



Strengthening national capacities to use modelling tools for sustainable development policies

18 February 2016

Building capacity in governments to use quantitative and modelling tools to inform development policy decisions contributes to strengthen countries' efforts to pursue national sustainable development goals and the 2030 United Nations Agenda. To this end, UNDESA is making available a suite of tools to assist countries addressing the complexities of sustainable development within an integrated and coherent framework.

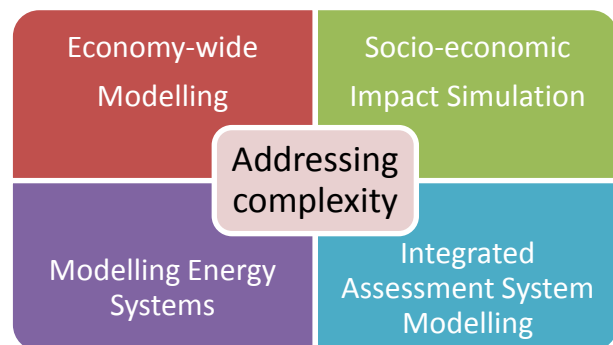
Strengthening policy design and capacity development

Countries are confronted with the imperative of re-balancing the economic, social and environmental dimensions of development. It is no longer enough to take into account the effects of one policy action on multiple domains, the interlinkages across the three dimensions of sustainable development must come at the forefront and at once. Similarly, the urgency of eradicating poverty, halting rising inequality, averting climate change and reversing the infringement of environment limits, underscores the need to embark in transformative development strategies. These challenges are better confronted by development policies aptly informed by detailed analyses of the trade-offs and synergies that exist across the wide range of policy options available to countries. Better informed policies require the development of analytical skills on the use of appropriate tools.

The need to overhaul capacity to assess national development policies is particularly urgent for developing and least developed countries. These countries have the compound challenge of accelerating growth, balancing sustainable development dimensions while coping with some of the worst effects of climate change.

Modelling tools to inform sustainable development policies

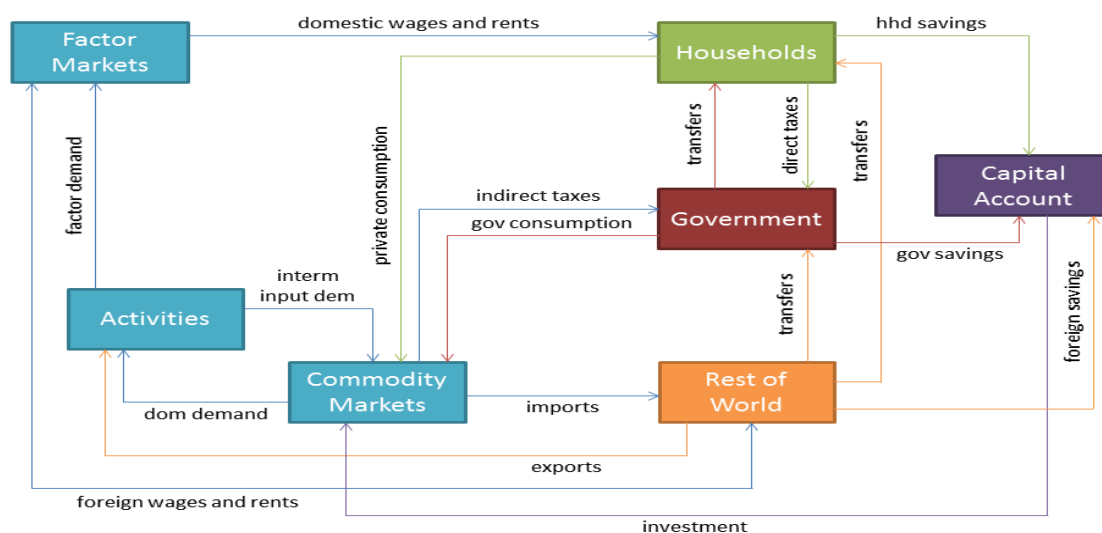
UNDESA has been implementing capacity development projects for a number of years in several countries to support technical capacities on the use of modelling tools to inform development policy. The methodologies provide a comprehensive integrated suite of tools useful to inform policy decision making for sustainable development. Modelling tools include the following:



Economy-wide Models

Economy-wide models are a useful tool to assess the implications that alternative development policies and shocks have throughout the economy, including employment, sector output, budget, external sector accounts, and consumption, among others. These models are useful to assess the direct and indirect economic impacts of alternative policies and external shocks.

Examples of policies that can be analysed to look at their multiple interlinkages in the economy include: increasing investment in education and health, new investments in infrastructure, introduction of fuel/carbon taxes, assessment of emission caps regulations, among many others.



Energy Systems Dynamic Models

Energy systems dynamic models can assist medium and long term energy planning by identifying the minimum cost path of meeting energy demand under alternative scenarios and investment portfolios. This model allows a comparison of the investment and generation costs of different scenarios; for example, scenarios increasing the use of renewable sources of energy, or investment plans that take account of the potential effects of climate change, policies aiming to ensure national energy security, and programs to guarantee universal access to modern energy.

A model to simulate universal access to electricity

The electrification modelling tool using open geo-spatial data simulates the provision of universal access to electricity by 2030 with the least cost technology option in 44 African countries. The model estimates the total cost of achieving universal access to electricity for various technology options and for each locality defined by a 10 by 10 kilometre range. The tool provides a first insight into energy planning that accounts for local characteristics and several technological options.

Socio-Economic Micro-Simulations

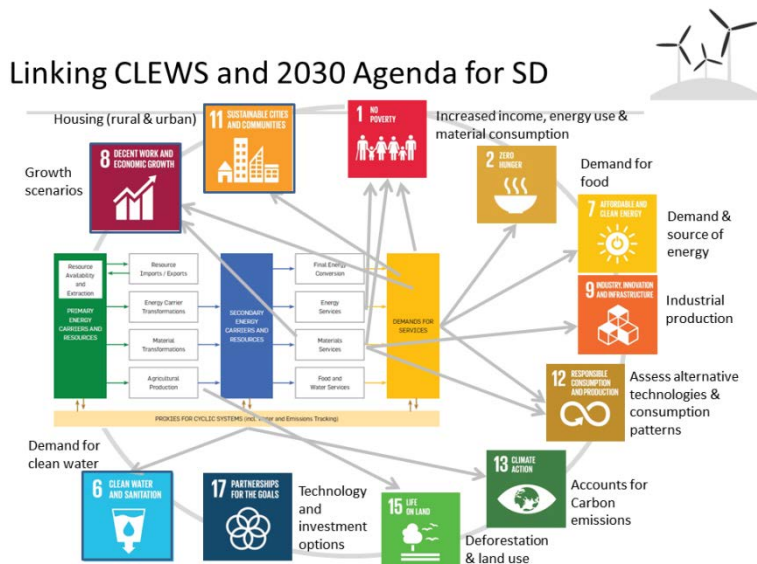
Microsimulations are a useful methodology to undertake detailed evaluations of the socio-economic impacts of alternative development policies and shocks on households. It is a useful tool to inform policies for poverty eradication, inequality reduction, enhanced food security and energy access. UNDESA, in collaboration with other partners, have used this methodology to

simulate the poverty and distributional impacts of specific policies and economic shocks. Examples of policies that can be simulated to understand their impact on households include the introduction of taxes or subsidies, transfers –in kind or cash, access to modern energy, among many others.

Integrated Assessments

Assess development policies within an integrated framework that takes into account, from the very beginning, the interlinkages among the three pillars of sustainable development. UNDESA in collaboration with other partners are currently piloting the use of this single integrated model.

The methodology helps to consider the interplay of land-use models, water resource models and energy systems models. The methodology basically iterates the results from various models until convergence is achieved, thereby providing a unifying framework to simultaneously assess policy decisions on issues such as promotion of renewables, preservation of biodiversity, agricultural expansion, and emissions' control.



The use of a single model reduces the time and the technical complexities of running several models until convergence is reached. While detail is lost, a well-built single model, based on key policy questions, various scenarios and a good selection of drivers, simplifies the task of looking at the inter-relations among various dimensions of development.

A web-platform to make modelling tools widely available

On 18 February 2016, UNDESA is launching the website **Modelling tools for sustainable development policies** with the intention of supporting the development of technical capacities, at country level, to inform sustainable development policies. The website is led by UN-DESA and powered by the United Nations Office for Information and Communication Technologies (UNOICT). The link for access is: <https://unite.un.org/analytics/desa/modellingtools>

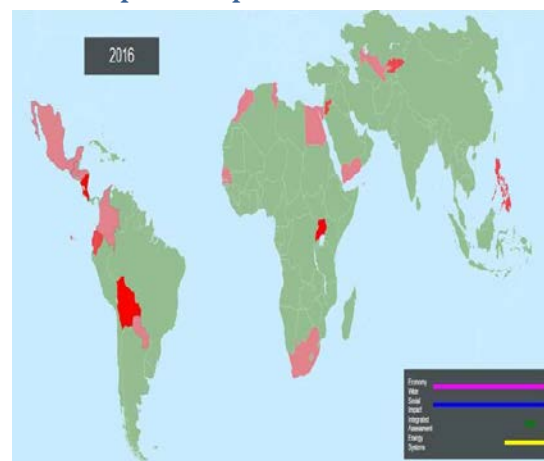


The website provides open access to the tools and methodologies used in capacity development projects. To the extent possible and in full compliance with countries' regulations, the website will make available the data used in modelling and the model codes. This will promote further research and contributions from the scientific and practitioner's communities. OICT will periodically post modelling challenges in the UN Challenges facility to tap into the wide pool of international experts that wish to make a contribution to further the development of these methodologies.

Three principles guide the construction, update and expansion of this website: a) make widely available a suite of tools, as no single model provides answers to all challenges posed by sustainable development; b) provide open and transparent documentation of models contained in the website; c) create a community of practice for continuous updating of the models and able to provide state-of-the-art knowledge in policy areas relevant to sustainable development

Scaling-up capacity in countries to inform development policies

UNDESA will continue supporting countries in the design of national development strategies that take into account the trade-offs and synergies of policies in a multidimensional setting. UNDESA has been working in a number of countries to generate knowledge and build capacity to assess the macroeconomic and financing implications of achieving the MDGs; including options for the design of social protection. Over 10 years, UNDESA has covered 20 countries as shown in the map.



Sustainable development requires improved capacity on the use of quantitative methodologies to assess a wide range of development challenges. By making openly available the modelling tools UNDESA, in collaboration with other partners, will continue to support countries in their efforts to strengthen capacity on the use of modelling tools for sustainable development.

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