The Arab Economy-wide Trade Simulator Interface

Objectives

Policymakers in the Arab region are increasingly requesting quantitative assessments of the impact of international trade policies on their economies. To response to these requests, ESCWA initiated an ambitious and original project on building trade simulation tools that enables users to perform trade simulations in a user-friendly manner without the need to be a specialized modeling expert with strong mathematical coding skills using GAMS (General Algebraic Modelling Language). The interface is accessible from anywhere through a web-application using the latest technologies.

The Arab Economy-wide Trade Simulator Interface (ATSI-1) is the first in a series of analytical tools, which focus on trade in goods. This simulator will serve as a laboratory for contrafactual trade policy analysis. It is based on a tailored dynamic global computable general equilibrium (CGE) model including individually 18 Arab countries. It captures interrelationships between economic sectors and institutions inside a given country and with sectors and institutions in the rest of the world.

For each Arab country, the interface allows users to perform three categories of trade-related simulations.

The first covers trade policy reforms in the country of interest (tariff and other trade costs on goods), for example Morocco.

The second allows the user to perform additional simulations related to trade policy reforms in partner countries across the world (example EU, USA…). In both cases, users will be able to perform simulations and analyses their economic impact.
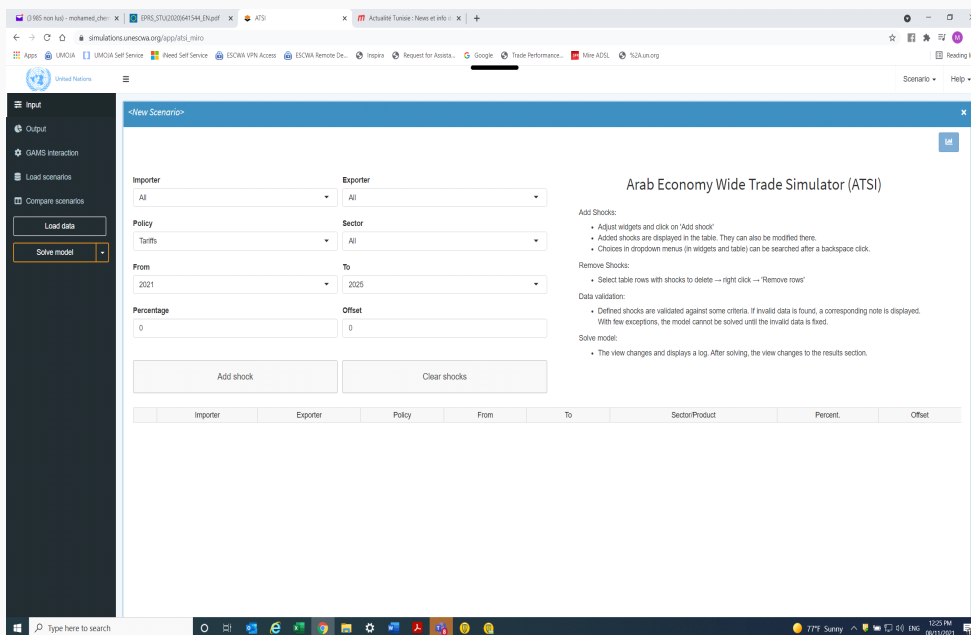
Finally, users will also able to perform cumulated scenarios covering both policy changes in the targeted country as well as in selected partners

The user-friendly interface is comprised of two pillars. The first, open to all users, contains the major features of the simulator. The second pillar, with restrictive access, provides direct access to the simulator to perform the three types of trade related simulations. The interface will be accessible through the Arab Trade Gateway which will be lunched by ESCWA in the coming months.

Functionality

To perform a simulation, users will:

- *Select the target country (Example, Morocco)*

- *Select the partner (s) (countries an d/or regions):*

  In addition to Arab countries, the list of partner regions and countries included in the release 1 of ATSI are the following: China, Japan, South Korea, India, United States of America, United Kingdom, Iran, Turkey, Rest of Asia, Rest of NAFTA (North American Free Trade Agreement countries, Canada and Mexico), Rest of America, European Union (EU-27), Rest of Sub-Sahran Africa, Rest of the world

- **Select the sectors** *(one or multiple values selected):*

  The current version of the global model includes the following sectors: cereals, other crops, animal productions, forestry and fishing, crude oil, natural gas, other extractive activities, food manufacturing, textile, chemical industries, mechanical industries, tourism and electronic indus tries, other manufacturing industries, transport services, tourism services, public administration, construction, health services, recreational services, and other services). Table 3 displays the mapping between the geographical structure of the model and the GTAP database (release 10).

- **Select the years of scenario implementation** *(one or multiple values):*

  Simulations could be implemented over the period 2021, 2022, 2023, 2024, 2025).

- **Select the policy and/or external shock** *(one or multiple values):*

  There are policy instruments considered in the interface: tariffs on imported goods and transport costs on trade (imports and exports). Alternative simulations on both instruments could be imposed by products, partners, and years.

- **Select the amplitude of the policy changes** *(one or multiple values):*

  After selecting the policy instrument, the user will select the percentage changes to be implemen -ted either in a single year or progressively over a period.
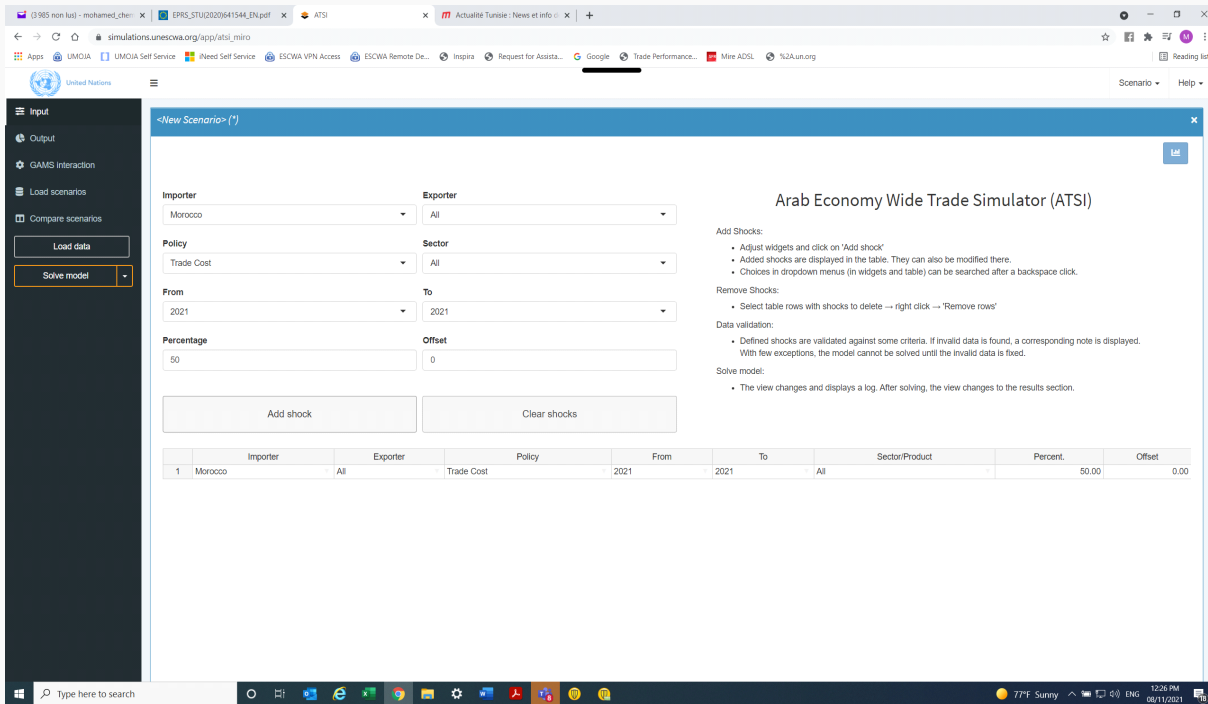

After defining the simulation details, the user could run the defined scenario by pushing on the "Run Button"

Results

When the simulation is successfully completed, the results are shown to the user. The results are displayed in two formats: charts and excel formats. Users have the choice to define the results they are looking for. In fact, given the large results generated by a global model, it is always recommended that users select the variables they are looking for in their specific analysis.

After the successful running of the model results will be displayed under four windows: Dashboard, macroeconomic results, sectoral results, and trade results. Given the features of this type of model for exante analysis, the best way to look and analyses results is the percentage change due to the alternative scenario compared to the baseline value. The percentage change could be updated using the latest available forecast to provide a more accurate estimations of the magnitude of changes either in USD (the unit of the simulator) or national currency using the appropriate exchange rates.
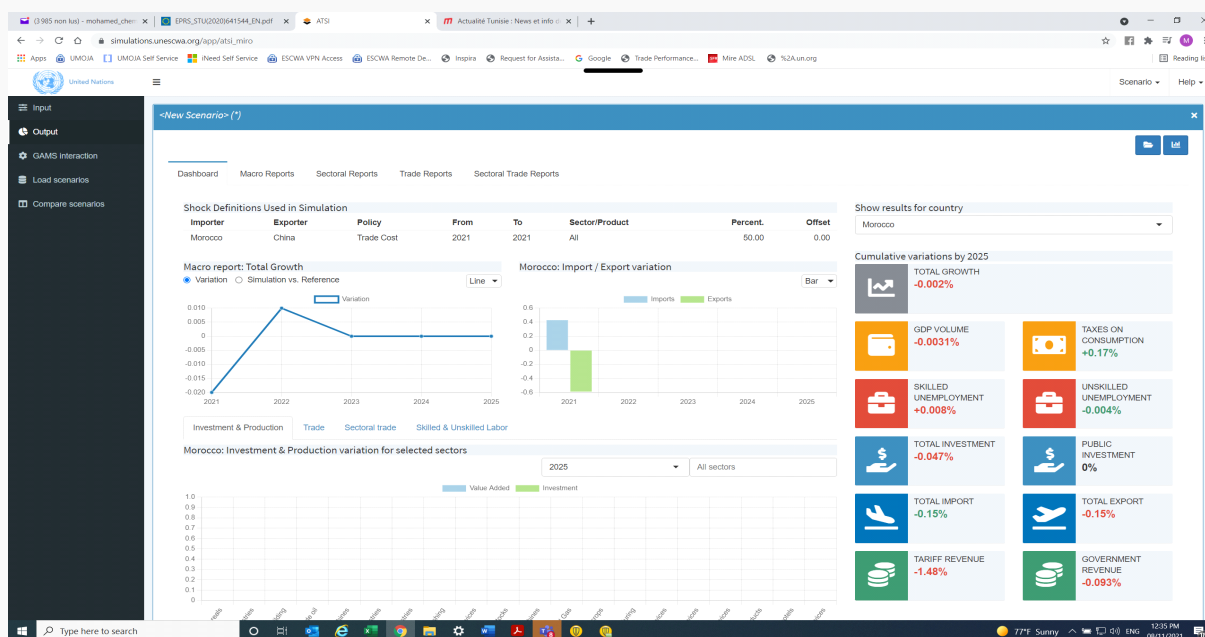
Way forward

ESCWA is currently working on the development of new versions of ATSI including specific versions for trade in services and for trade and climate changes.