The Categories of Frameworks and their relation to the FDES revision

Presentation to the Second Meeting of the UN Expert Group on the Framework for Environment Statistics

Robert Smith

Director, Environment Accounts and Statistics

May 4-6, 2011

Overview of presentation

- Definition of "framework"

- The function of frameworks

- The components of frameworks

- The types of frameworks and their pros and cons

- Applying all this to the revision of the FDES

Definition of a framework

- A framework is the way in which any "thing" is put together – like a blueprint or a roadmap

  - The thing may be tangible (like a building) or abstract (like a statistical system)

- Putting any thing together requires:

  - Deciding what its constituent elements should be

  - Deciding how the constituent elements should be arranged to form the thing

- The answers to these two questions make up the framework

Function of frameworks

- Frameworks are needed to simplify the complexity of the world so that a thing may be created efficiently and effectively in the face of constrained resources

- Such simplification is essential in all non-trivial tasks

  - Without a framework to constrain and guide it, work may be unfocused and less than fully effective leading to a thing that does not work the way we would like it to

The components of a framework

- Given that frameworks must answer two questions (the "what" and the "how"), they comprise two components

  - The *fundamental component* defines the content of a thing (the "what") by reference to some valid body of knowledge

  - The *operational component* defines how the content is organized (the "how") to create the thing by reference to a valid set of rules

The fundamental component of a framework

- A framework's fundamental component is established by reference to some valid body of knowledge
  - "Valid" in this case implies a body of knowledge that has been built up and tested through a credible process such as science (natural or social), politics or practical trial and error
- A framework whose fundamental component is derived purely from theory can be labelled a *conceptual framework*
  - The theory itself may be derived from the natural sciences (e.g., ecology, physics) or the social sciences (political science, psychology)
- A framework derived purely from practice can be called a *heuristic framework* – most common in the social domain (a framework defining a "family")
- Of course, many frameworks are not pure, so *hybrid frameworks* combining elements of conceptual and heuristic knowledge are also common

The operational component of a framework

- Depending on the type of framework in question, the rules used in the operational component of a framework will be derived in different ways
  - Rules associated with conceptual frameworks will be derived from mainly from the professional application of theoretical knowledge in disciplines such as engineering, statistics, medicine, politics, etc.
  - Rules associated with heuristic frameworks will be derived from accumulated trial and error
  - Rules associated with hybrid frameworks will be based on a combination of applied theory and trial and error

Pros and cons of conceptual frameworks

- Pros
  - Very robust if the underlying theory is good
  - High level of legitimacy if the theory is broadly accepted
  - Difficult to refute – theory must be disproven first
  - Stable – theories usually evolve relatively slowly, so major shifts in the framework are unlike in the short term
- Cons
  - May be difficult from some to understand or to accept (mistrust or misunderstanding of theory)
  - Can become irrelevant if underlying theory is modified and the framework does not adapt
  - May not reflect what matters directly to people (or what they understand to directly matter to them)

Pros and cons of heuristic frameworks

- Pros
  - Very robust if the practical experience is vast
  - High level of legitimacy if based on broadly held cultural knowledge
  - People are likely to "see themselves" in a heuristic framework
  - Often works when theory fails or does not exist
- Cons
  - May go seriously wrong when experience fails to identify a key parameter – should not be used when the stakes are very high
  - May not reflect what science tells us matters most
  - May be incomplete (unless based on truly vast experience)
  - May be unacceptable to those who do not share the experience
  - May not promote coherence, in part because they can be transient

Pros and cons of hybrid frameworks

- Pros
  - Very robust if the combination of theory and practice is good
  - High level of public legitimacy by combining theory and practice
  - People more likely to "see themselves" in a hybrid framework than conceptual frameworks
- Cons
  - May be less stable than conceptual frameworks – practice can evolve quickly under the influence of social forces
  - May not fully reflect what science tells us matters most if theory and practice are not fully aligned
  - Can lead to tension when theory and practice diverge

Applying all this to the FDES

- The FDES could be designed as either a conceptual or a hybrid framework

  - A purely heuristic framework is not suitable for official statistics

- The current FDES is a hybrid with an emphasis on the conceptual

- The fundamental component of the FDES is derived from mainly from ecology and other natural sciences

  - It is mostly laid out in the document titled *A Framework for the Development of Environment Statistics*

- The operational component is derived mainly from science, but also from practical experience

  - It is mostly laid out in the accompanying documents on human settlements and the natural environment

On what basis to revise the FDES?

- The revision of the FDES could:

  - Move further toward a purely conceptual framework

  - Maintain the current balance (mainly conceptual with some heuristic elements)

  - Increase the heuristic content by incorporating more of the practical experience gained since its development