

# EU Conference on Modelling for Policy support

Brussels, 26 to 27 November 2019

Parallel session 1: Model transparency and sensitivity analysis

**It started with a KISS: making complex modelling accessible, transparent and understandable**

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## Abstract

1) Modelling in the policy and research life cycles Model-based analysis supports the European Commission in impact assessments and analysis of policy options. In the area of agriculture policy analysis and related areas, modelling constitutes a key component for evidence-based policy making. The modelling work belongs to the 'formulation' phase of the policy cycle, where the impact assessments are located. For a transparent policy-making, this process has to follow highest standards to allow for tracing back all decision making. Therefore, the modelling for policy support has to include the full step of the research life cycle, which does not stop with the publishing of a report. Instead, it has to ensure open access, dissemination within social media (e.g. making understand metrics through visualization) and preservation of the information in sustainable formats and reliable storage. To this end, the Joint Research Centre (JRC) of the European Commission has developed DataM as a tool, which provides interactive dashboards and raw datasets resulting from the scientific activities of JRC and partners, relating in particular to the economics aspects of agriculture and sustainable resources. Thus, it is a complement to scientific publications, aiming to improve the usability of traditional scientific reports largely based on big and complex data outcomes. DataM provides the readers with 19 on-line tools that enable the

self-analysis of data and allows full accessibility and storage.

2) The challenge of explaining model output Support to policy with (economic) modelling tools has to ensure that the outcome is i) accessible, ii) transparent, iii) traceable, and iv) understandable. Without saying, it has to provide results and recommendations in a timely manner and with high scientific quality. DataM1 (Data portal of agro-economics research) was built by the JRC as a tool for responding to these challenges. It provides meta-information on the models, including links to documentation in order to allow a precise understanding of each model's specification. Graphical user-interfaces offer flexibility in supporting the appropriate use of models and their outputs by different user types (e.g. 'viewers', 'users' or 'developers').

3) DataM in details The concept at the basis of DataM is to exploit the web plus the recent business intelligence technologies to improve the usability of our scientific literature. Scientific articles, especially in the case of economic studies relying on modelling exercise, are largely based on big and complex data outcomes. Users take great advantage from the usage of on-line tools to self-analyze model outcomes from personal perspectives. This is a paradigm shift as compared to the traditional scientific articles that show only some charts and tables in accord to authors' choices. This is also a

significant improvement as compared to the simple provision of complex raw data outcomes, not accompanied by any tool and guidance to interact efficiently with them. The site is based on: i) a data-warehouse where we manage datasets, often linked by the JRC open data catalogue, the EU open data portal and the European data portal. Normal users can only <https://datam.jrc.ec.europa.eu> download data whereas modelers can also upload results by managing version, metadata, reference data and harmonization logics. ii) a business intelligence engine for interactive infographics and dashboards. The infographics include some narrative to resume the results of studies presented in interactive way with a top-down approach (from generic concepts to details). The dashboards are straightforward screens based on charts, maps, tables and filters interrelated among them. DataM belongs to the acknowledged tools within the section 'EC knowledge, publication, tools and data platform' of the internet portal of the European Commission.

4) Example 1: Free trade agreements study A good example is the 2016 study on 'Cumulative economic impact of future trade agreements on EU agriculture'. The study, announced by Commissioner Hogan at the Agriculture Council meeting and published (15 November 2016). Models used: MAGNET and AGLINK Interactive dashboards, data to be downloaded through a query portal or as a bulk. The dashboards are actually short versions of the report with interactive visualisations. In 2019 the negotiations on an EUMERCOSUR free trade deal gained momentum and were closed at the Osaka G20 meeting 29 June 2019. Analysts and press did consult the report intensively.

5) Example 2: BioSAMs and SAMs The tool is also supporting the storing and visualization of analytical (used for modelling purposes) databases such as Social Accounting Matrices (SAMs), which are typically employed to calibrate Computable General Equilibrium models. A SAM is a comprehensive and

economy-wide database recording data on all transactions between economic agents in an economy over a certain period of time. SAMs are large databases which include national account 20 data plus a series of micro data used to disaggregate the economy at stake to the level of details needed for the analysis. DataM is currently storing a EU plus all Member States' Social Accounting Matrices with a detailed disaggregation of the bioeconomy (Mainar Causapé et al., 2018). The tool allows researchers to download all the available SAMs which can be used in any single-country modelling approach or to visualize the key indicators included within the database in a friendly manner. Based on these sets of SAMs, DataM produced an interactive tool to provide the number of jobs that would be generated by an exogenous shock in final demand for the selected commodities. This number accounts for direct, indirect and induced effects, calculated after (an infinite) feedback effects. The tool shows the variation in job creation in each of the sectors shocked and the aggregate variation (total jobs, jobs in the main productive sector of the commodity, jobs in the other sectors). In addition, DataM is also storing and provide visualization tool for SAMs, developed within the JRC food security projects, for Sub-Saharan African countries. So far Kenya and Senegal SAMs are include while Ethiopia is about to be uploaded.