

Logic Models: A theory of change perspective to support economy, efficiency, and effectiveness

Greg Mason

PRA Inc. & University of Manitoba

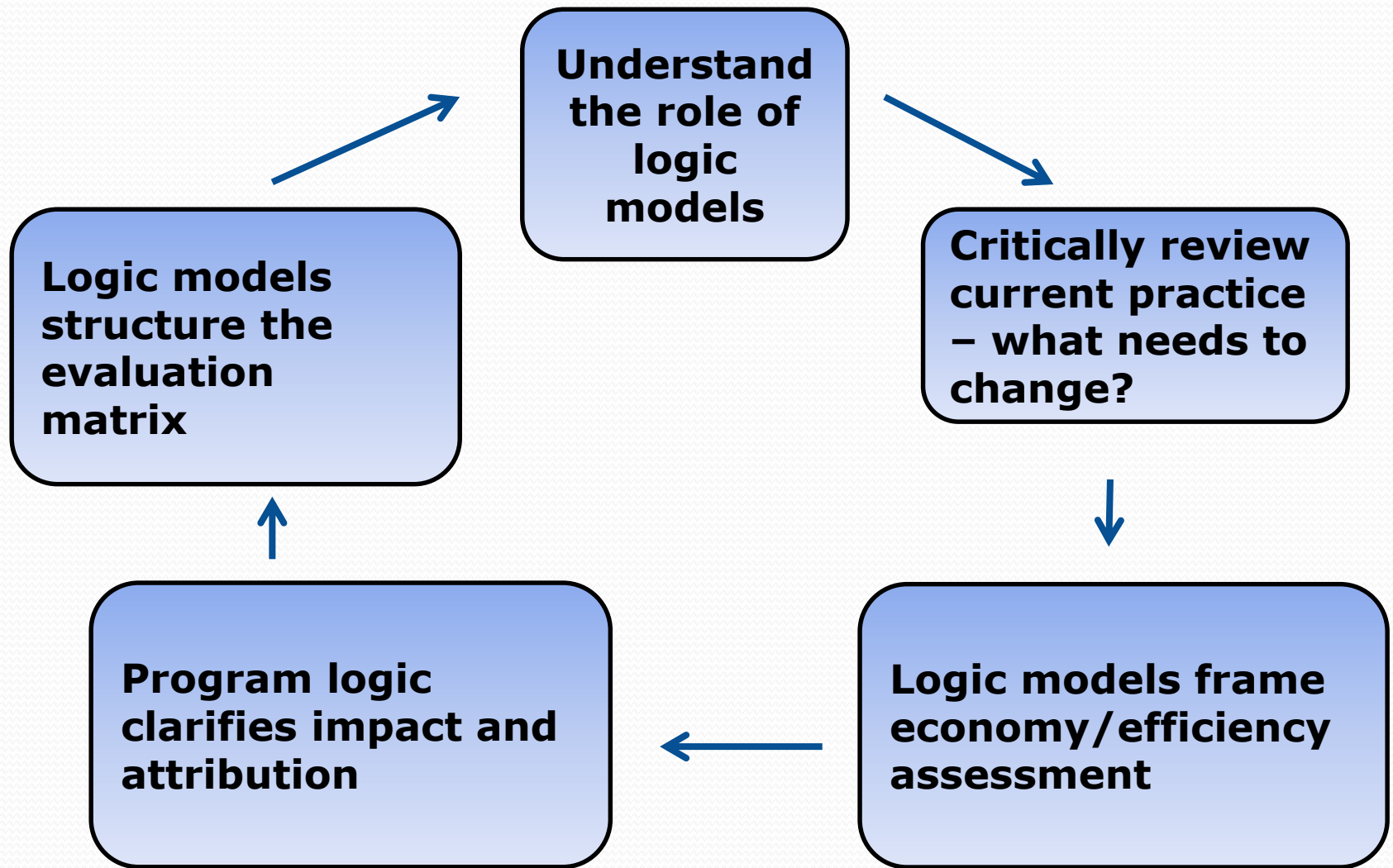
Ottawa, June 15, 2013

View notes pages to view additional material

Outline

- 1. Foundations – Understanding the objectives of a logic model**
- 2. Examples of current (bad) practice**
- 3. Goal 1 – Analysing program fidelity, economy and efficiency**
- 4. Goal 2 – Clarifying expected impact**
- 5. Goal 3 – Specification of the evaluation matrix**

Learning Objectives



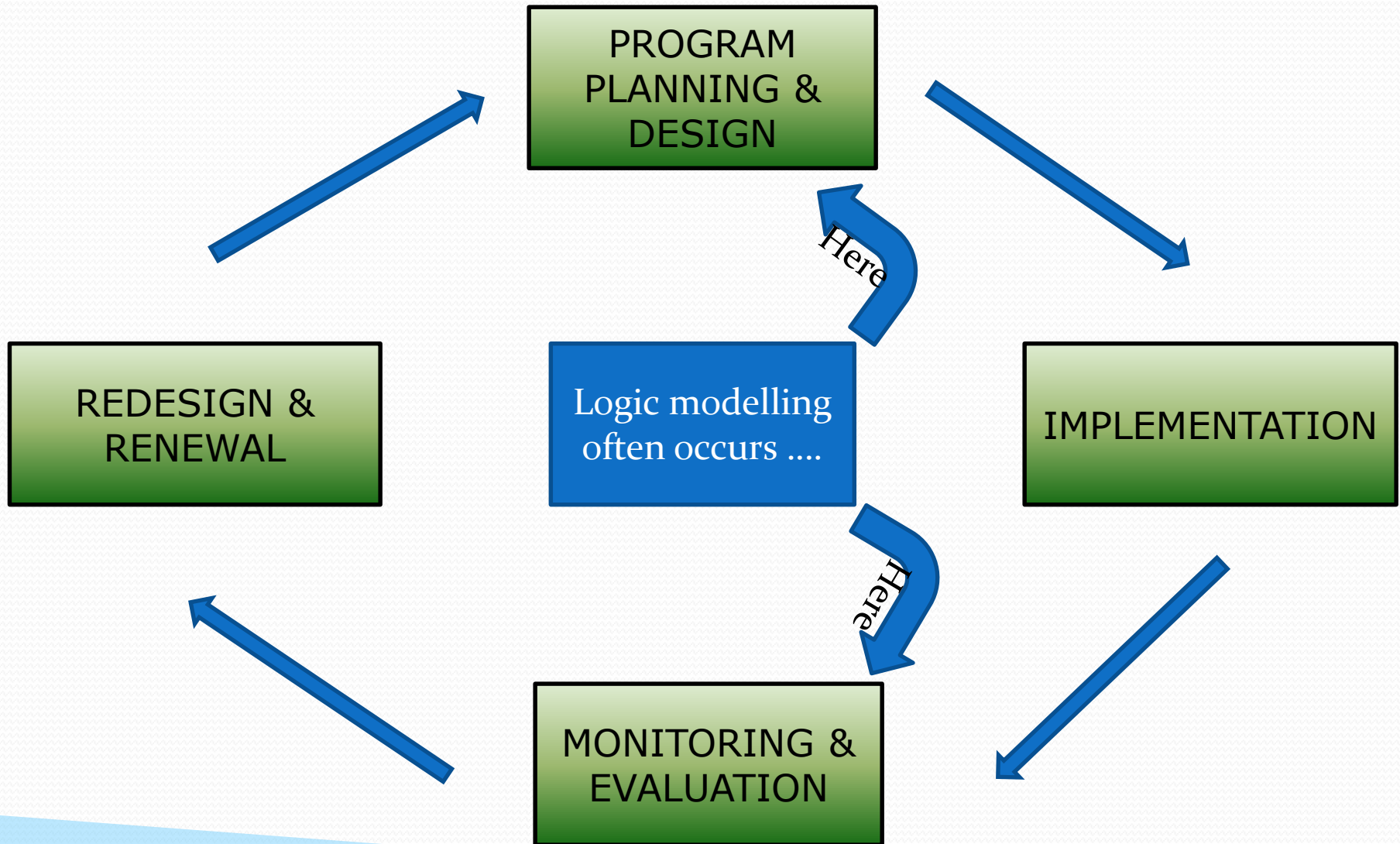
Part 1 - Foundations

The theory of change comprises three dimensions:

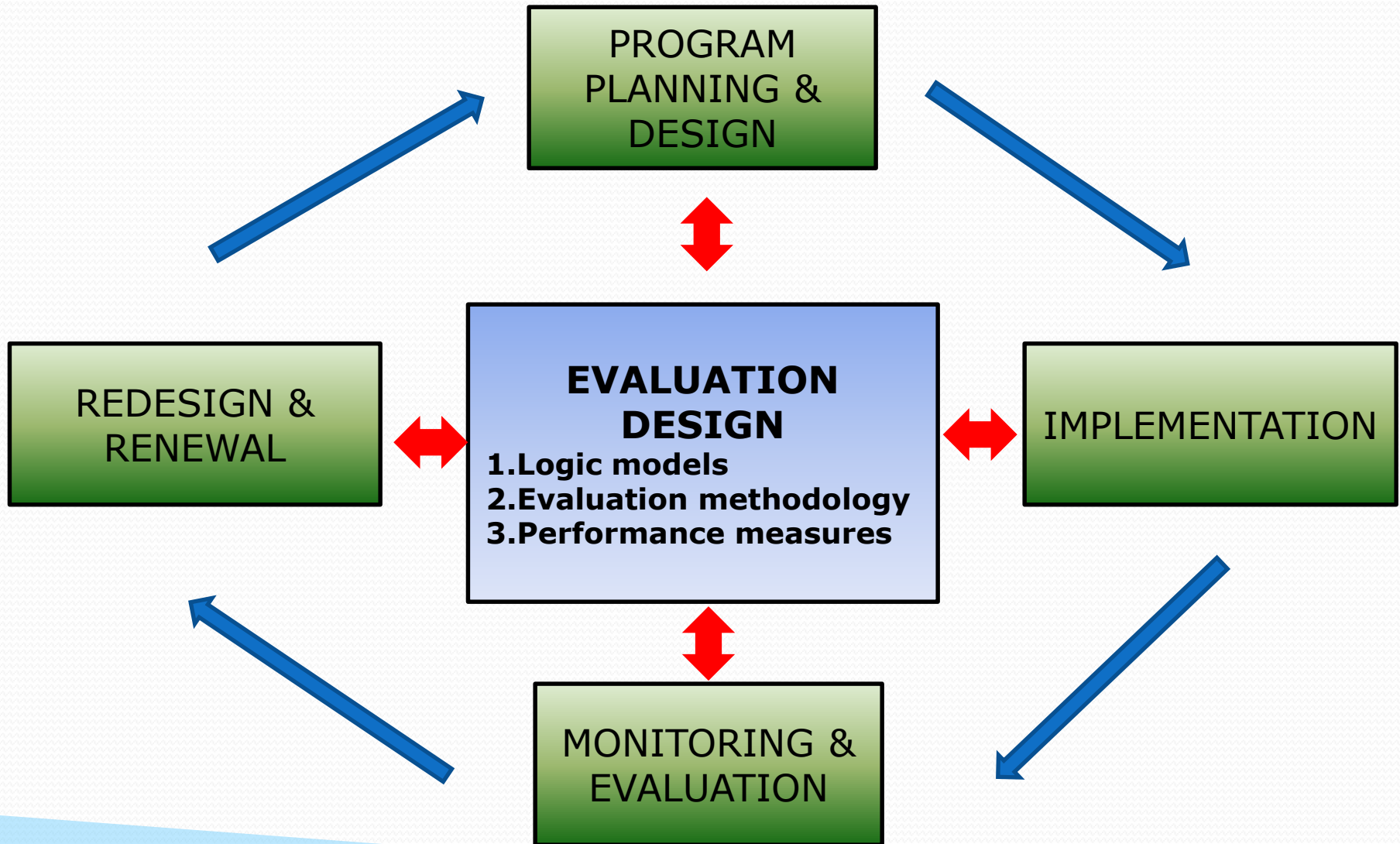
- design of the intervention;
- implementation of the intervention; and
- assessment of the impact arising from the intervention.

The logic “model” must capture all these dimensions.

Program evaluation – a standard view



Program implementation & evaluation – integrated view



What use are logic models?

- Clarify program goals (expected outcomes)
 - **relevance/rationale (policy goals/coherence)**
- Explain program implementation
 - **design (alignment with best practice/best science)**
- Document the project/program/initiative and its operations
 - **program fidelity – formative evaluation**
- Support the evaluation and performance measurement system
 - **performance (accountability and impact)**
- Communicate the essence of a program throughout the organization
 - **accountability and coordination**
- Reveal the primary and secondary beneficiaries; the agencies/institutions responsible for the implementation; and stakeholders (the influenced and the influencers)
 - **reach**

Role of a logic model

Role 1 - Clarify program implementation

- **Supports analysis of program fidelity**
 - Was the program implemented as intended?
 - Identify implementation realities
- **Define performance measures for implementation**
 - Results chain frames economy and efficiency
 - Business process modelling

Role 2 – Explain the impact in context

- **Maps the causal logic**
 - Summarizes the theory of change, based on literature, program documentation, and management representation
 - Defines and ranks external factors
 - Identify contingent dependencies and multiple causality
- **Creates method for measuring net impact**
 - Specify confounders and counterfactuals
- **Define performance measures**

Role 3 – The logic model supports the evaluation matrix

Some examples of limited logic modelling

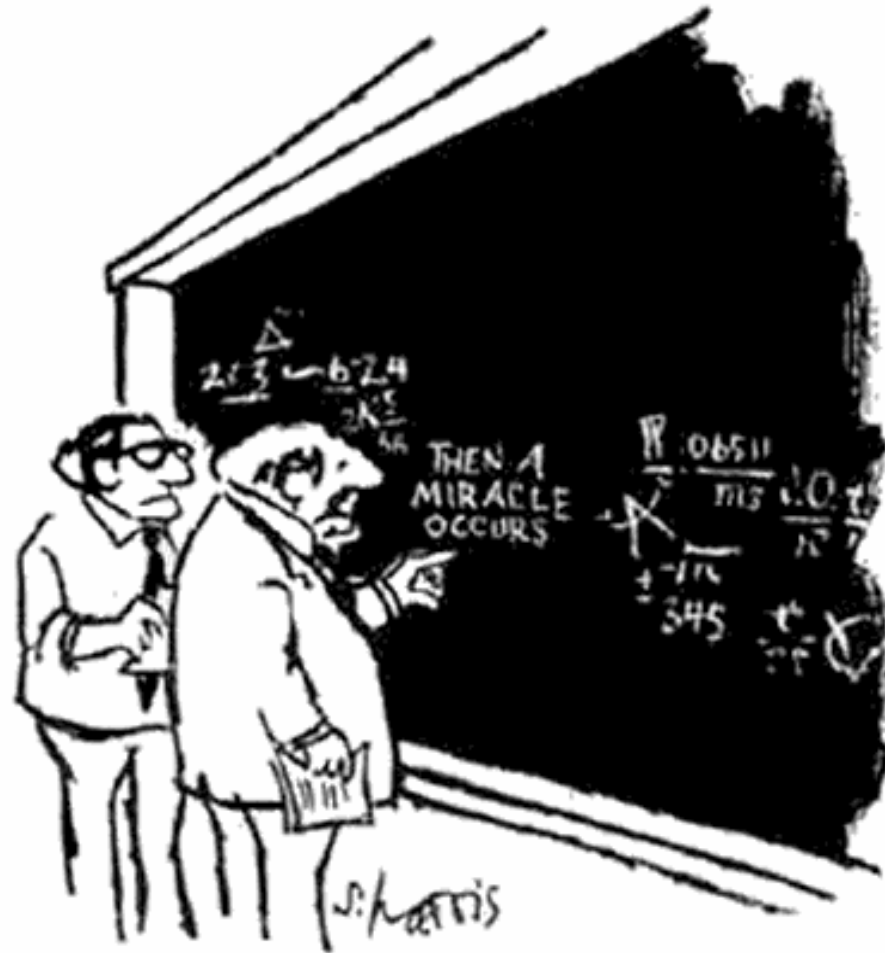
- National Child Benefit (HRDC 2003 evaluation)
- Agricultural Policy Framework (AAFC 2006 evaluation)
- Healthy Child Development – Healthy Living (First Nations and Inuit Health Branch 2013-14 evaluation)

These examples reflect common practice, which underspecifies the theory of change:

- **Program design**
- **Program interventions**
- **Program impact**

Common deficiencies in logic modelling: implementation

- Logic models are “flat” and lack insight into the complexity of implementation
- Programs are never designed and implemented instantaneously
- Interaction of program elements is rarely discussed
- The analysis of implementation integrity or “program fidelity” is often missing



"I THINK YOU SHOULD BE MORE EXPLICIT
HERE IN STEP TWO."

© 1988, 1979-1981 J. HARRIS

Distributed By Cribbin Enterprises Ltd.

Role 1 – Clarifying program implementation

Clarify program implementation

- **Why, what, and how?**
- **Supports analysis of program fidelity**
 - Was the program implemented as intended?
 - What implementation failures occurred?
 - Lessons earned
- **Defines performance measures (implementation)**

Example – First summative evaluation of the NCB

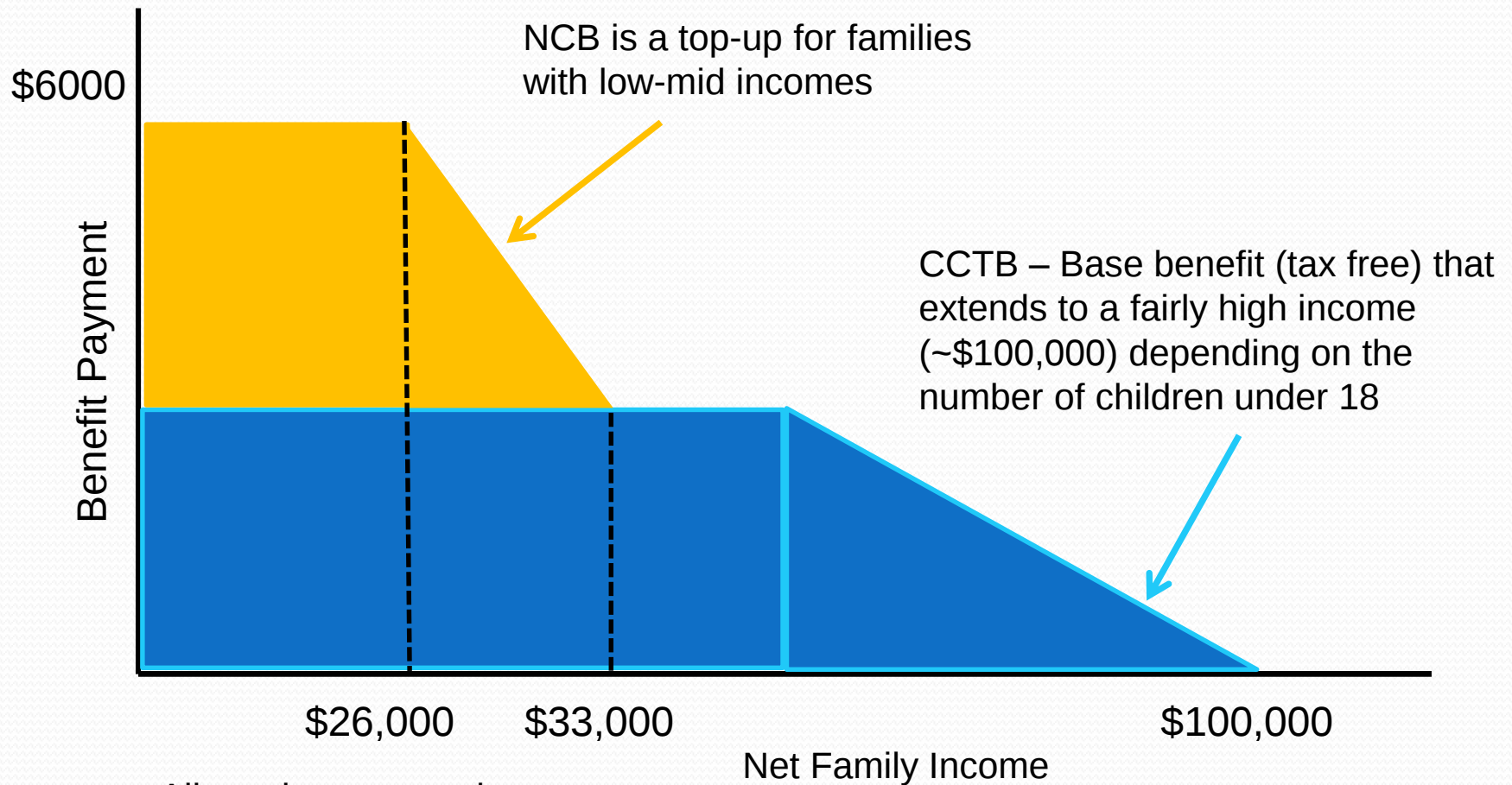
Theory of the intervention

National Child Benefit (NCB)

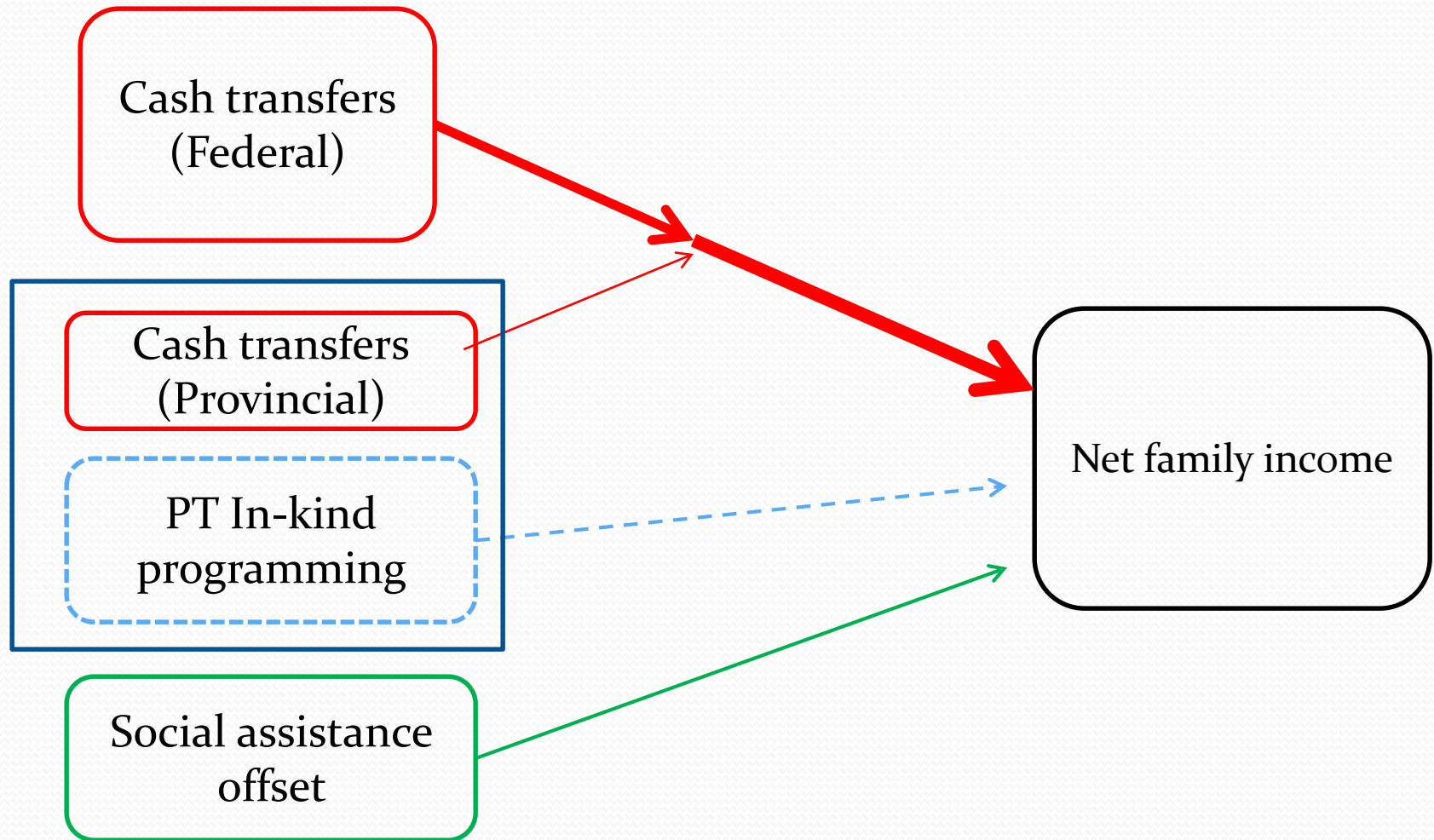
The NCB Initiative is a joint initiative of federal and provincial/territorial governments intended to help prevent and reduce the depth of child poverty, as well as promote attachment to the workforce by ensuring that families will always be better off as a result of working.

It does this through a cash benefit paid to low income families with children, a social assistance offset, and various supplementary programs (childcare, additional cash benefits, employment support, health care, etc.) provided by provinces and territories.

National Child Benefit (two children < 18)



Mechanism of National Child Benefit



Theory of change and logic model

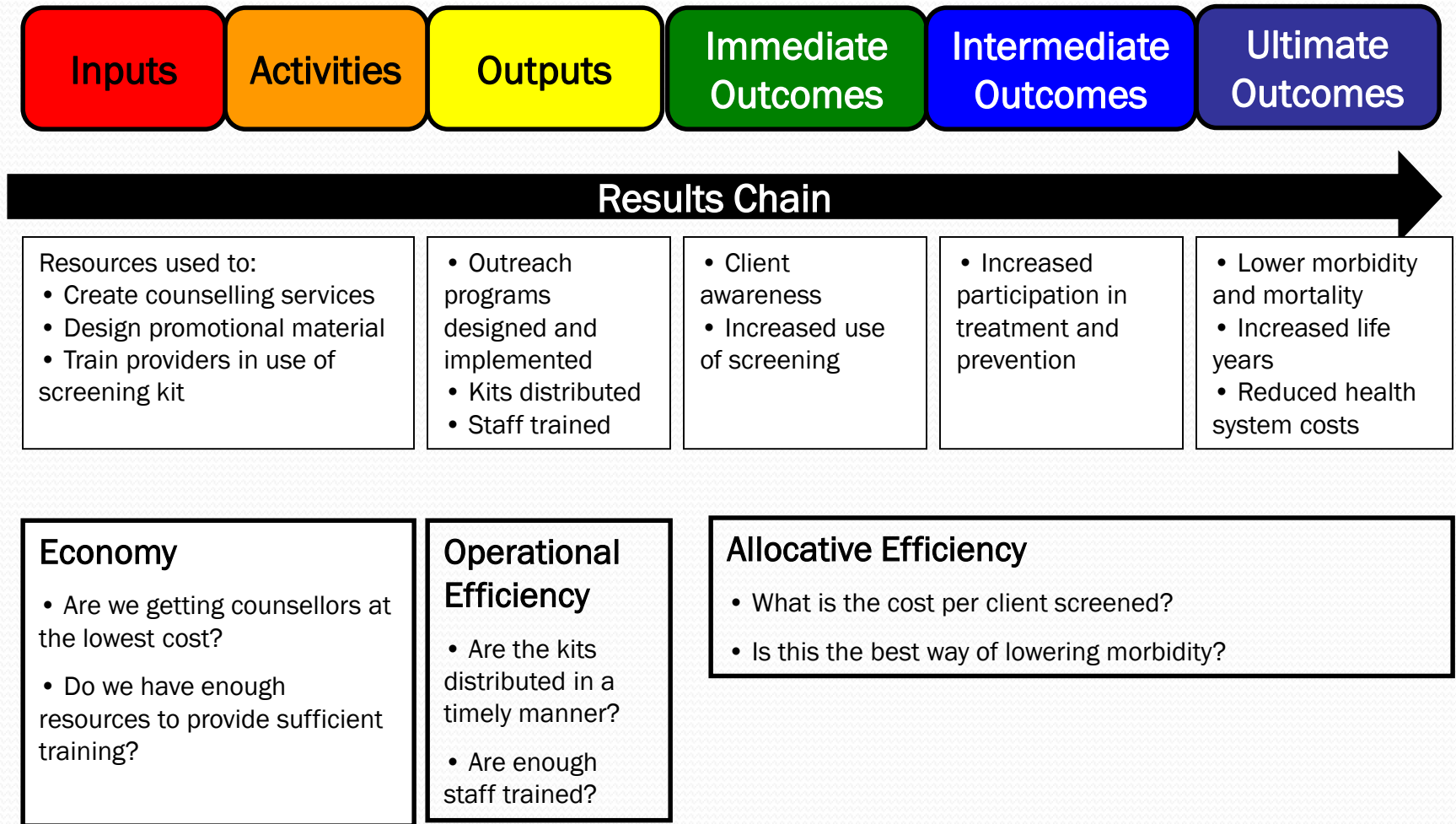
- The logic model is much more than a static two-dimensional representation of a result chain
- It comprises both symbolic explanations, text and context, and possibly an abstract (mathematical model)
- The NCB “logic” shows the mechanisms for:
 - Reduction in the depth and incidence of child poverty
.... measured by
 - Increase in net family income.
- The intervention is complex
 - Direct cash transfers
 - No cash support for those on social assistance
 - In-kind programming to support employment, health, childcare, early childhood development

Efficiency and economy: Business process models

Results chains

- Logic models can be visualized as a parallel series of results chains
- Each results chain can also be presented as a business process model
- Detailed links between inputs and outputs will:
 - Identify all the potential implementation issues and threats to fidelity
 - Provide more traction to collecting resource utilization data
 - Support the specification of alternatives
- A results chain is a high level business process mode
- The results chain is the “architectural plan” for the “building” known as the program
- Program fidelity assesses how well the builder (program manager) has implemented the intentions of the architect (policy planner)

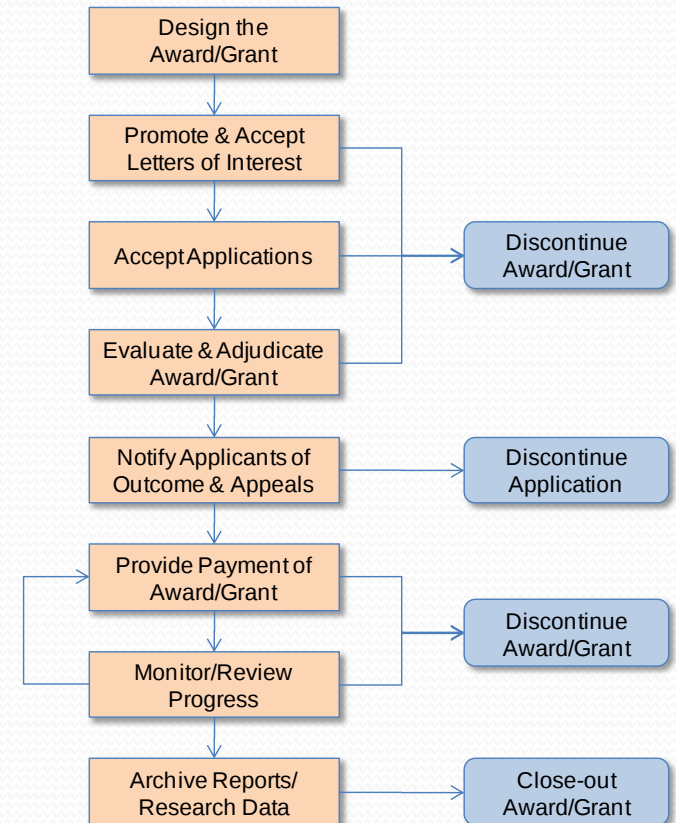
Example: a health screening model



Example - Research grants program - BPM

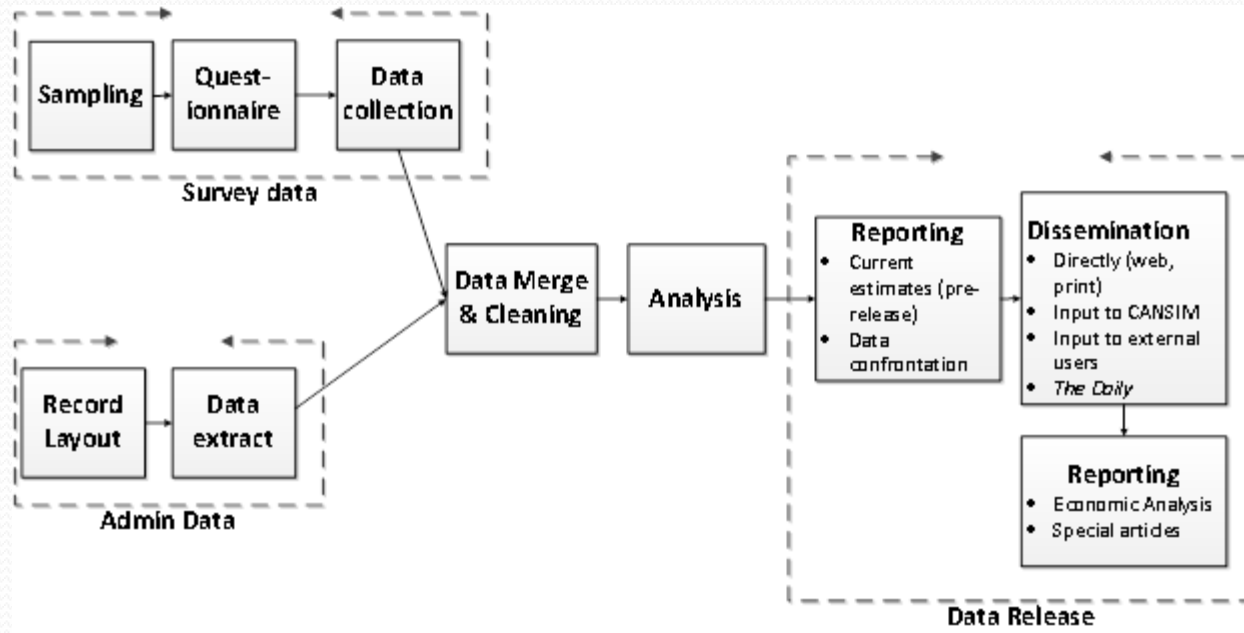
1. Clarify links between inputs (e.g., labour, supplies, facilities, services) and activities used to create outputs
2. Define the links between activities and create a process model map
3. Define cost drivers by enumerating factors that affect the cost of resource use, for example, number of applications, 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 (i.e., research grants)

Example - Statistics as a business process

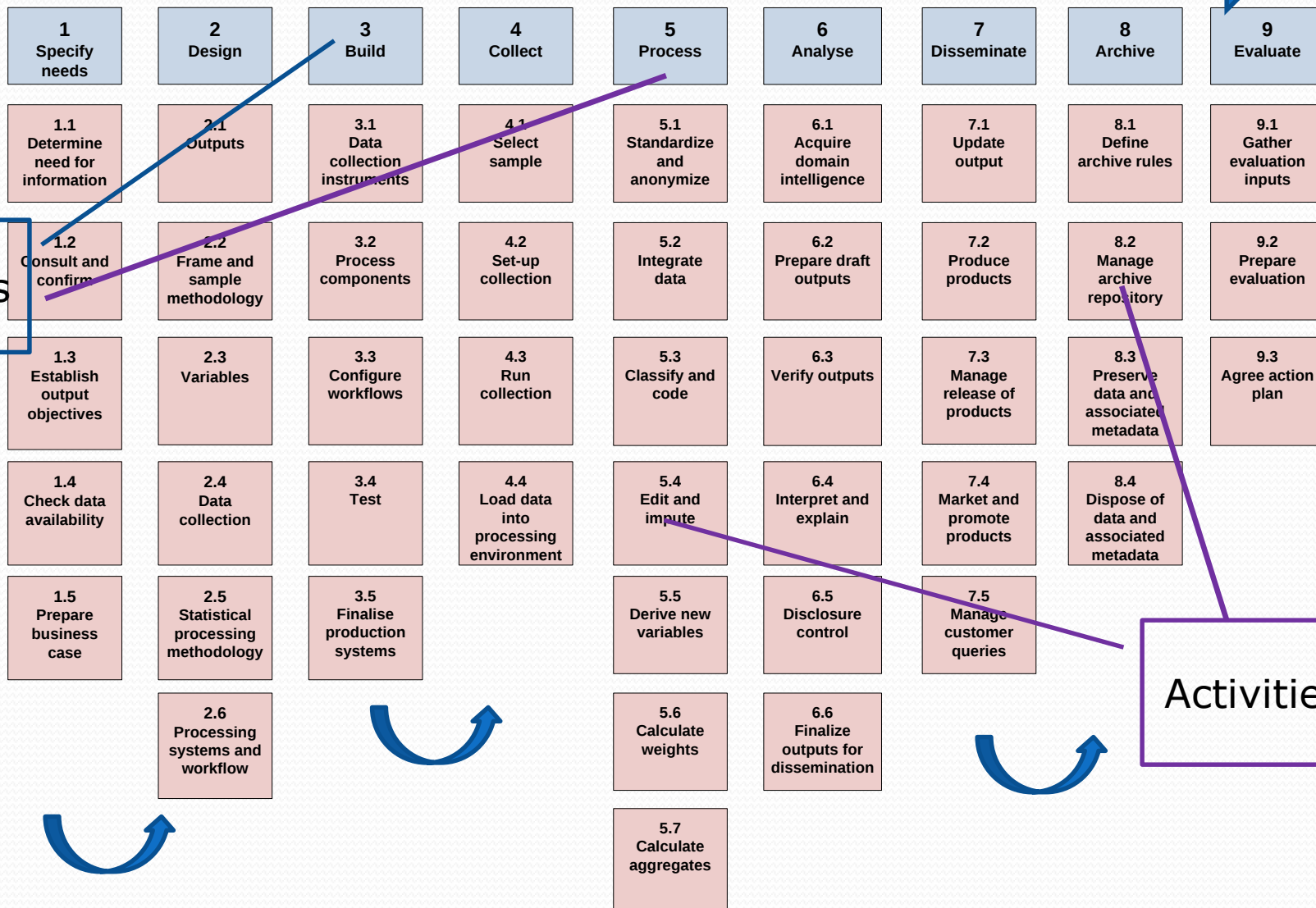


- Three broad processes exist:
 1. Survey and administrative data combine as the sources of data
 2. Data analytics create the information
 3. Reporting and dissemination create series that in turn support further interpretive analysis
- Each link represents a transformation that involves resources (staff time)
- In this way BPM supports the analysis of efficiency and economy

Generic statistics business process model

Tasks

Activities



Example of economy – business process

- Generic statistical business process model (GSBPM) (see notes page)
- A model of data collection, processing, and publication processes
- Adopted by Eurostat, UN, and Statistics Canada
- Offers a general framework to understanding the processes used to create and publish information
- Aligning resource use (staff hours) at each step, maps the “economy” of a program
- Once staff understand each activity step, it is possible to record time use (resource use) for each task
 - This is **economy** and will support management decisions about technology and revisions to component activities
 - **Operational** efficiency is the cumulative cost of all tasks needed to produce the output

Example - CCTB and NCB delivery

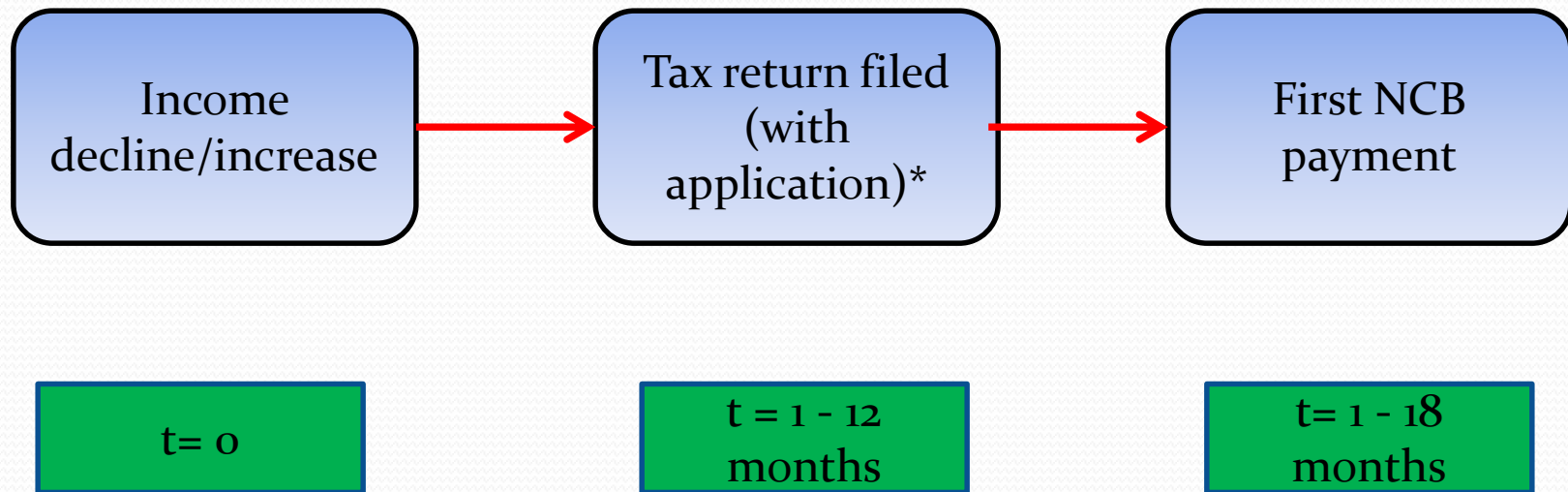
CCTB (Canadian Child Tax Benefit) – Base Benefit

- Tax free supplement directed to low-middle income families (custodial parent) with children (<18)
- Based on net family as calculated on the tax return
- Lags changes in income by one year
- Extremely efficient delivery by Canada Revenue Agency (CRA) (no on-going means test, uses monthly direct deposit)

NCB supplement (now rolled into CCTB)

- Tax free supplement directed to low income families with children (two tranches ≤ 6 and $7 - 18$)
- Based on net family income as calculated on tax return; also lags changes in income
- Efficient delivery by CRA; provincial cash supplements also delivered by CRA in a unified direct deposit

BPM of CRA delivery of CCTB (2000)



- * Originally required a separate application; now mothers with newborns can consent to automatic application through vital statistics
- * Both partners need to file a tax return

Summary on Role 1 - Clarifying program implementation

- The logic model is an opportunity to clarify implementation
- Business process models (a type of logic model) support the specification of the translation of inputs activities into outputs
- Clarifies the key questions for economy and efficiency

Role 2 – Explain the impact in context

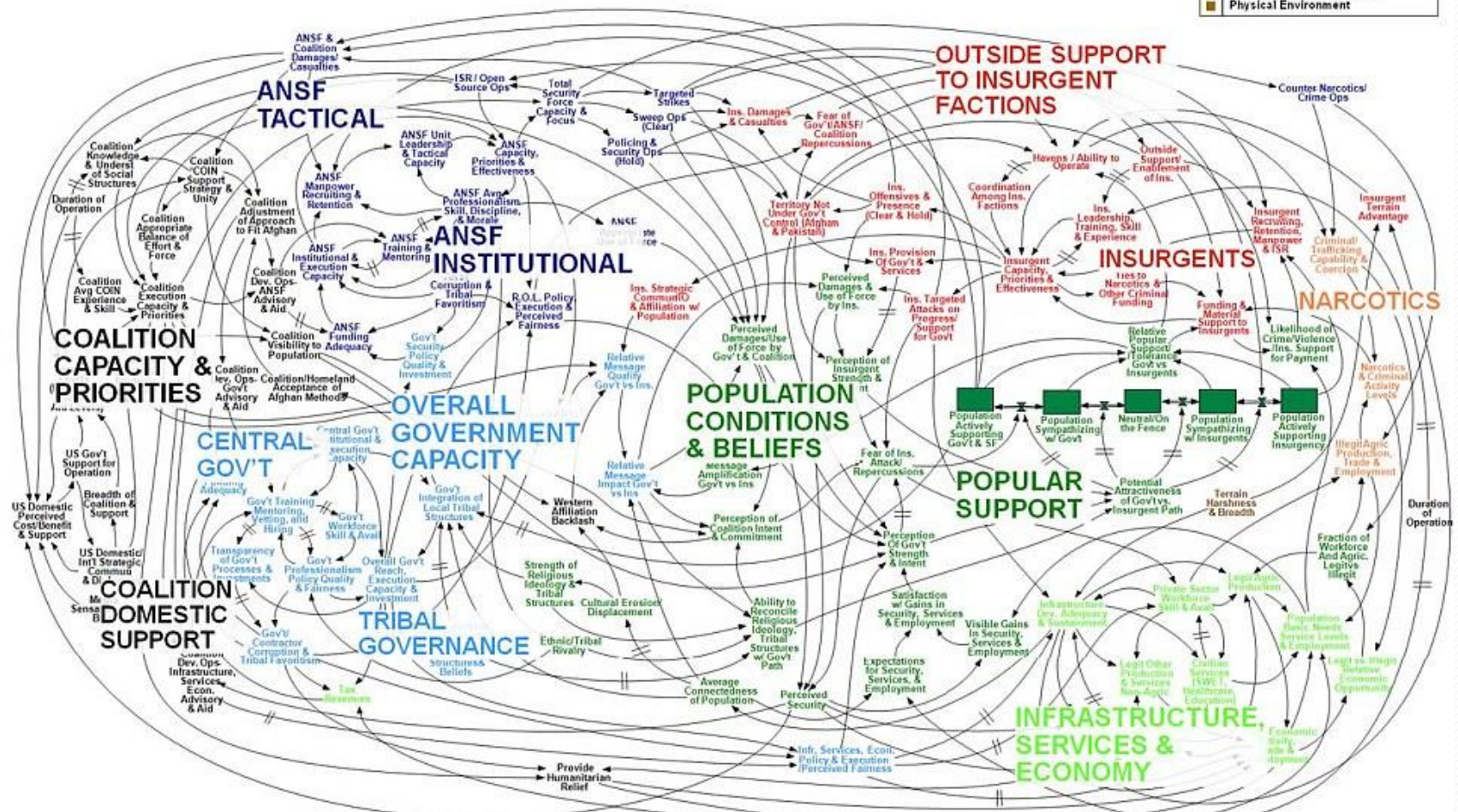
Causal logic models

- **Verbal** – explains the intervention and how it interacts with external events
- **Graphical** – presents a “picture” of the program
- **Abstract** (mathematical) – formalism that is most useful when quantitative data are available

Afghanistan Stability / COIN Dynamics

/// = Significant Delay

- Population/Popular Support
- Infrastructure, Economy, & Services
- Government
- Afghanistan Security Forces
- Insurgents
- Crime and Narcotics
- Coalition Forces & Actions
- Physical Environment



<http://www.nytimes.com/2010/04/27/world/27powerpoint.html?src=me&ref=general>

Example 1- National Child Benefit

Verbal theory of change - rationale

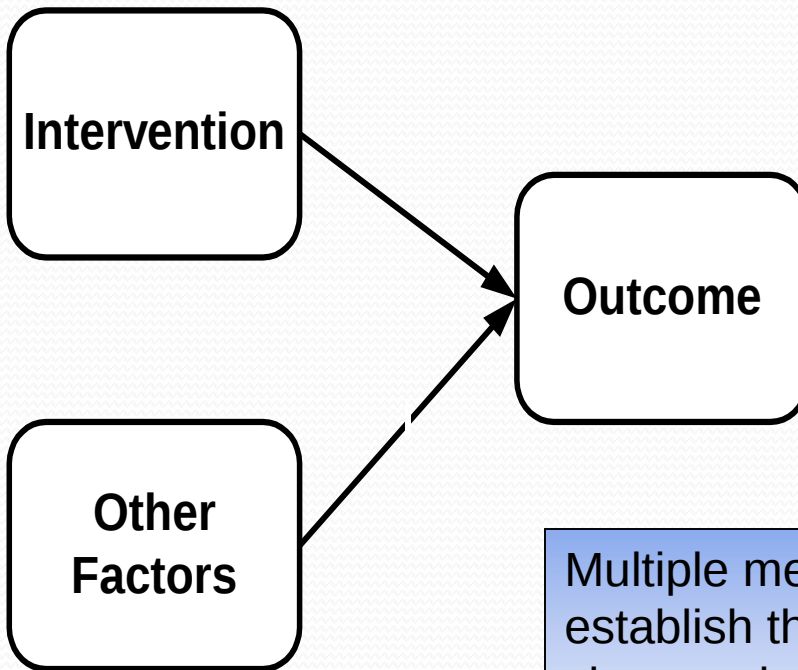
The NCB Initiative is a joint initiative of federal and provincial/territorial governments intended to help prevent and reduce the depth of child poverty, as well as promote attachment to the workforce by ensuring that families will always be better off as a result of working.

Verbal theory of change - mechanism

It does this through 1) a cash benefit paid to low income families with children; 2) a social assistance offset; and 3) supplementary programs provided by provinces and territories.

Causal logic models

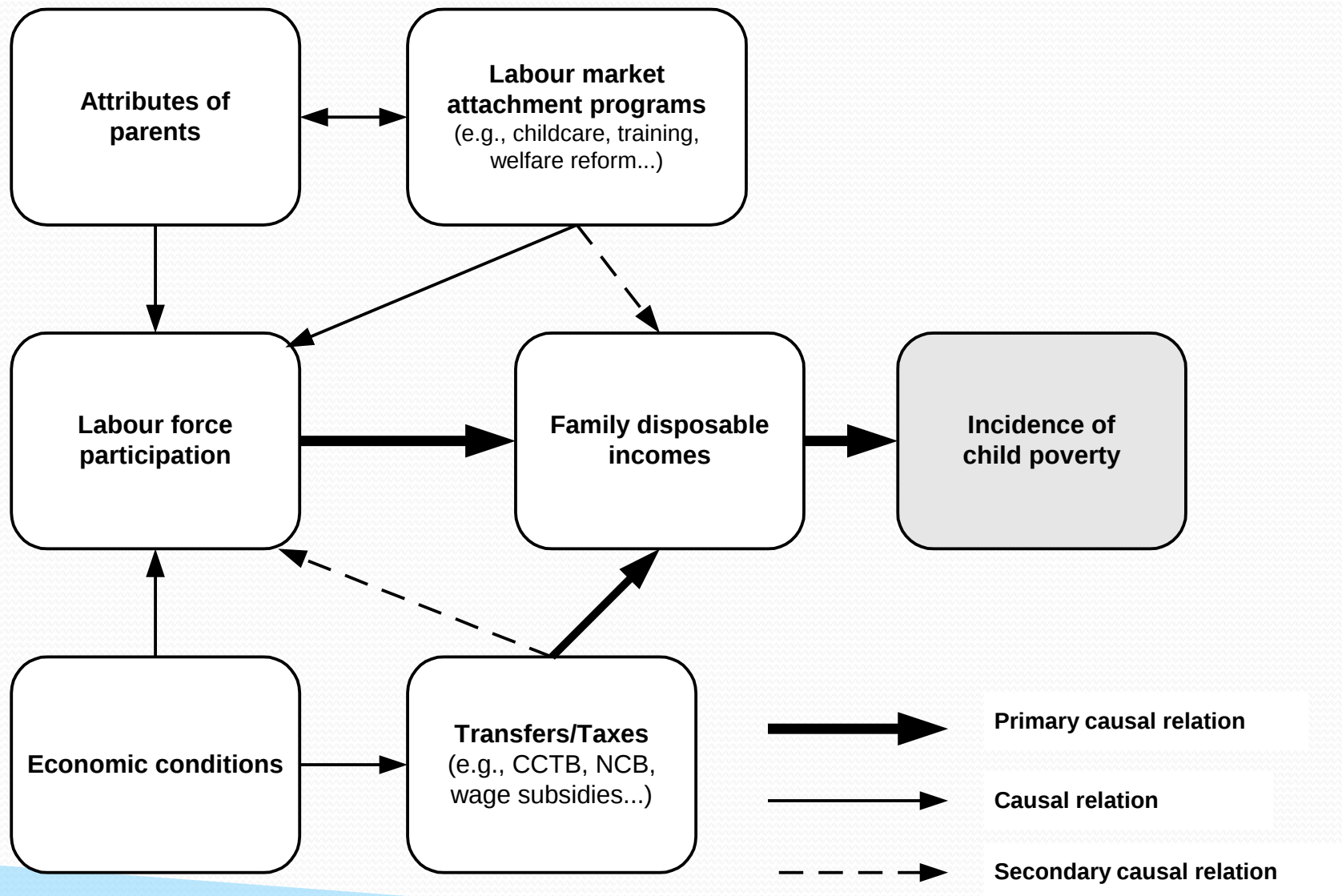
Graphical models



The causal logic model clarifies the theory of how interventions produce outcomes

Multiple methods and experimental techniques establish the relative importance of causes of changes in outcomes

Graphical logic for the NCB



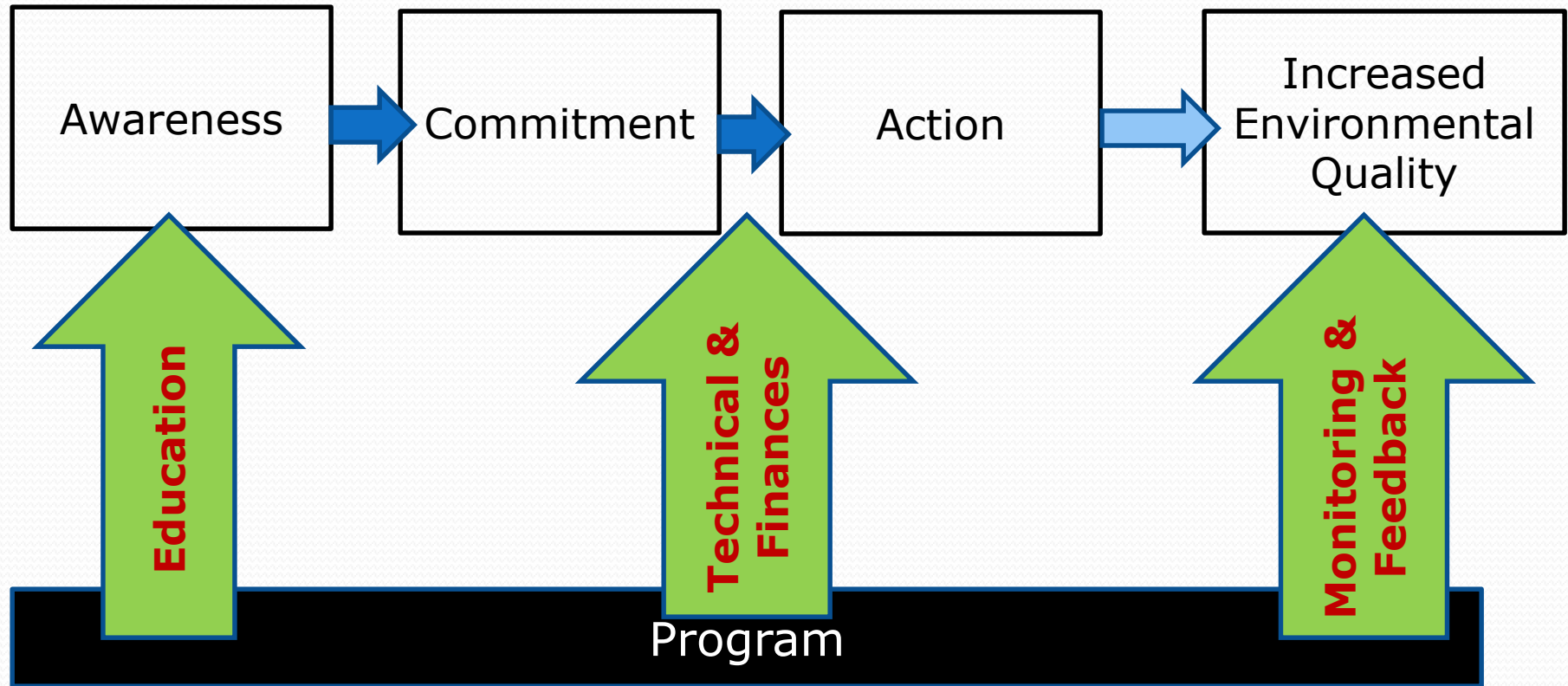
Example – Agricultural policy framework

- Recognized that agriculture was shifting from a family basis to a business basis
- Political acceptance that a viable farm sector could not be founded on ever increasing subsidies
- Role models from New Zealand and Australia
- The goal was to move away from cash subsidies to increased strategic and information support
- Introduction of expectations concerning agricultural stewardship
- Implemented 2004 – 2009
- Foundations for Growing Forward 1 and 2

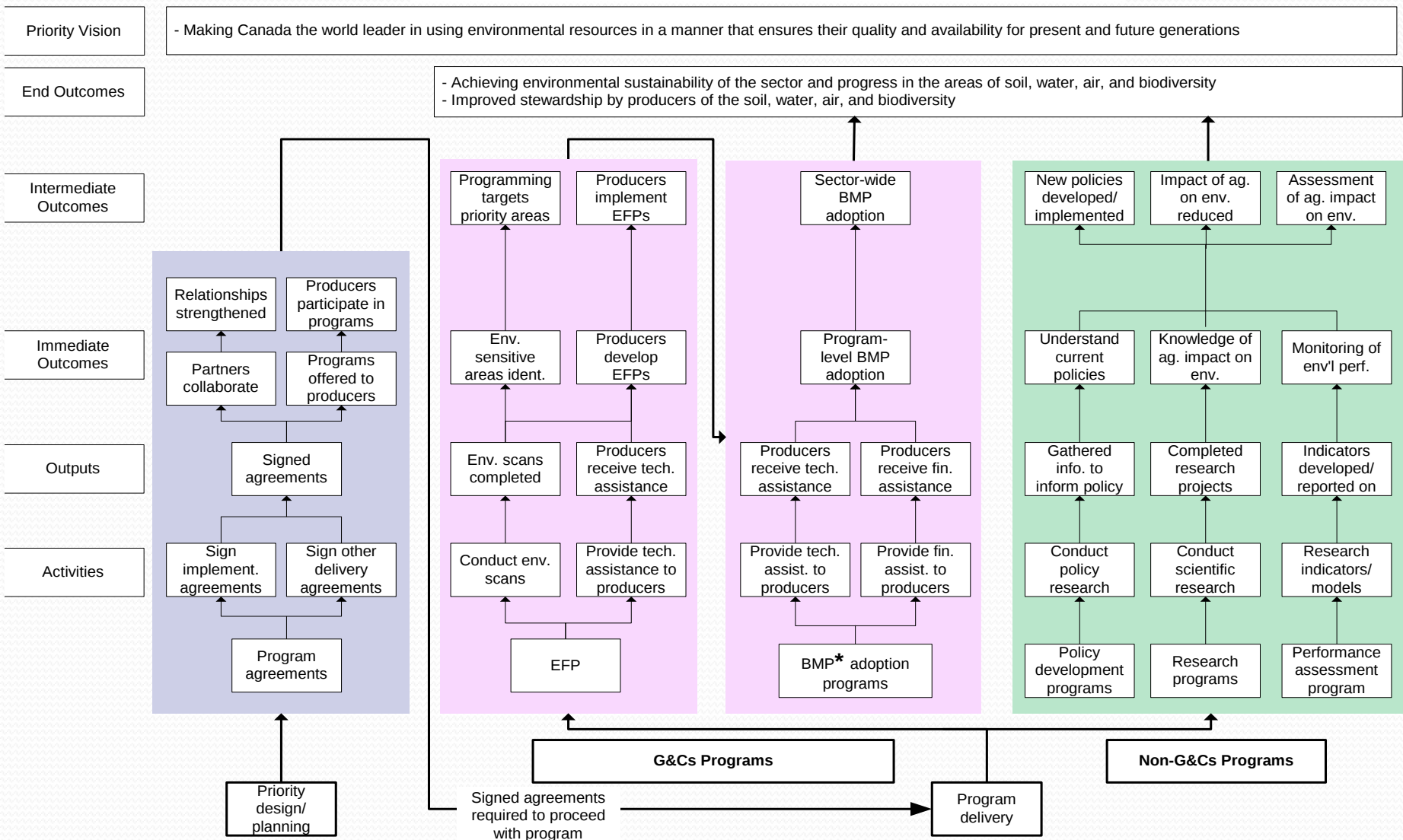
Theory of change

BMP – Beneficial (Best) Management Practices

Social marketing model links to the science of changing farm practice to yield benefits to soil, water, and air quality



Organizational process and programming



Advantages and disadvantages of causal logic models

Advantages

- reveals inter-relationships among program elements
- identifies confounding factors that reduce program outcomes
- supports the specification of an operation matrix

Disadvantages

- over complication can impede understanding
- abstract representations will confine communication to the “geeks”

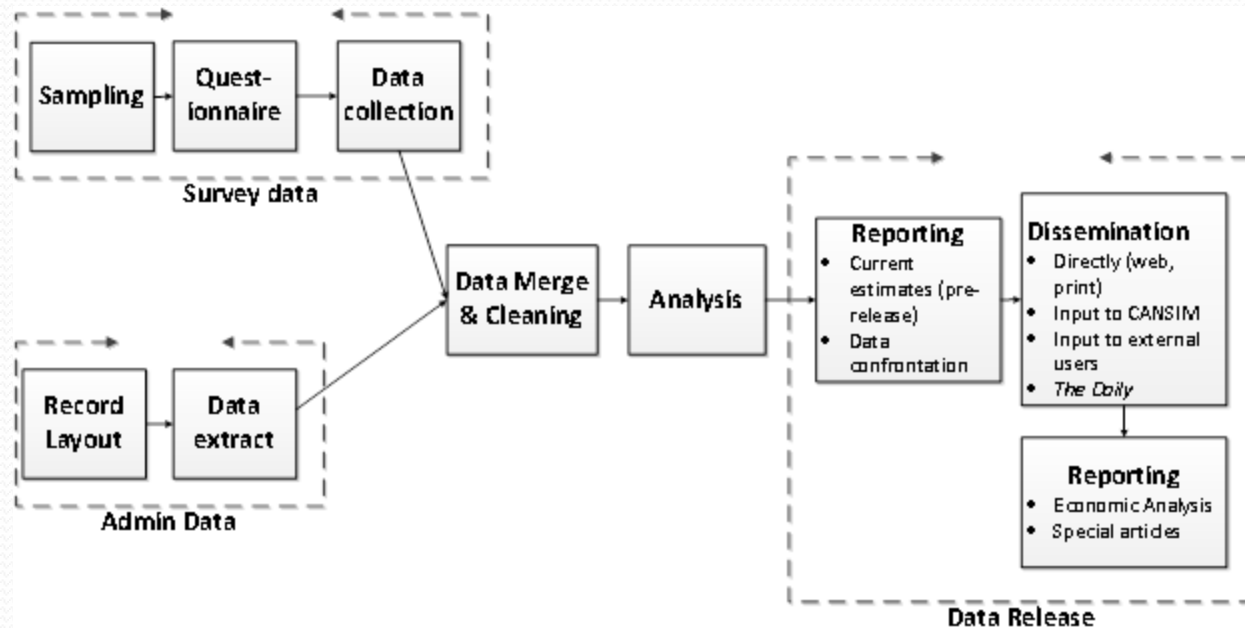
Role 3 – The logic model supports the evaluation matrix

The evaluation matrix

- Specify issues, questions, indicators, data sources, and method
- Method comprises:
 - data collection
 - data analysis
 - interpretation
- Issues and questions must cover Treasury Board (TB) guidelines
 - *Relevance* (need, alignment to government capacity, alignment to federal scope of action)
 - *Performance* (progress to reach outcomes, economy and efficiency)
- **But**....replicating TB questions will:
 - create measurement problems
 - fail to use the evaluation to respond to other managements needs/interests

Creating the questions – Linking BPM to economy and efficiency

- Each “line” in a logic model supports one or more questions



- In this case, the GSBPM details the steps in survey and admin data collection, analysis, and dissemination
- Management will more readily identify key issues (hot buttons) when presented with such a visual model of the results chain

Do not ask whether the program has shown economy and efficiency

- This question posed in the matrix demonstrates that the evaluation planners have penetrated to core issues of “production”
- The BPM supports “intelligent” questions on economy and efficiency
 - How much staff time is used in sample preparation?
 - What do sample frame errors costs us?
 - How much time is spent in cleaning data?
 - Which of the dissemination methods are least costly?
 - Which of the dissemination methods are most useful for users?
 - What does it cost us to rectify errors at the dissemination stage (as opposed to detection and rectification at an earlier stage)?
 - How much staff time (junior, intermediate, and senior) does the organization spend?
- The same principles apply to questions on impact

Logic models support the theory of change in two domains

