in relation to the production of outputs and progress toward expected outcomes

- Directive on the Evaluation Function
(2009), Annex A



1. Overview of core concepts

Key Definitions

- **Economy:** Minimizing the use of resources. Economy is achieved when the cost of resources used approximates the minimum amount of resources needed to achieve expected outcomes.
- **Efficiency:** The extent to which resources are used such that a greater level of output is produced with the same level of input or, a lower level of input is used to produce the same level of output. The level of input and output could be increases or decreases in quantity, quality, or both.
- **Effectiveness:** The extent to which a program is achieving expected outcomes.

Different Perspectives on Assessing Resources Utilization

Perspective

Overview

Allocative
Efficiency

- Focus on relationship between resources consumed and outcomes
- Were resources consumed reasonable for the outcomes achieved in light of context, priorities and/or alternatives?

Operational
Efficiency

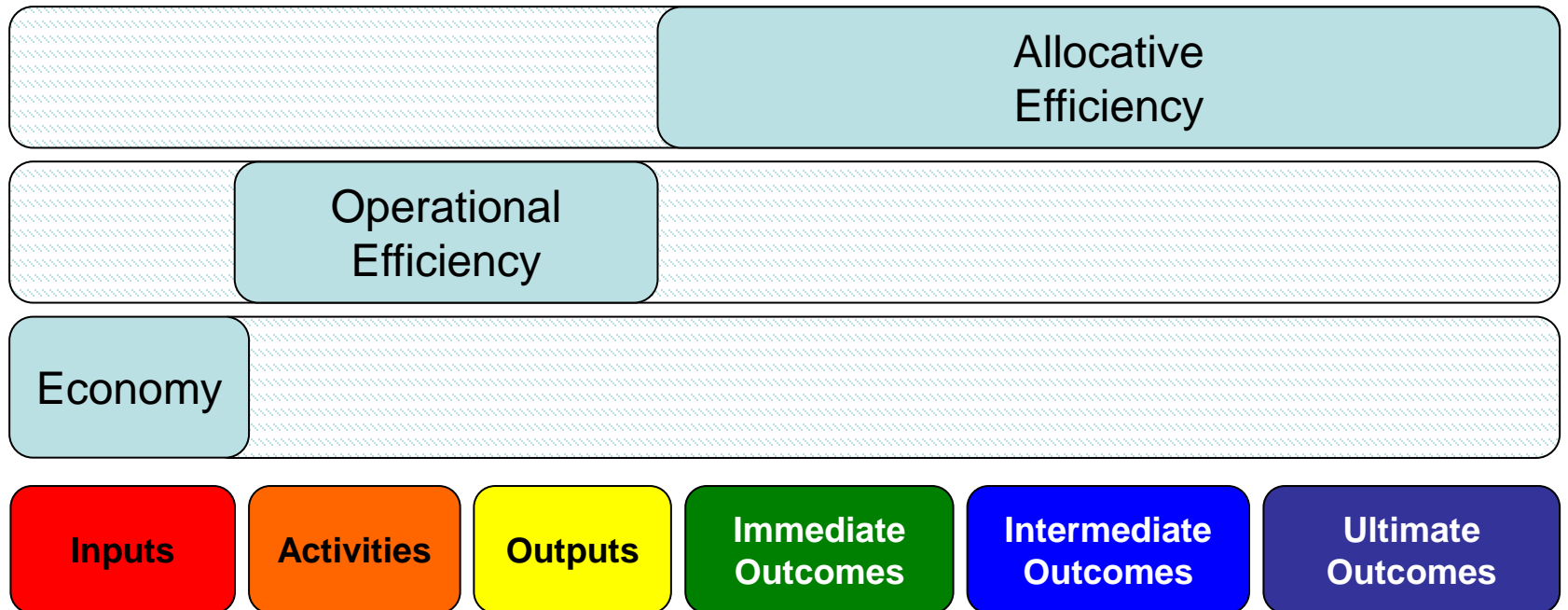
- Focus on relationship between resources consumed and outputs
- How well are inputs being used and converted into outputs?

Economy

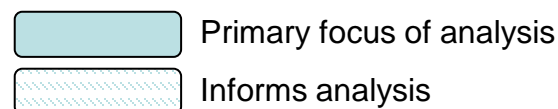
- Focus on the optimization (including minimization) of inputs
- How well did the program select inputs to support program success and prudent use of resources?

CI5 does **not** require evaluators to pursue “audit-like” lines of inquiry but results of internal audits can be valuable inputs to the assessment of economy and efficiency

Perspectives on Assessing Resources Utilization and the Results Chain



The analysis for economy, operational efficiency, and allocative efficiency occurs along the results chain



Economy: Definition

- Focus on the optimization (including minimization) of inputs
- How well did the program select inputs to support program success and prudent use of resources?

Example: Cost of developing courseware (wages + overhead + materials)

Example: Cost of setting up flu clinics (location, staff training, media, notifying vulnerable groups)

Operational Efficiency: Definition

- Focus on relationship between resources consumed and outputs
- How well are inputs being used and converted into outputs?

Example: Cost per nurse graduate (number of grads divided by the total program cost)

Example: Cost per potential flu shot (before any shots are actually given)

Example: Cost of awarding a dollar to third party delivery for screening program

Allocative Efficiency: Definition

- Focus on relationship between resources consumed and outcomes
- Were resources consumed reasonable for the outcomes achieved in light of context, priorities and/or alternatives?

Example: (Vaccination)

- Number of flu shots delivered (immediate outcome)
- Reduction in the incidence of flu as a result of a vaccination promotion program (longer-term outcome)

Example: (Third party delivery of cancer screening)

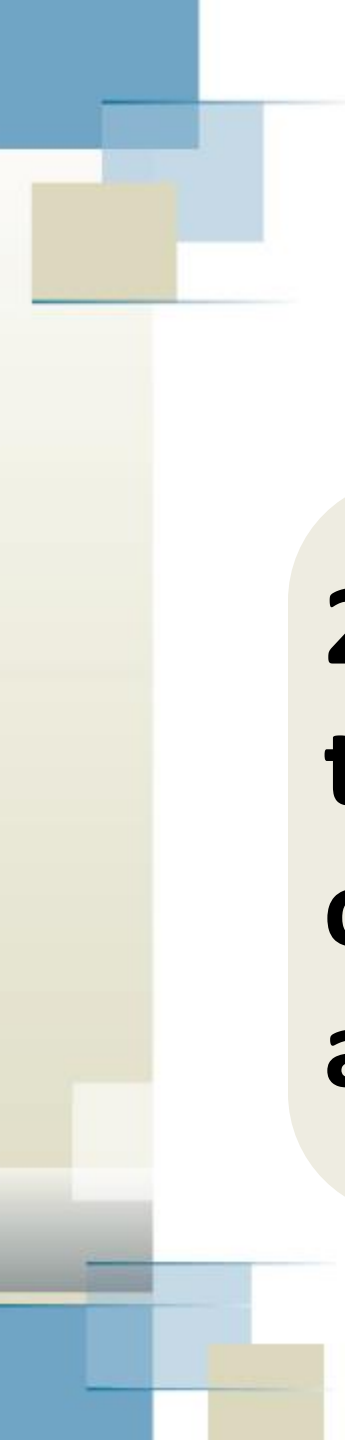
- Increase in screening incidence (immediate outcome)
- Increase in five-year survival rate for Stage 2 breast cancers (longer-term outcome)

Example: A Health Screening Program



<p>Resources used to:</p> <ul style="list-style-type: none"> • Create counselling services • Design promotional material • Train providers in use of screening kit 	<ul style="list-style-type: none"> • Outreach programs designed and implemented • Kits distributed • Staff trained 	<ul style="list-style-type: none"> • Client awareness • Increased use of screening 	<ul style="list-style-type: none"> • Increased participation in treatment and prevention 	<ul style="list-style-type: none"> • Lower morbidity and mortality • Increased life years • Reduced health system costs
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<p>Economy</p> <ul style="list-style-type: none"> • Are we getting counsellors at the lowest cost? • Do we have enough resources to provide sufficient training? 	<p>Operational Efficiency</p> <ul style="list-style-type: none"> • Are the kits distributed in a timely manner? • Are enough staff trained? 	<p>Allocative Efficiency</p> <ul style="list-style-type: none"> • What is the cost per client screened? • Is this the best way of lowering morbidity?
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2. Typical applications of the three perspectives economy, operational efficiency and allocative efficiency

Economy: Typical Application

- **Programs requiring significant material or service inputs**
- **Programs with suspected opportunities for optimizing of inputs, or challenges in terms of input costs**
- **Programs where this perspective suits the information needs of evaluation users**

Economy: Examples of Questions

Input Costs

- What were the costs of the inputs used for each of the results chains or service lines?
- How do these compare with targets (i.e., budgeted costs) set by the program? To other programs or with other comparators (benchmarks)?

Input Optimization

- Has management acquired the inputs at the lowest cost, consistent with the required quality, quantity, appropriateness and timeliness?

Context, risks and assumptions

- Did external events, contextual issues, risks or other assumptions compromise, assist or otherwise affect the processes that influenced the timing, quality, quantity or appropriateness of the required inputs?



Operational Efficiency: Typical Application

- **Newer programs that are not yet expected to produce outcomes**
- **Established programs with plans to redesign their delivery mechanisms**
- **Programs with known challenges in terms of output production**

Operational Efficiency: Examples of Questions

- **How do unit costs compare with those in other similar programs or benchmarks?**
- **What are the differences between planned and actual spending for these outputs? What explains this difference, if any?**
- **Were the costs of outputs reasonable in light of the program context? Why or why not?**
- **Were the outputs produced of a quantity/quality acceptable to support the achievement of expected results**

Allocative Efficiency: Typical Applications

- **Established programs that have existed long enough to achieve outcome-level results**
- **Evaluations where two or more program models (either real or hypothetical, or between programs or within the same program) with the same or similar outcomes need to be compared**
- **Programs where a previous evaluation found reasonable performance in terms of operational efficiency and where there have been no significant changes in the program's context that would necessitate further examination of operational efficiency at this time**

Allocative Efficiency: Examples of Questions

- **Were resources consumed reasonable for the outcomes achieved in light of context, priorities and/or alternatives?**
- **Have we realized the expected/required results, given the resources used and in the context of what can reasonably be expected**
- **Did we use the best approach for reaching the results?**



3. Scoping assessments of program resource utilization

Examples of Tools to Guide Assessments of Resource Utilization

- **Logic models**
 - Help identify units of analysis for assessing the cost of inputs, outputs and outcomes
- **Theories of Change**
 - Build on logic models to clarify mechanisms, assumptions, risks and/or context
 - Frames the conclusions on how the costs incurred at the inputs stage (economy) link to the cost of outputs (operational efficiency) and outcomes (allocative efficiency)
- **Business Process Maps**
 - Details the key delivery processes

Preliminary Steps

- **Understanding the black box**
 - Evaluators need to understand how a program works to make judgment about its economy and efficiency
 - It is a common mistake to rely solely on program documentation (e.g., program description, performance measurement strategy)
 - Preliminary interviews should be conducted to understand activities, roles and responsibilities, systems involved, technologies, partners etc.
- **Conducting a literature review**
 - May reveal how others have assessed resource utilization
- **Choosing a perspective (see next slide)**

Key questions to help choose a perspective for CI5

- **What are the specific purposes of the evaluation (e.g., how will it be utilized)? What are the information needs of the intended users?**
- **At what stage is the program in its development?**
- **How complex is the program/initiative?**
- **What is the risk profile of the program?**
- **Are there known or suspected concerns about efficiency or economy? If so, what are they?**
- **Do reliable and valid performance data exist?**
- **What type of program cost data is available and what can be collected as part of the evaluation? (see next slide)**

Identification of Program Cost Data

- **Assessments of economy and efficiency should ideally involve the comparison of inputs, outputs and outcomes against costs**
- **Costing information derives from**
 - government costs (operational, capital, costs for services from other departments, non-administrative disbursements)
 - non-government costs (e.g. contracted services, compliance costs)
- **Availability of detailed cost information (e.g., per program, activity, output or outcome) is a common challenge**
- **Some options for identifying program cost data include: time-use surveys, projections based on budgets, interviews with management and internal audits**

Seven Step Approach to Purposeful Costing

- 1. Cost purpose:** What is the purpose for which the cost information will be used?
- 2. Cost object:** What is being targeted for costing (e.g. an activity, output, service, or immediate outcome)?
- 3. Cost base:** Which costs are relevant to the cost purpose and object(s)?
- 4. Cost classification:** Which costs can be identified directly with the cost object(s) and purpose, and which costs are less direct (such as the cost of supporting activities)?
- 5. Cost assignment:** What are the appropriate methodologies for assigning the costs to the cost object(s)? The methods chosen should be reasonable and cost-effective in light of the purpose of the cost information.
- 6. Calculate, validate, and confirm:** Apply the costing methodologies, validate the calculations and assumptions, and confirm that the results respond to the cost purpose defined in Step 1.
- 7. Sign-off:** Sign-off by CFO for Treasury Board submissions and MCs or underlying internal sign-off as designed by departments to meet their own needs.



4. Examples of analytical approaches to addressing CI5

Overview of Some Analytical Approaches

1. **Planned to actual cost comparison and expenditure tracking analysis**
2. **Benchmarking**
3. **Business process mapping and analysis**
4. **Optimization analysis**
5. **Cost-effectiveness analysis**
6. **Cost-benefit analysis**
7. **Partial cost-benefit analysis**
8. **Cost-utility analysis**
9. **Assessment of avoided costs**

1. Planned to actual cost comparison and expenditure tracking analysis

- Compares planned (budgeted) to actual spending
- Identifies variances and search for explanations (e.g., high transportation costs)
- Possible reasons for variances include:
 - Projects, or aspects of projects not implemented
 - Poor acquisition of inputs (e.g., inappropriate or low quality inputs lead to inappropriate and low quality outputs)
 - Governance/management issues
 - Poor planning (e.g., budget planning)
 - Capacity constraint on key inputs
 - Resource diversion due to competing priorities

2. Benchmarking (1)

- **Involves systematic comparisons of actual cost per unit of program input/outputs and/or comparison of overall admin cost ratios versus a known standard or best practice**
 - Benchmarks should come from comparable programs (e.g., in terms of size and type)
- **Benchmarking of the ratio of admin cost to total disbursement is a useful indicator for assessing economy and operational efficiency for most G&Cs programs as comparators often can be identified**
- **A target could be identified in consultation with key stakeholders if it is not possible to find a benchmark**

2. Benchmarking (2)

- **The analysis should identify a rationale for potential variances and determine what, if any, effect these have had on the production of outputs and/or the achievement of outcomes**
- **Possible reasons for cost variations:**
 - The nature and complexity of delivery processes, program context, size and target population
 - The program life-cycle (e.g., program implementation and expansion require additional resources)
- **Whether not cost variations are reasonable depends on the program context**

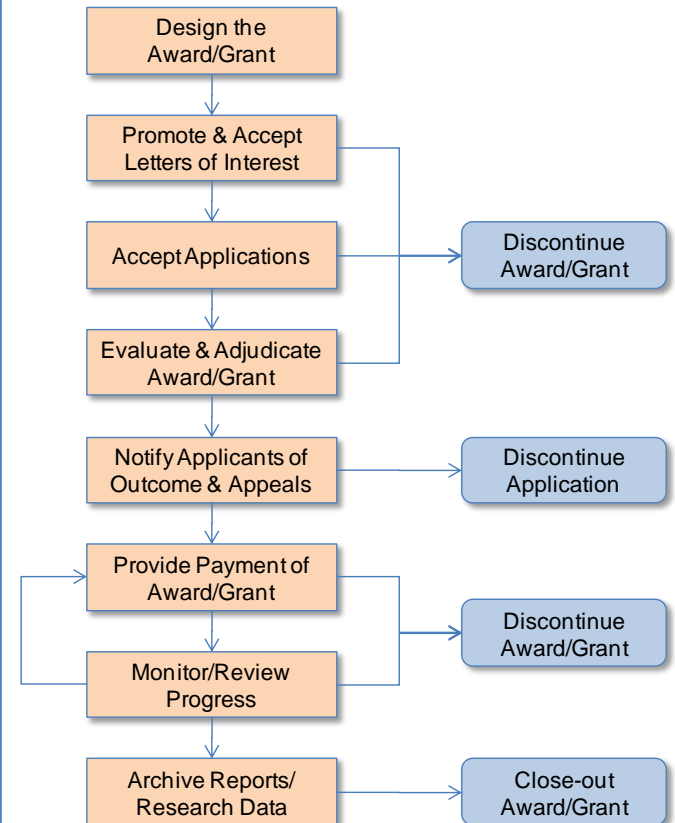
2. Benchmarking (3)

- **Purpose-based costing (with activities or outputs as cost objects) can also be used to investigate why costs are higher or lower than the benchmark (or target)**
- **Using activities or outputs as cost objects allow evaluators to identify:**
 - Costs of service lines (e.g., program components) within a unit (e.g., a program)
 - Costs of activities within each service line and across service lines
 - Indirect or overhead costs that are not specific to a unit or service line
 - The relative value of service lines in relation to activities or outputs

Example: Detailed Costing of a Research Grants Program

1. Clarify links between inputs (e.g., labour, supplies, facilities, services) and activities used to create outputs
2. Define the links between activities and create a process model map
3. Define cost drivers by enumerating factors that affect the cost of resource use (e.g., number of applications, complexity of the grant [e.g., individual versus institutional grant])
4. Associate direct costs to each activity (e.g., labour, supplies, facilities, services)
 - Enumerate labour costs using diaries or retrospective surveys
5. Pro-rate indirect/overhead costs (e.g., corporate services)
6. Cumulate costs of each activity to cost object of interest – for example:
 - Total cost of an activity (evaluation of applications)
 - Total cost of one grant (processing to closing)

Grant Program Activities



Each activity is a discrete step in the production of the output – research grants

3. Business Process Mapping and Analysis

- Consists of identifying/mapping key delivery processes and analyzing them to determine whether any challenges (e.g., bottlenecks) are inhibiting the achievement of outputs
- Can be used to identify cost variations in support of benchmarking
 - Process maps may or may not be costed
- Interviews with staff can explain where challenges exist, and explain why plans were not followed
- Signs of inefficiencies include:
 - Inappropriate, inefficient, over resourced or superfluous activities, or existence of downtime
 - Existence of alternatives to lower costs

4. Optimization Analysis

- **Assesses the degree to which inputs and outputs are optimized and appropriate, and balanced in a defensibly rational manner**
- **Comparison with good practices can help identify what went can go wrong/well and why**
- **Can be assessed using experts and/or literature on known good practices (e.g., governance, appropriateness of processes, inputs and outputs)**
 - Examples of inputs include: Right HR, right equipment/current technology, right tools, right systems, right partners, right deliverers
- **Good practices should be identified BEFORE the fieldwork to build robust instruments**
 - Could develop a good practice framework for more complex programs

5. Cost-effectiveness analysis (CEA)

- Refers to the comparative assessment of costs per “unit” of outcome (a cost-effectiveness ratio) between two or more program elements (or sub-units of a program)
- Assumes outcomes are similar and strategic (central to the strategic outcomes), for example:
 - Measures of reading level (early childhood development)
 - Mammograms delivered delivery mode (primary health program)
- Measures operational efficiency or allocative efficiency depending on the nature of the results:
 - Operational efficiency (outputs): Numbers of training contracts negotiated
 - Allocative efficiency (outcomes): Numbers of trainees who gain employment; social assistance costs avoided

6. Cost-benefit analysis (CBA)

- **Essentially an assessment of all the outcomes valued in dollars in relation to all program costs**
- **Challenge is usually the conversion of outcomes into dollars**
 - Sometimes, outcomes have market value that evaluators must seek through additional research in literature and grey literature
 - Economists also use assumptions to fill information gaps and projections
- **Often subject to debate (e.g., using social benefits, benefits abroad, projections)**
- **Few evaluations will have the resources to execute a complete cost-benefit analysis**

7. Partial Benefit-Cost Analysis (PBCA)

- **Partial benefit cost-analysis attempts to identify enough benefits to justify the cost of the program**
- **Can be defined in two different ways:**
 1. Includes **total costs**, but only a **sub-set of benefits** (e.g., benefits generated by the most successful research projects) and results can not be generalized to the whole population funded by the program
 2. Includes only a **subset of the costs and benefits** (e.g., cost of vaccination divided into value of time lost from work)
- **Sometimes, benefits generated by 10-20% of projects can justify the entire investment**
- **If the cost of the program exceeds the value of a major benefit by a wide margin, it may be sufficient to question the entire program**

8. Cost-utility Analysis

- **Compares the utility of a program (i.e., the worth, value, merit of – or degree of satisfaction with – program outcomes, usually as defined from the perspective of beneficiaries) with the costs**
- **Traditionally used in the health sector where utility often is measured in terms of ‘Quality Adjusted Life Years’**
 - What is the value of conditional life extension? (What is the value of an addition year of life with a severe disability?)
- **Other quantitative or qualitative units of utility could be identified**
- **Similar to CBA in that it focuses on assigning value to intangibles**

9. Assessment of Avoided Costs

- **An assessment of avoided costs compares costs that would occur in absence of program (i.e., monetized benefits) to program costs**
- **This is a useful approach for programs that are preventive in nature and have impacts that are difficult to measure (e.g., absence of a disaster, crime or disease)**
- **Challenge is often the conversion of avoided harm into dollars and determining the probability of harm**
 - Historical comparisons or comparisons with countries without similar interventions can be used to build alternate scenarios

Example: Training Program (1)

- Evaluation of training program for disadvantaged workers to increase participation in labour market.
- Key elements of the results chain include
 - Activities and outputs
 - Development of courseware
 - Determination of eligibility
 - Identify delivery options (contracted training, in-house training)
 - Delivery of training
 - Placement services
 - Outcomes
 - Number of trained workers
 - Number placed in work (hours of paid labour)
 - Reduction in social assistance/EI benefits

Example: Training Program (2)

- **Economy**
 - Cost per trainee accepted
 - Cost per seat (common measure of training costs among contractors – measured by competitive tender)
- **Operational efficiency**
 - Cost per trainee enrolled (may also be an immediate outcome)
 - Cost per trainee graduated (may also be an immediate outcome)

Example: Training Program (3)

- **Allocative efficiency**
 - Cost per trainee placed in a job
 - Cost per incremental hours of employment
 - Cost per dollar of social assistance avoided
- **Counterfactual (controls)**
 - Social assistance clients not in training
 - Later cohort of trainees