



Disaster-REALM Manual

Disaster Risk-Evaluation and Analysis using Leontief Models or Disaster-REALM is a web-based freeware designed to aid policymakers in measuring the impact of disasters through simulating perturbations. This freeware contains 2 components: Inoperability Input-Output Modelling (IIM), which allows users to measure the impact of disasters in a static setting, and Dynamic Inoperability Input-Output Modelling (DIIM), which allows users to measure impact in a dynamic setting.

Upon entering webpage, the user is given the option to choose between these two components in the toolbar found at the top portion of the page.



IIM Tool

The IIM Tool allows users to simulate an initial perturbation and measure the immediate impact of this perturbation to the economic system without taking into account the response or changes in the system over time.

Step 1: Select Country

Users can simulate an initial perturbation by first selecting their country of choice. The current version offers models for the Philippines and Japan.



Step 2: Select Year and Select Disaggregation

The user will be prompted to select the input-output table that will be used as a basis for the computations.



Step 3: Encode initial perturbation

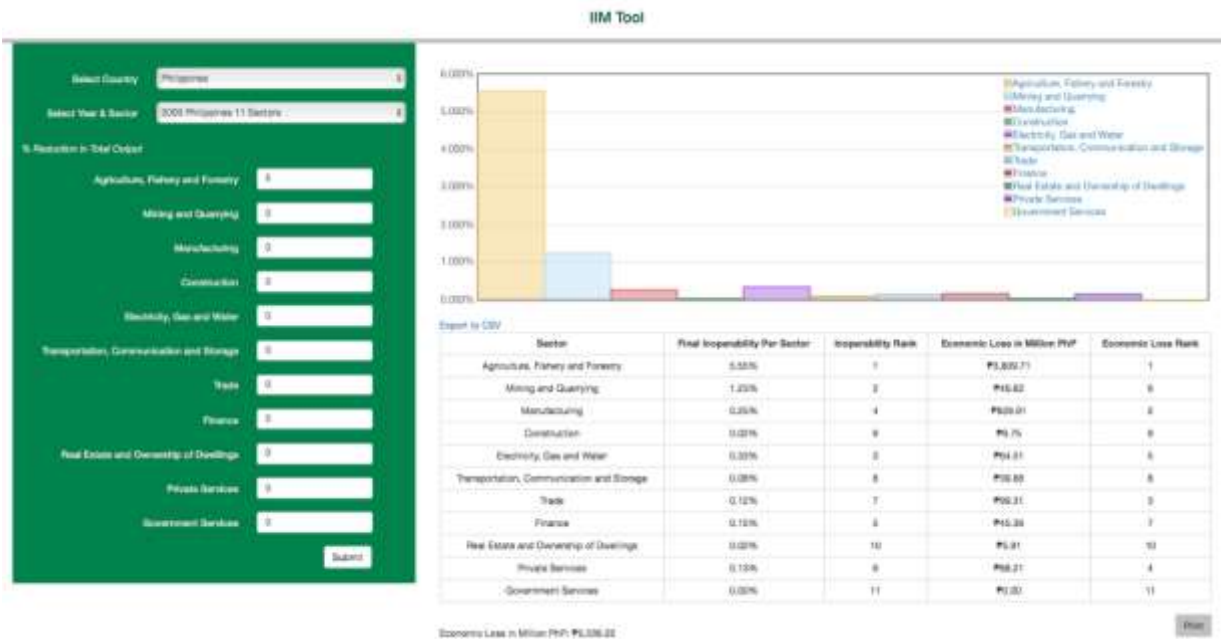
Each sector may suffer from different levels of initial perturbation resulting from a disruption to the economy. This example considers a 5% reduction in Total Output of the Agriculture, Fishery and Forestry Sector.

IIM Tool

The screenshot shows the IIM Tool interface with a dark green background. At the top, there are two dropdown menus: 'Select Country' set to 'Philippines' and 'Select Year & Sector' set to '2000 Philippines 11 Sectors'. Below these is the heading '% Reduction in Total Output'. A list of 11 economic sectors is displayed, each with a corresponding input field for the percentage reduction. The 'Agriculture, Fishery and Forestry' sector has a value of 5, while all other sectors (Mining and Quarrying, Manufacturing, Construction, Electricity, Gas and Water, Transportation, Communication and Storage, Trade, Finance, Real Estate and Ownership of Dwellings, Private Services, and Government Services) have a value of 0. A 'Submit' button is located at the bottom right of the form.

Sector	% Reduction in Total Output
Agriculture, Fishery and Forestry	5
Mining and Quarrying	0
Manufacturing	0
Construction	0
Electricity, Gas and Water	0
Transportation, Communication and Storage	0
Trade	0
Finance	0
Real Estate and Ownership of Dwellings	0
Private Services	0
Government Services	0

Upon clicking the SUBMIT button, a table, displaying the final inoperability, total economic loss, and each sector's ranking based on the two categories, as well as a graph summarizing the impact of the perturbation on each sector, will be generated as shown in the screenshot below. These graphics allow users to easily determine the static impact of a disaster.



Right-clicking the graph will allow the user to save the graph. Clicking the “Export to CSV” link allows the user to save the table as CSV format.

DIIM Tool

Unlike the IIM Tool, the DIIM Tool now allows the users to measure the impact of an initial perturbation in a dynamic setting. This means that users can now observe the effects of a disaster while taking into account the duration of the economy's recovery process and the additional disruptions that may take place after the perturbation is initially experienced.

Step 1: Select Country

Similar to the IIM Tool, the user must first select one's country of choice.

DIIM Tool

Select Country

INOPERABILITY

ECONOMIC LOSS

Step 2: Select Year and Select Disaggregation

Once the country of choice is selected, the user is prompted to choose the input-output table that will serve as a basis for the computations. The 2000 Philippines 11-Sector economy is considered for this example.

DIIM Tool

Select Country

Select Year & Sector

INOPERABILITY

ECONOMIC LOSS

Step 3: Select Type of Disaster and Recovery Period

The economy may suffer from different types of disasters and the amount of time it takes to recover may vary. Disaster-REALM allows users to simulate the following types of disasters: Typhoon, Earthquake, Volcanic Eruption, or Others. Additionally, the user may choose between a recovery period of 30, 60, and 90 days. Disaster-REALM takes into account the duration of the recovery period in order to fully capture the dynamic impact of the disaster. This example considers a typhoon and a 90-day recovery period.

DIIM Tool

Select Country Philippines	Select Year & Sector 2000 Philippines 11 Sectors	INOOPERABILITY ECONOMIC LOSS	

Type of Disaster

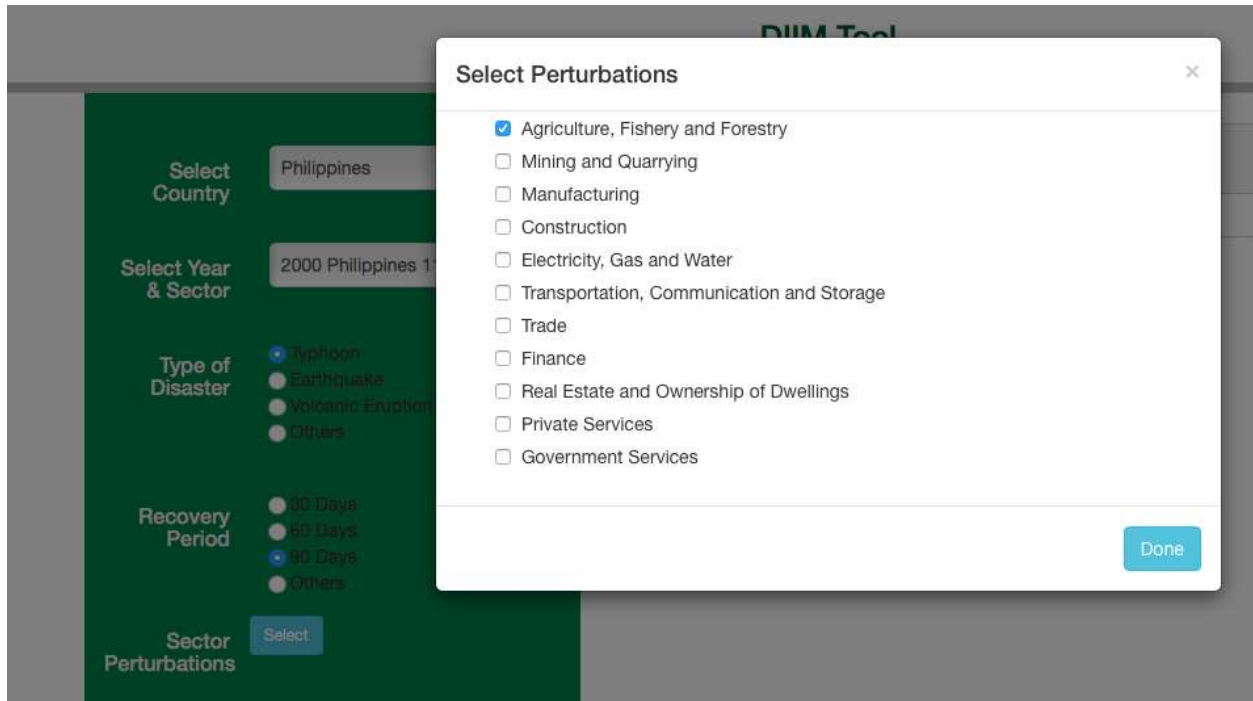
- Typhoon
- Earthquake
- Volcanic Eruption
- Others

Recovery Period

- 30 Days
- 60 Days
- 90 Days
- Others

Step 4: Encode the initial perturbation

Upon selecting the type of disaster and recovery period, the user is prompted to specify the the initial perturbation by first pressing the “Select Perturbation” button. This will display the list of sectors for the user to choose from. The Agriculture, Fishery, and Forestry sector was selected for this example.



Once the sector is chosen, a box, in which the user may specify the magnitude of the initial disruption, will appear. This example considers a 5% reduction in the total output of the Agriculture, Fishery, and Forestry sector.

DIIM Tool

Select Country:

Select Year & Sector:

Type of Disaster:

- Typhoon
- Earthquake
- Volcanic Eruption
- Others

Recovery Period:

- 30 Days
- 60 Days
- 90 Days
- Others

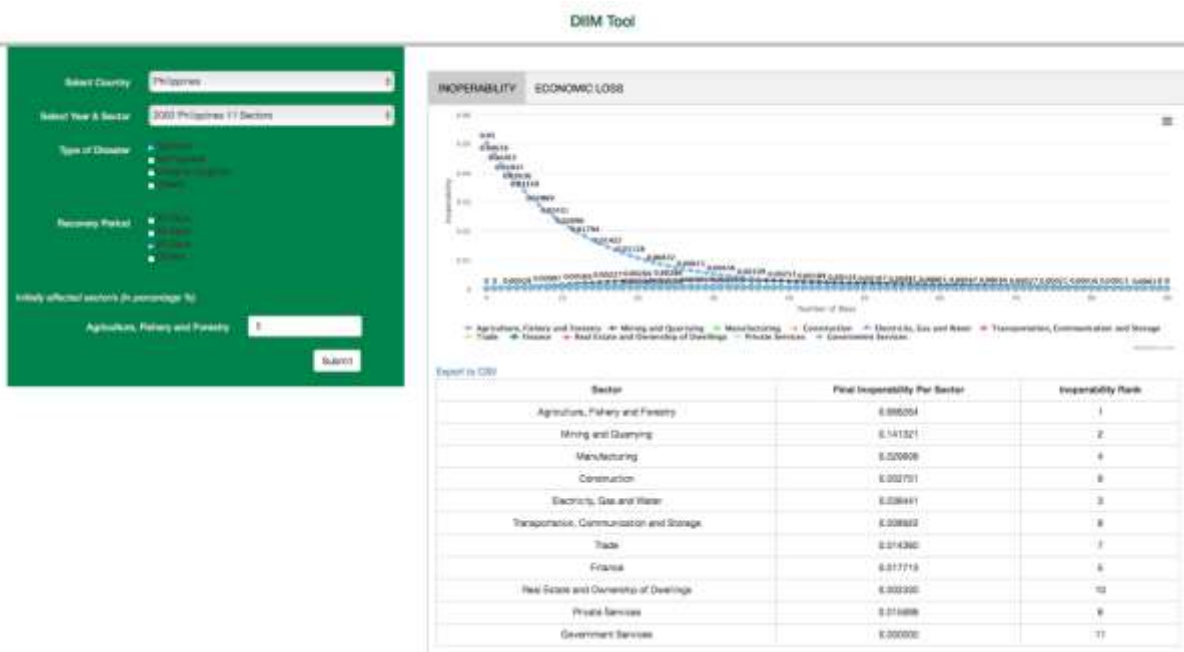
Sector Perturbations:

Initially affected sector/s (in percentage %)

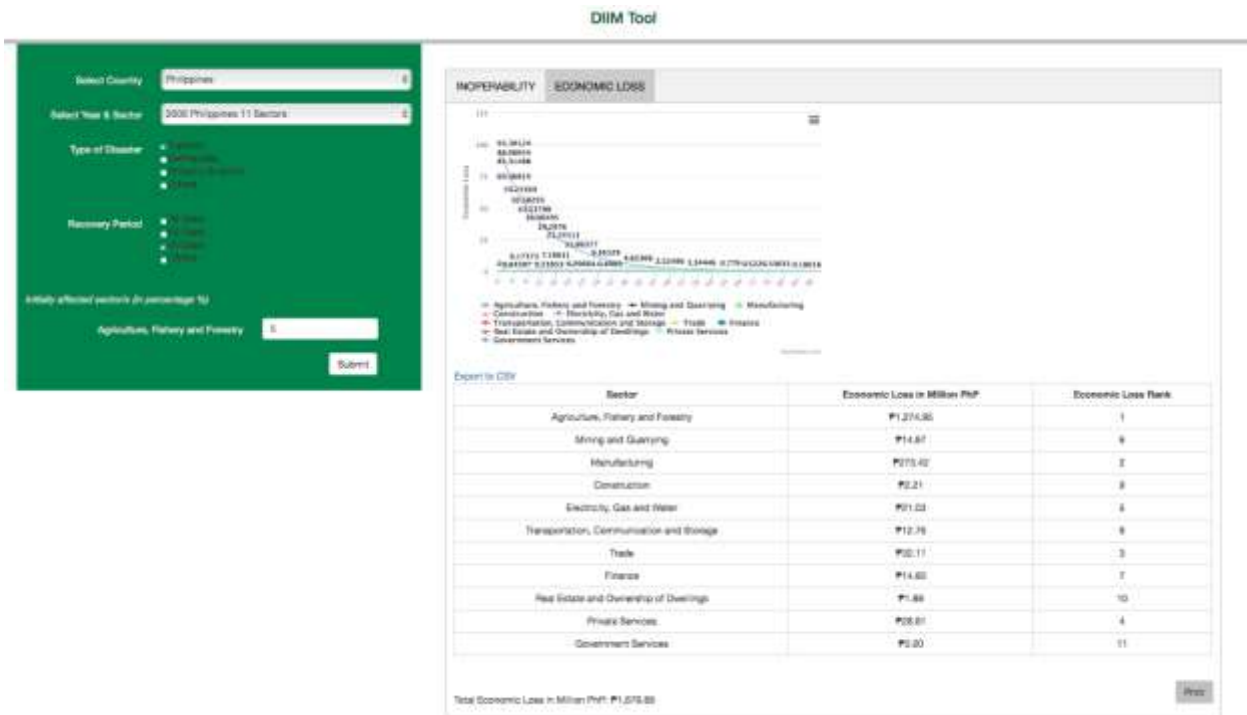
Agriculture, Fishery and Forestry:

INOPERABILITY | ECONOMIC LOSS

After submitting this, Disaster-REALM will produce two separate sets of results. The first set will display a summary graph for inoperability and a table, which enumerates the final inoperability, as well as the final inoperability ranking, of each sector.



The second set of results displays a summary graph for economic loss and a table, which enumerates the total economic loss, as well as the economic loss ranking, of each sector.



For the user's ease, all summary graphs and tables generated by Disaster-REALM can either be printed or downloaded by right-clicking the graph and clicking the "Export to CSV" button.

Sectors may be excluded from the graph by clicking on the sector name. In this scenario, the "Agriculture Fisher and Forestry" sector is de-activated, showing more information on the other sectors.

