BEYOND SDG INDICATORS
PART 2: Integrated models supporting implementation, strategy development and transition planning

REPORT OF TIAS-IISD WEBINAR

APRIL 12, 2016

Organized and hosted by:

THE INTEGRATED ASSESSMENT SOCIETY (TIAS)
AND
INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT (IISD)

Chaired by:

László Pintér, Central European University (CEU) and
International Institute for Sustainable Development (IISD)

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Organizing committee: László Pintér, Jan Bakkes, Caroline van Bers, Johannes Halbe

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TIAS-IISD Webinar Report: BEYOND SDG INDICATORS
PART 2: INTEGRATED MODELS SUPPORTING IMPLEMENTATION, STRATEGY DEVELOPMENT AND TRANSITION PLANNING
12 Apr. 2016

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1. Introduction to TIAS and the webinar

The Integrated Assessment Society (TIAS) is a not-for-profit entity created to support the community of scientists, practitioners, and stakeholders who develop and use Integrated Assessment (IA). The goals of TIAS are to nurture this community, to promote the development of IA and to encourage its wise application. Within this context, TIAS initiates and actively supports a variety of activities that allow the IA community to meet each other, learn about past and on-going experiences with IA, and develop new activities.

TIAS defines IA as the interdisciplinary process of integrating knowledge from scientists, practitioners and stakeholder groups in order to evaluate a problem situation from different perspectives and provide support for its solutions. IA is used by scientists, policy analysts and practitioners to identify and integrate knowledge about a problem domain as well as to inform and support decision-making and policy processes. IA therefore supports a range of fields concerned with sustainable development, including the implementation of the Sustainable Development Goals (SDGs). The SDGs have been approved by the UN General Assembly as key elements of the post-2015 development agenda in September 2015. The goals represent a significant challenge for the science and policy community, given their broad scope, diversity, inherent uncertainties, the vested interests involved, and growing urgency for action.

As a crucial element of their implementation, there is significant interest in defining SDG indicators, given their potential role in monitoring and progress review. However, beyond having suitable statistical instruments for measuring progress, moving SDG into the mainstream will also require analytic tools and methods that can address SDGs as a system, analyze their relationships, and allow policymakers, experts and the public to identify and test hypotheses about implementation options in the context of scenarios. The hypothesis underlying this webinar is that the conceptual approach, tools and methods of IA make it an interesting candidate to play a role.

The first TIAS webinar on the implementation of the SDG's held in February 2016 focused on where the need for assessment and strategic analysis in the different stages of SDG implementation may arise, how it can build on the work on indicators and statistics, and the related institutional and capacity issues. This second webinar in the SDG series has focused on efforts to support SDG implementation assessment and strategic planning through integrated modeling. To illustrate these general issues, the speakers discussed ongoing work on integrated modeling and key conceptual,

technical and institutional capacity challenges that will need to be considered for making use of these IA tools and methods in practice.

The webinar was chaired by László Pintér Professor, Central European University and Senior Fellow and Associate, International Institute for Sustainable Development.

The presentations and presenters were:

- "Applying integrated assessment models to SDG planning" by Paul Lucas, Researcher, Sustainable Development and International Climate Policy, Netherlands Environmental Assessment Agency

- "Modeling support for SDG Implementation" by Marco Sanchez-Cantillo, Senior Economic Affairs Officer, Development Policy and Analysis Division, United Nations Department of Economic and Social Affairs

- "The Integrated Sustainable Development Goals Planning Model" by Matteo Pedericini, Director of Planning, Millennium Institute

The presentations were followed by a roundtable discussion session.

The agenda can be found in Annex 1.

2. The presentations and discussion

The presentations are available for downloading from the TIAS webinar page: www.tias-web.info/webinars

Applying integrated assessment models to SDG planning

Paul Lucas, Researcher, Sustainable Development and International Climate Policy, Netherlands Environmental Assessment Agency (PBL)

Highlights from Paul Lucas' presentation:

- Paul introduced the Integrated Assessment Model Image 3.0 that has a strong earth system focus and describes the linkages between human development and global environmental change. In particular, it focusses on the integrated land and climate systems, as well as the impacts on human development, water, biodiversity, and the N and P cycle. Image 3.0 allows for the testing of possible response strategies, which has been used in many international scenario studies (e.g., IPCC, GEO, MEA, OECD-EO)
- Paul presented the example study "Beyond 2015: Long-term development and the MDGs (2009)". Among others, the study was able to show that various regions/countries are not on track for achieving the MDGs. A particular impediment was the inertia of the system, as it takes time to develop capacities.
- The second study "Roads from Rio+20: Pathways to achieve global sustainability goals by 2050 (2012)" analysed opportunities to reach internationally agreed targets. Thus, the expected trends without targeted policies were implemented in Image 3.0 and three alternative pathways tested in order to achieve the targets. The results show that transformative action is required, and that important synergies and trade-offs exist.
- Some early results of an ongoing third study, "Planetary Boundaries and SDGs: an energy-system perspective," were also presented.
- Paul concluded that Integrated Assessment Models and model-based scenario analysis are

effective tools for (1) linking across issues, time and scale, (2) addressing feasibility, trade-offs / co-benefits, inertia, required effort, and (3) making goals and targets transparent and track progress.

Questions and Answers

László Pintér (chair): Can you please say a few words about the world in 2050 project. What are the resolutions of that work? How do you involve the policy community, or are there plans to involve the policy community beyond the scientific institutions?
Paul: The project is currently bringing together scientists and modellers. Involving the policy community can be part of the project, but this is not a topic at the moment, as funding is also still an issue. On the other hand, there is a clear interest of the Sustainable Solutions Network that is very interested in getting this study done, as well as institutes like IIASA and the Stockholm Resilience Centre which are at the core of this study.

László Pintér (chair): Can you provide an example of the type of policy impact that your kind of modelling related to the other projects that you mentioned had –in the Netherlands or beyond?.
Our modelling work has been used a lot in the different IPCC reports and especially in the discussion of how to achieve long-term climate targets. I think that the PBL IMAGE Model was one of the first models that analysed how to achieve more stringent climate targets. I think that we are now facing a new challenge as the question is now how to achieve the 1.5 °C target of the Paris agreement. The study could hint to specific technologies that are required in this transition and the timing of the different actions. The PBL IMAGE Framework has been highly used in the UNEP GAP reports to match the different IMCs to what would be required to stay on track towards the 2°C target.

3. Strengthening national capacities to use modelling tools for sustainable development policies

Marco Sanchez-Cantillo, Senior Economic Affairs Officer, Development Policy and Analysis Division, United Nations Department of Economic and Social Affairs (UN DESA)

Highlights from Marco Sanchez-Cantillo presentation:

- At the outset, Marco pointed out that no single model can address the complexity of SDGs and can easily be adapted to address the SD priorities of diverse countries.
- UN-DESA/DPAD builds capacity in the use of modelling tools, and transfers these tools to inform policy decisions. This work has been done in 20 countries while current work is located in six countries (Bolivia, Costa Rica, Kyrgyzstan, Nicaragua, Paraguay, Uganda).
- Trainees are usually qualified technical staff in the government who generate model-based evidence that is later used by policy-makers.
- Integrated assessments of economic and social policies are complemented by microsimulation models.
- Examples of results that had a concrete policy impact in Uganda, Bolivia and Costa Rica were presented.
- Today, the focus is on integrated assessments that include climate, 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.
- A web platform has been implemented by UN-DESA (powered by the United Nations Office for Information and Communication Technologies) to make modelling tools widely

available.

- Marco summarized his talk by providing the key principles of UN-DESA. First, capacity development should be demand driven emerging from national policy priorities. Continuous interaction with policymakers is needed to induce learning and effective communication of results. Second, a suite of models is required as no single model can cover all relevant issues. Models should be available (via open source software), transferable, transparent and open for validation from scientific and development practitioner community.

Questions and answers

Caroline van Bers: I have two questions. First, are you sharing these tools with universities as well, since there might be quite a bit of interest there? And the second question is do you plan to build a model for food and agricultural systems, especially for African countries?

Marco Sanchez-Cantillo: We are focussing on capacity building. We are trying as much as possible with the limited human capacity we have to develop these tools ourselves. In many instances developing these tools goes beyond our expertise, of course. So basically we work with different partners. For the simulations we work a lot with colleagues at the World Bank. The idea is that we are developing models but the ultimate goal is to develop capacities. Ultimately, we want to address the policy concerns in the countries. So you are right, it is capacity building but without that there is an extensive exercise in developing these tools.
With regard to agricultural systems, we have implicitly included the agricultural nexus in these tools. They basically need to understand based upon the country context the dynamics of agriculture and more importantly, where the energy and water needs are in agriculture in order to produce food and so on. In terms of partnerships, we are talking a lot with colleagues from the FAO and we are seeking ways to exchanging codes and models in order to consider the dynamics of food production which is very important. We are moving away from the approach of just understanding production and consumption and we are trying to understand more the food production chain while exchanging with the FAO.

László Pintér: What role do you see for integrated assessment models or model families or interlinked models in supporting the SDG reporting process?
Marco: This is a very important question, as actually one of the things we were upset about with the MDGs was that there were a lot of ex-post reporting of MDG progress and policies basically at the end of the period. This is reporting at the country level – we are not talking about global reports.
It is well-known that scenarios can be a helpful approach to deal with uncertainties and provide an ex-ante assessment of MDG policies. Based upon positive experiences with Bolivia, it is currently being discussed how to integrate such scenario approaches in the SDG reporting.

László Pintér: How did you interact with the Bolivian government when you applied modelling to assess their MDG policies. Did you work in iterations? Did they revise their policies when you presented your results?
Marco: The goal was to inform policy makers about the potential outcomes of their policies. The actual discussion of policies has happened more behind closed doors. What we however wanted to make sure was that energy, land use and water issues are properly taken into account and that a dialogue was started. With the platform, we want to bring together researchers and the public who are interested in the dialogue.

4. The Integrated Sustainable Development Goals Planning Model (iSDG)

Matteo Pedericini, Director of Planning, Millennium Institute

Highlights from Matteo Pedericini's, presentation:

- …

Questions and answers

Fabian Heitmann: Do you plan to evaluate the effectivity of your model? And if yes: how?
Matteo: Usually, we speak of validity of the model, which we achieved in a number of ways (runs start in 1990). First, the model is based upon the 2021 model which has been validated in various contexts. It is validated each time it is used through simulation and it is tested for its ability to reproduce past developments in the country. Third, we also validate the assumptions of the model using available data and local experts. However, as with every model, we do not aim to achieve an accurate model but provide indications of policy coherence and impacts and about reasonable scenarios.

Marco V. Sanchez: To which family of models does the iSDG pertain? Is it a CGE model? Is it an integrated assessment model? Is it mostly linear or non-linear?
Matteo Pedericini: The iSDG model is a system dynamics model, i.e., it is a system of non-linear differential equations, which is simulated over time. It embeds many principles of CGE and macro-economic models, but it is a real sector model. It does simulate the economic sectors simultaneously with social and environmental sectors. It does not entail much detail in each of the sectors, as we are more interested in inter-sectoral interactions.

David: Please deliberate on how you work with stakeholders such as governments.

Matteo Pedericini: we have been working with different partners over the years and there is no two that are the same. We work with the ministries of finance and planning that coordinate National development plans. In terms of modelling we work with technical teams. At the higher decision making levels we share results with ministers and discuss implications. We sometimes work through UN organisations who can open doors.

Q -What is the minimum set of variable required to run the model? For example, if i would like to run the model focusing only on 2-3 SDG goals.

Matteo Pedericini: The model simulates for all the SDGs at the same time. We can make the simulation focusing on policy interventions for 2 or 3 goals but it will still simulate in the background progress with the other SDGs. So we cannot isolate these goals and the model would be of such a different nature that it will not be the same thing anymore.

5. Roundtable discussion and wrap-up

László Pintér: Asks each presenter to respond with their reactions to the other presentations.

Paul Lucas: There are some distinct differences between our modelling focusing on aggregated processes at global scale. Another difference is that we do not work with stakeholders in developing scenarios. On the other hand, there is a clear potential link between these kind of models. Image kind of models can provide a global overview and global inputs that are relevant for models that are focusing on national issues. There are synergies among models and this relates to the comment of Marco that there is no single model but you need a suite of models to address the SDGs.

Marco V. Sanchez: There are some critical challenges to help countries to understand their challenges and policy options. One is that it is important to create communities of practice for continuous updating of models and sharing of protocols. The work at the global scale is important for the national level. So we need to talk to the experts like Paul who work at the global level and we should do more of this collaboration and we are trying to do this through our platform. I recommend you have a look at it.
The other important aspect is how we make it visually appealing. We need to work on this as well. A third challenge is to make it open e.g. with open source and sharing codes. And that has worked out well for the researchers.

Matteo Pedericini: As a modelling community it is encouraging to see that we are starting sooner to produce tools to support their implementations with the SDGs in comparison with the MDGs. It is clear we need more than one tool to address the challenges embedded in agenda 2030 and we need tools that bring it all together to look at it as one. But we do not have to follow the natural tendency of silo planning.

Summary by László Pintér

We heard three presentations. It was interesting to see the different approaches from the custom-developed global modelling that Paul presented and to the approach presented by Marco that tries to expand mainstream models to be used in a more integrated way, and finally the third approach presented by Matteo that is customised to the national level. These are different approaches within a single toolbox. Some key points and actions that stood out*:*

- **Involving the modellers in customising the models**: We need more than a single solution and we have more than one modelling pathway and we should look at how these **families of models** help planning processes.
- There was a point on **linking global goals to national priorities** and tailoring models to the national interests. This process is important in adjusting models to actual needs**.**
- **Capacity building** stood out and this requires real efforts, it can take years and involves joint learning. **Key levers** such as finance and investment that need to be identified and can have an impact across the SDGs. We should test how adjusting these levers can, as we saw in the iSDG case, show the impact in the individual SDGs
- Investigating **trade-offs over time and across sectors** would be more doable if we have system wide models which gives us a chance to formalize these relationships and develop and test scenarios to give better outcomes across the goals.
- It is important to make the tools **visually attractive**.

Close of webinar.

Link to recording: https://webconf.vc.dfn.de/p8tylg0kd7a/

Link to programme and presentations: http://www.tias-web.info/tias-activities/webinars/#6th

Annex: Webinar organizers and presenters

Organizers:

László Pintér (chair) Professor, Central European University and Senior Fellow & Associate, International Institute for Sustainable Development

Livia Bizikova, International Institute for Sustainable Development

Jan Bakkes, Vice-president, TIAS and Advisor, Netherlands Environmental Assessment Agency

Caroline van Bers, Programme manager, TIAS and Researcher, Institute of Environmental Systems Research, Osnabrück Univ.

Presenters:

Paul Lucas, Researcher, Sustainable Development and International Climate Policy, Netherlands Environmental Assessment Agency

Marco Sanchez-Cantillo, Senior Economic Affairs Officer, Development Policy and Analysis Division, United Nations Department of Economic and Social Affairs (UN DESA)

Matteo Pedericini, Director of Planning, Millennium Institute