



Model for Analysis of Energy Demand (MAED)

Hands-on 7: Entering Scenario Data for the case study

Learning outcomes

By the end of this exercise, you will be able to:

1. Enter Scenario Data
2. View Results

Activity 1: Adding Scenario Data

Let us move on to the scenario data. We shall start with the population and other parameters of the demographic data. The base year data have already been entered. We are now going to enter data for future years; these are referred to as the scenario data.

To add population scenario data in MAED-D, we need to enter the assumed population average annual growth rates for future years.

If we do not enter any data, the model interprets the growth rate as zero and assumes that the population remains constant.



MAED Model for Analysis of Energy Demand

MAED D About

En Ex Ft

Social economic data

Name of the case study: Demo MAED0 2

Demography GDP

Demography

Item	Unit	2030	2035	2040	Chart
Population *	Million	19.50000	19.50000	19.50000	<input type="checkbox"/>
Population growth rate *	% per annum	-	0.00000	0.00000	<input type="checkbox"/>
Urban Population	%	41.50000	0.00000	0.00000	<input type="checkbox"/>
Person/ urban Household	cap	6.00000	0.00000	0.00000	<input type="checkbox"/>
Number of urban Households	Million	1.34875	0.00000	0.00000	<input type="checkbox"/>
Rural Population	%	58.50000	100.00000	100.00000	<input type="checkbox"/>
Person/ rural Household	cap	7.00000	0.00000	0.00000	<input type="checkbox"/>
Number of rural Households	Million	1.62964	0.00000	0.00000	<input type="checkbox"/>
Potential Labour Force	%	49.00000	0.00000	0.00000	<input type="checkbox"/>
Participating Labour Force	%	40.00000	0.00000	0.00000	<input type="checkbox"/>
Active Labour Force	Million	3.82200	0.00000	0.00000	<input type="checkbox"/>
Population in cities with public transp...	%	22.00000	0.00000	0.00000	<input type="checkbox"/>
Population inside Large Cities	Million	4.29000	0.00000	0.00000	<input type="checkbox"/>

* Enter Population data only for the first year & Population growth rate (Average annual) for all other years (except first year)

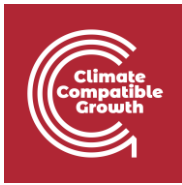
Data notes

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Note that the growth values for each interval are the average growth rates. In our case, the values are the average growth rates over the 5-year intervals. The model calculates the total population in the future.

Columns for the years 2035 and 2040 will contain the scenario data for the corresponding parameters. For example, according to this scenario, the size of the households in the urban area will be reduced, from 6 persons per dwelling in the base year, to 5.2 persons per dwelling at the end of the study period. At the same time, the proportion of potential labour is considered constant in this scenario.

Please, enter all these data shown below.



MAED Model for Analysis of Energy Demand

MAED D About

En Es Fr

Social economic data

Name of the case study: Demo MAEDD 2

Demography GDP

Demography

Item	Unit	2030	2035	2040	Chart
Population *	Million	19.50000	20.20215	20.81553	<input type="checkbox"/>
Population growth rate *	% per annum	-	0.71000	0.60000	<input type="checkbox"/>
Urban Population	%	41.50000	42.70000	44.00000	<input type="checkbox"/>
Person/ urban Household	cap	6.00000	5.40000	5.20000	<input type="checkbox"/>
Number of urban Households	Million	1.34979	1.59747	1.76131	<input type="checkbox"/>
Rural Population	%	58.50000	57.30000	56.00000	<input type="checkbox"/>
Person/ rural Household	cap	7.00000	6.50000	6.00000	<input type="checkbox"/>
Number of rural Households	Million	1.87964	1.78090	1.94278	<input type="checkbox"/>
Potential Labour Force	%	49.00000	49.00000	49.00000	<input type="checkbox"/>
Participating Labour Force	%	40.00000	40.00000	40.00000	<input type="checkbox"/>
Active Labour Force	Million	3.82200	3.92962	4.07984	<input type="checkbox"/>
Population in cities with public transp...	%	22.00000	27.00000	33.00000	<input type="checkbox"/>
Population inside Large Cities	Million	4.29000	5.45458	6.86913	<input type="checkbox"/>

* Enter Population data only for the first year & Population growth rate (Average annual) for all other years (except first year)

Data notes

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We are now going to enter the scenario data for GDP growth and structure. Just like with the population, future GDP data is introduced using annual average GDP growth rates.

The data corresponding to the future GDP structure must be introduced in their respective blank cells. Enter the following data in the GDP and Distribution of GDP by Subsectors tables.

MAED Model for Analysis of Energy Demand

MAED D About

En Es Fr

Social economic data

Name of the case study: Demo MAEDD 2

Demography GDP

GDP

Item	Unit	2030	2035	2040	Chart
GDP	US\$ Million	1230.00000	1725.13863	2308.62464	<input type="checkbox"/>
GDP Growth rate	% p.a.	-	7.00000	6.00000	<input type="checkbox"/>
GDP per capita	US\$/Cap	63.07692	85.39381	110.90876	<input type="checkbox"/>
Sectorial shares of GDP					
Agriculture	%	10.00000	10.00000	10.00000	<input type="checkbox"/>
Construction	%	10.00000	10.00000	10.00000	<input type="checkbox"/>
Mining	%	10.00000	10.00000	10.00000	<input type="checkbox"/>
Manufacturing	%	38.37398	38.37398	38.37398	<input type="checkbox"/>
Energy	%	11.62602	11.62602	11.62602	<input type="checkbox"/>
Service	%	20.00000	20.00000	20.00000	<input type="checkbox"/>
Total	%	100.00000	100.00000	100.00000	<input type="checkbox"/>

* Enter GDP data for first Year & Average annual growth rate for each period/timestep

Data notes



The screenshot shows the MAED (Model for Analysis of Energy Demand) software interface. The main window displays a table titled "Distribution of GDP by subsectors". The table has columns for "Item", "Unit", "2030", "2035", "2040", and "Chart". A red circle highlights the 2030, 2035, and 2040 columns. The table data is as follows:

Item	Unit	2030	2035	2040	Chart
Agriculture					
Farming	%	100.00000	100.00000	100.00000	
Total	%	100.00000	100.00000	100.00000	
Construction					
Buildings	%	100.00000	100.00000	100.00000	
Total	%	100.00000	100.00000	100.00000	
Mining					
Metal ores	%	30.00000	40.00000	50.00000	
Non-metal ores	%	70.00000	60.00000	50.00000	
Total	%	100.00000	100.00000	100.00000	
Manufacturing					
Basic materials	%	100.00000	100.00000	100.00000	
Total	%	100.00000	100.00000	100.00000	
Energy					
Energy	%	100.00000	100.00000	100.00000	
Total	%	100.00000	100.00000	100.00000	
Service					
Commercial and tourism	%	30.00000	28.00000	25.00000	
Public administration	%	10.00000	10.00000	10.00000	
Finance and Busis	%	5.00000	10.00000	15.00000	
Personal Services and others	%	55.00000	52.00000	50.00000	
Total	%	100.00000	100.00000	100.00000	

We shall now enter the scenario data for the **energy intensities** of motive power, specific electricity use and thermal use for all the sectors. As done in the previous Hands-on we will have to calculate these data for the future years. To do so you can use a support Excel template.

Once you are done repeating the same steps of the previous Hands-on for the future years, you will be able to enter the data **that you have calculated** where shown below. However, as this is a time consuming and more advanced skill, we will not ask you to do in this online course. It will be useful for you to know when you will work on your real country case-study.



MAED Model for Analysis of Energy Demand

Energy intensities

Name of the case study: Demo MAEDD 2

Energy intensities of Motive Power (final energy per unit of value added)

Item	Unit	2030	2035	2040	Chart
Agriculture					
Farming	kWh/US\$	1.50000	1.50000	1.50000	
Construction					
Buildings	kWh/US\$	0.10000	0.10000	0.10000	
Mining					
Metal ores	kWh/US\$	0.30000	0.30000	0.30000	
Non-metal ores	kWh/US\$	0.20000	0.20000	0.20000	
Manufacturing					
Basic materials	kWh/US\$	0.15000	0.15000	0.15000	

Data notes

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N.B. Therefore, remember to take advantage and use the Data Collection and Manipulation template EXTENDED to reconstruct the Base Year for each sector and to calculate scenario data. This template is available here and has a similar structure that the previous template you have used:

<https://doi.org/10.5281/zenodo.7717393>

Use v3.0.0 of this template.

You will now be able to calculate and look at the results for the years 2035 and 2040.

Congratulations, you now know how to enter data into the MAED-D model.



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