Modelling tools to support evidence-based policy decision making for sustainable development

Marco V. Sanchez-Cantillo
Development Policy and Analysis Division
UN-DESA

Capacity Building Workshop on INTEGRATED APPROACHES TO SUSTAINABLE DEVELOPMENT PLANNING AND IMPLEMENTATION
Session 5, 28 May 2015, New York

What, when and how

- UN-DESA/DPAD transfers modelling tools to support evidence-based policy decision making
  - experience and expertise built since 2006
  - various projects completed; 19 countries covered
- What analytical tools?
  - economy-wide models at the core
    - coherent financing strategies to achieve the MDGs (MAMS)
    - social protection policies to offset external shocks (MACEPES)
    - integrated assessment of economic and social policies
    - economic growth and macroeconomic trade-offs
  - complemented with microsimulation models
    - poverty and inequality analysis; household surveys
  - statistical and quantitative techniques to apply models

What, when and how (cont.)

- Implementation modality
  - Government demand for national models that possess relevance for policy making
  - “Trainers”: UN-DESA/DPAD staff mostly
  - “Trainees”: qualified technical staff in government; *generators* of modelling-based evidence
  - “Decision makers”: *users* of modelling-based evidence
  - Missions/workshops & technical support
    - Scoping mission: defines policy issues
    - Training workshops: transfer of knowledge and tools; generally two to three; telecommunication in between
    - “Clinics” in countries if needed
    - Final workshop: discussion of outputs (policy notes) with decision makers.

Policy discussion at the highest level (examples)

- Policy notes presented to and discussed with the President of Costa Rica and her complete cabinet
- Policy notes regularly discussed within the Ministry of Planning and Economic Development in Bolivia and then used to inform cabinet discussions
- Capacities used to inform; the NDP-2 in Uganda (ongoing), the Poverty Status Report 2014 and the MDG Report for Uganda 2013
- Recent request from the Nicaraguan government seeks support to analyze the impact of the Canal

Why economy-wide models?

- Policies have a “direct effect” and regularly have numerous “indirect effects”
- In reality, there are multiple transmission mechanisms from policies to outcomes; and complex interactions
- Net outcome may not easily be predicted
- Economy-wide models allow a simplification of such a reality
  - apply to the whole economy
  - “computational”
    - solved numerically
    - idea of impacts with statistical robustness

Why economy-wide models? (cont.)

- For example: the pursuit of a strategy for achieving MDGs has strong effects throughout the economy
  - demand and supply in the different markets (goods and services, factors and foreign exchange)
  - synergies between the different goals may influence the required expansion of services
  - financing strategy creates trade-offs (exchange rate appreciation, crowding out, etc.)
  - productivity gains impact the economy

Examples of results: *Costa Rica*

- Economy-wide model produced a very low “primary completion rate”: on average, 61.6% for the period 2000-2009
- A thorough analysis showed there was a high repetition rate in first grade (about 12%).
- Issue began to be studied and discussed within the Ministry of Education.
- Subsequently, there was a reform: reading and writing skills began to be assessed at the end of second grade, not in first grade.

Examples of results: *Uganda*

- Key conclusions from modelling exercise:
  - Social service provision not always the best policy to accelerate MDG achievement
  - Larger improvements in the MDGs are more strongly associated withy public investment in physical infrastructure (e.g. rural feeder roads).
  - Public infrastructure investment is an important driver of household income growth, with knock-on implications for the other MDGs.
- **Investment in physical infrastructure is at the core of the Government's strategy to deliver its Vision 2040**

Examples of results: *Bolivia*

- *Agenda Patriótica 2025* is Bolivia's development vision. It was launched in January 2012.
- Economy-wide model helped estimate requirements in terms of GDP growth, government budget and financing for implementation of programs and plans.
- Conclusion:
  - Bolivia would need to grow by 7% per year (much more than in the past) to avoid excessive reliance on public spending.
  - Even so, some MDG targets would not be achieved by 2025.
  - Tax revenues (rather than foreign debt) would need to be mobilized to support programs.

Ongoing and going forward

- Completed projects during 2006-14 covered the ***economic*** and ***social*** pillars of sustainable development.
- Ongoing projects pay more attention to the ***environmental*** pillar and its integration with the other two pillars:
  - achieving sustainable energy
  - finding optimum energy system configuration in countries
  - estimating costs of, and assessing incentives for promoting sustainable energy
  - identifying investment needs for sustainable energy
  - assessment of economic and human development impacts of all the above
- Upcoming projects will focus on integrated assessments that include natural resources in a broader sense

New modelling tools

a) Economy-wide models (MAMS) extended to have energy and environmental details (emissions, natural resources, etc.)

b) Integrated energy systems (OseMosys)

   with (a) and (b) interacting: soft link between models to get consistent simulation results while keeping their own richness

c) Integrated comprehensive approaches, e.g. CLEWS (climate, land, energy and water systems) and NEXUS (food, agriculture, water and energy systems)

Some advantages and costs

- Advantages
  - presence of UN-DESA staff reduces reliance on consultants; builds trust with government
  - favors a continuous use of modelling tools in government
  - reduces the need to hand out sensitive information
  - datasets and statistics are improved
  - provides more information on policy options
- Costs
  - strong dedication and work of government officials
  - takes some time for projects to be quickly implemented
    - rotation of people in governments/countries
    - trainees have other pressing short-term priorities
    - acquiring mastery of the tools demands time/commitment
    - data are gathered, adjusted, produced and processed
    - initial policy priorities need to be discussed