

# EBS & MAED

#### Hands-on 5: Setting Up the Structure Part II

#### Learning outcomes

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

- 1. Navigate subsectors
- 2. Add and delete subsectors
- 3. Define the structure of the household sector
- 4. Define the structure of the transport sector
- 5. Configure the end-use categories

#### Activity 1: Navigating Subsectors

In the previous hands-on we learnt how to manage case studies and declare the case definitions. The next step in establishing the model structure is the defining of the subsectors of the economy.

Let us open the Demo MAEDD 1 case study that we created in hands-on 4. The economic sectors are predefined and are shown in the main menu under Energy Intensities. You will have to click the drop-down menu to view them. In MAED-D, the industry sector is further divided into the Agriculture, Construction, Mining, and Manufacturing sectors. From now on we shall refer to all of tabs in the Sectors & Clients block as sectors.



Es Fr	General information Name of the case study Demo MAEDD 1				
nage case studies	Definitions (name, years, description)	8	Units		
neral information	Name of the case study Demo MAEDD 1		Population Thousand  Million		
rgy intensities	Years 2010,2015,2020,2025,2030,2035,2040,2045,2050		GDP  Million (10 <sup>4</sup> )  Billion (10 <sup>4</sup> )  Trillion (	[10 <sup>+a</sup> ] US	5 Dollar
sport	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetic		Transport Pessenger (pkm) Million [10*] Trillion [10*] Trillion	[10'2]	
sehold	They are there only for illustration purposes and will need to be replaced by actual country and so the user of the model.	enario specific data by	Transport Freight (tkm) Million [10 <sup>4</sup> ] Trillion [ Trillion [	1012]	
ulate			Energy unit GWyr O PJ O Tcal O Mtoe	O GBTU	
		4			
	Sectors & Clients				
		Household Transport	フ	Specific	Motive
	0			Electricity Thermal us use	e Power
	Farming				

However, even though sectors are predefined and fixed in MAED-D, users can define the subsectors that they want to study. The number of subsectors to be defined by the user depends on the information available regarding both the economy and the energy consumption, which will be discussed in upcoming lectures.

For now, let us see how the model was structured for the Demo MAEDD 1 case study. This can be seen in the bottom half of the general information page in the Sectors & Clients block. The agriculture sector only has one subsector defined: Farming. Each sector needs to have at least one subsector, that is why the first subsector cannot be deleted.



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MAED Model for Analysis of Energy		М	IAED D 🗸 About
En Es Fr	General information Name of the case study Demo MAEDD 1		
Manage case studies	Definitions (name, years, description)	Units	8
General information	Name of the case study	Population	
Social economic data	Demo MAEDD 1	Thousand I Million	
<ul> <li>Energy intensities</li> <li>Industry</li> </ul>	Years 2010,2015,2020,2025,2030,2035,2040,2045,2050	GDP <ul></ul>	*
Transport Household	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country.	Transport Pessenger (pkm) Million [10"] Billion [10"] Trillion [10"]	
Services	They are there only for illustration purposes and will need to be replaced by actual country and scenario specific data by the user of the model.	Transport Freight (Ikm) Million [10 <sup>4</sup> ]  Billion [10 <sup>9</sup> ]  Trillion [10 <sup>12</sup> ]	
Calculate		Energy unit	
II Results		GWyr PJ Tcal Mtoe GBTU	
↔	<i>"</i> "		
	Sectors & Clients		8
l	Agriculture Construction Mining Manufacturing Energy Service Household Transport	Specific Electricity Thermal use Motive use I I I I I I I I I I I I I I I I I I I	
		e2	020. Version: 2.0.0.202

The subsectors for other sectors can be accessed by clicking on their names. Please pause and explore the subsectors defined in other sectors of Demo MAEDD 1 case study.

n Es Fr	General information			
	Name of the case study Demo MAEDD 1			
fanage case studies	Definitions (name, years, description)	8	Units	
eneral information	Name of the case study		Population	
ocial economic data	Demo MAEDD 1		O Thousand I Million	
nergy intensities	Years		GDP O Million [10*] O Trillion [10*] US Dollar US Dollar	
ustry	2010,2015,2020,2025,2030,2035,2040,2045,2050			
nsport	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country of the data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country of the data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country of the data used in this demonstration case correspond to a hypothetical scenario for a hypothetical scenario	try.	Transport Pessenger (pkm) O Million [10*] O Trillion [10*]	
isehold	They are there only for illustration purposes and will need to be replaced by actual country and scenario the user of the model.		Transport Freight (tkm)	
rices			Million [109]      Billion [109]      Trillion [1013]	
culate			Energy unit	
sults		<u>/i</u>		
$\leftrightarrow$				
	Sectors & Clients			
	Agriculture Construction Mining Manufacturing Energy Service House	hold Transport		
	•		Specific Electricity Thermal use Motive	
	-		use Power	
	Farming			



Click on the Agriculture sector to look at the subsectors that are defined inside. We currently only have one subsector defined: Farming. All tables in MAED-D should have this subsector. Let us check, for example, the table of the GDP structure

MAED Model for Analysis of Ene	sgy Demand														MAED D	Abou
En Es Fr	Social economic data Name of the case study Demo MAEDD 1															
Manage case studies	Demography GDP															
General information																
Social economic data	GDP												di	< >	±	8 0
Energy Intensities	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	) Chart				
Industry	GDP	US\$ Million	54.13092	67.78036	84.06328	103.26305										
	GDP Growth rate	% p.a.		4.60000	4.40000	4.20000										
Transport	GDP per capita	US\$/Cap	2229.86802	2516.56917	2840.79860	3207.55620										
Household	Sectorial shares of GDP											-				
Services	Agriculture	%	21.50000	19.40000	17.40000	15.50000										
	Construction	%	2.30000	2.30000	2.30000	2.20000										
Calculate	Mining	%	5.10000	4.80000	4.30000	3.80000										
Results	Manufacturing	%	15.20000	16.10000	16.80000	16.90000										
	Energy	%	5.90000	5.60000	5.00000	4.30000										
e	Service	%	50.00000	51.80000	54.20000	57.30000										
	Total	%	100.00000	100.00000	100.00000	100.00000										
	Data notes Distribution of GDP by subsectors	-											di	<   >	±	8 (
	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart				
	Agriculture										-					
	Farming	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					
	Total	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					
						-			_			-	-			
	Construction															
	Construction Buildings	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					

Let us also check the energy intensity of motive power.

En Es Fr	Energy intensities Name of the case study Demo MAEDD 1												
A Manage case studies	$\square$												
General information	El-Motive El-Specific Electricity Power use	EI-Thermal use	Penetration ACM	n of Energy Fo	orms in	Efficiencies in ACM		perature level i afacturing	n	Penetrat Manufac	ion of Energy Forms in turing	Efficiencies in Manufacturing	
Social economic data	Energy intensities of Motive Power (fin	nal energy per un	it of value a	dded)								di 🔞 👌 👱 🖻	10
Energy Mensities	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart		_
Industry	Agriculture										8		
Ifanapore	Farming	kWh/US\$	1.40000	1.30000	1.25000	1.20000							
Household	Construction				-	_					-		
Services	Buildings	kWh/US\$	0.10000	0.10000	0.10000	0.10000							
	Mining										8		
Calculate	Metal ores	kWh/US\$	0.30000	0.30000	0.30000	0.30000							
II Results	Non-metal ores	kWh/US\$	0.20000	0.20000	0.20000	0.20000							
	Manufacturing												
69	Basic materials	kWh/US\$	0.15000	0.15000	0.15000	0.15000							
	Data notes												



### Activity 2: Adding and Deleting Subsectors

Let us now see how to add and delete subsectors in a sector. Return to the general information page and select the agriculture tab in the Sectors & Clients block. We can add a subsector to the agriculture sector by clicking the plus button. This should create a new subsector called Agr\_2. To change the name simply type it in the field. Change the name of the new subsector to Others. Remember to click save to save the changes.

			Success	
n Es Fr	General information Name of the case study Demo MAEDD 1		Data saved successfully	
Manage case studies	Definitions (name, years, description)	8	Units	
General information	Name of the case study	_	Population	
Social economic data	Demo MAEDD 1		Thousand  Million	
Energy intensities ~	Years 2010,2015,2020,2025,2030,2035,2040,2045,2050		GDP         Billion [10"]         Billion [10"]         Trillion [10"]         US Dollar	
ransport	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country.		Transport Pessenger (pkm) Million [10"] Million [10"] Trillion [10"]	
lousehold	They are there only for illustration purposes and will need to be replaced by actual country and scenario specifi the user of the model.	data by	Transport Freight (tkm) Million [10"] Billion [10"] Trillion [10"]	
Calculate			Energy unit	
Results		4	GWyr PJ Tcal Mtoe GBTU	
$\leftrightarrow$				_
	Sectors & Clients			Í
	Agriculture Construction Mining Manufacturing Energy Service Household	Transport		
	D		Specific Motive Electricity Thermal use Power use	
	Farming			
	Others			×

Let us examine the same tables that we saw a moment ago. Go to the GDP page. We can now see the Others subsector under the Agriculture Sector.



MAED Model for Analysis of Energy De	mand													м	AED D 🗸	About
En Es Fr	Social economic data Name of the case study Demo MAEDD 1															1
Manage case studies	Demography GDP															
General information	Demography GDP															
Social economic data	GDP												di i	< 🕞	±   i	3 0
Energy intensities	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart				
	GDP	US\$ Million	54.13092		84.06328		2030	2033	2040	2045	2030					
ndustry	GDP Growth rate	% p.a.	54.15032	4.60000												
ransport	GDP per capita		2220 86802		2840.79860											
lousehold	Sectorial shares of GDP	000/04p	2227.00002	2010.00717	2040.7 7000	0207.00020										
	Agriculture		21.50000	19.40000	17.40000	15.50000										
Services	Construction	~	2.30000		2.30000	2.20000										
Calculate	Mining	10	5.10000		4.30000	3.80000										
Results	Manufacturing		15.20000		16.80000	16.90000										
neauna		~ ~	5.90000	5.60000	5.00000	4.30000										
↔	Energy Service	30	50.00000		54.20000	4.30000										
	Total	5														
	* Enter GDP data for first Year & Averag	3			100.00000	100.00000										
	Data notes Distribution of GDP by subsectors												di l	<   >	±   i	a (0)
	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart				
	Agriculture		2010	2010	LOLO	LOLO	Ecco	2000	2010	2010	2000					
	Farming	5	10.00000	100.00000	100.00000	100.00000										
	Others	8														
		~				100.00000										
	Total	8	100 00000													
	Total Construction	%	100.00000	100.00000	100.00000	100.00000										

Let us now go to the Energy Intensities of Motive Power. We note that the Others subsector does not appear under the Agriculture Sector.

EMattrie         Effective         Effective         Penetration of Energy Forms in use         Efficiencies in ACM         Tempeature level in Manufacturing         Penetration of Energy Forms in Manufacturing         Efficiencies in Manufacturing           Social economic data         Energy Intensities         Montracturing         Penetration of Energy Forms in Manufacturing         Montracturing	En Es Fr	Energy intel													
General Information     Social economic data       Energy Intensities of Motive Power (final energy per unit of value added)       Industry     Information       Transport       Household       Services       Calculate       Mining       Moning       Moning       Moning       Moning       Besit       Image (Intersities of Motive Power (final energy per unit of value added)	A Manage case studies	El-Motive	EI-Specific Electricity	El-Thermal	Penetratio	n of Energy Fo	orms in				n				
Energy intensities of Motive Power (final energy per unit of value added)     Industry       Industry     Industry       Transport     Agriculture       Household     Industry       Services     Industry       Industry     Industry       Industry     Industry       Construction     Industry       Industry     Industry	General information	Power	use	use	ACM			ACM	Manu	facturing		Manufac	cturing	Manufacturing	
Item       Unit       2010       2015       2020       2023       2035       2040       2045       2050       Chart         Industry       Industry <th< td=""><td>Social economic data</td><td>Energy intensit</td><td>ies of Motive Power (fi</td><td>nal energy per un</td><td>it of value a</td><td>dded)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0</td></th<>	Social economic data	Energy intensit	ies of Motive Power (fi	nal energy per un	it of value a	dded)									0
Industry     Agriculture     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n     n<	Energy intensities		ier of moure i offer (ii											- 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990	
Transport         Farming         KWh/US         1.40000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         1.20000         <	Industry		-	Unit	2010	2015	2020	2025	2030	2035	2040	2045			
Construction       Construction       Image: Construction <th< td=""><td>Transport</td><td></td><td></td><td>1118.0100</td><td>1 10000</td><td>1.00000</td><td>1.05000</td><td>1.00000</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Transport			1118.0100	1 10000	1.00000	1.05000	1.00000							
Services         Image: Services         Buildings         Multives         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000 <td></td> <td></td> <td></td> <td>kwn/05\$</td> <td>1.40000</td> <td>1.30000</td> <td>1.25000</td> <td>1.20000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				kwn/05\$	1.40000	1.30000	1.25000	1.20000							
Alming         Mining         Mining<				kWh/US\$	0.10000	0.10000	0.10000	0.10000							
Calculate         Metal ores         KWh/US         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000         0.30000	Services														
Results         Non-metal ores         kWh/US         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000         0.2000 <t< td=""><td>Calculate</td><td>Metal ores</td><td></td><td>kWh/US\$</td><td>0.30000</td><td>0.30000</td><td>0.30000</td><td>0.30000</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Calculate	Metal ores		kWh/US\$	0.30000	0.30000	0.30000	0.30000							
Manufacturing         End         <	Results	Non-metal	ores	kWh/US\$	0.20000	0.20000	0.20000	0.20000							
UB90 INECTIONS 0.1000 0.1000 0.1000 0.1000		Manufactu	ring										-		
Data notes	69	Basic mate	erials	kWh/US\$	0.15000	0.15000	0.15000	0.15000							
		Data notes													

This is because the programme has not been informed about the end-use categories to be studied in the Others subsector. We must go to the general information page and select the End-Use categories for the



Others subsector. Check all three end-use categories for the Others Subsector to include them as enduses. Remember to save the changes.

IAED Model for Analysis of Energy	General information Name of the case study Demo MAEDD 1	Success Data saved successfully	D 🗸 🔥 Abou
mage case studies	Definitions (name, years, description)	Units	
neral information	Name of the case study	Population	
cial economic data	Name of the case study Demo MAEDD 1	Thousand  Million	
ergy intensities ~	Years 2010.2015.2020.2025.2030.2035.2040.2045.2050	SOP         Image: Sope state stat	
isport	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country.	Transport Pessenger (okm) Million [10 <sup>4</sup> ] Billion [10 <sup>4</sup> ] Trillion [10 <sup>4</sup> ]	
sehold ices	They are there only for illustration purposes and will need to be replaced by actual country and scenario specific data by the user of the model.	Transport Freight (Bm) Million [10 <sup>4</sup> ) Billion [10 <sup>4</sup> ] Trillion [10 <sup>12</sup> ]	
culate		Energy unit	
sults		GWyr O PJ O Tcal O Mtoe O GBTU	
•			
	Sectors & Clients		1
	Agriculture Construction Mining Manufacturing Energy Service Household Transport		
	•	Specific Electricity Thermal use Power use	
	Farming		
	Others		×

The programme will now build tables for input data in the energy intensities of Specific Electricity use, Thermal use, and Motive Power. Let us look at the energy intensities of motive power to confirm this.



En Es Fr	Energy internet	ensities study Demo MAEDD 1													
Manage case studies	El-Motive	EI-Specific Electricity	El-Thermal		n of Energy Fo	orms in	Efficiencies in		erature level i	n		tion of Energy Forms in	Efficien		
General information	Power	use	use	ACM			ACM	Manu	Ifacturing		Manufa	cturing	Manufa	ecturing	
Social economic data	Energy intensi	ities of Motive Power (fi	nal energy per un	it of value a	dded)								dr   <   🔊		
Energy intensities								double of t	Sec. 4	1000001			1	1 - 1	
Industry	Agricultur		Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart			
Transport	Farming	re	kWh/US\$	1.40000	1.30000	1.25000	1,20000								
	Others		kWh/US\$	1.40000	1.30000	1.23000	1.20000								
Household	Construct		KIND CCC												
Services	Buildings		kWh/US\$	0.10000	0.10000	0.10000	0.10000								
Calculate	Mining														
Results	Metal ores	s	kWh/US\$	0.30000	0.30000	0.30000	0.30000								
1000	Non-meta	l ores	kWh/US\$	0.20000	0.20000	0.20000	0.20000								
(+)	Manufacti	uring													
	Basic mat	terials	kWh/US\$	0.15000	0.15000	0.15000	0.15000								
	Data notes														

Let us now look at the mining sector. There are 2 subsectors defined.

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And a case studies     a case case studies     a case case studies     a case case case case case case case cas				MAEDD	- About
Definitions (name, years, description)     Image: Information call     Image: Information call <td>En Es Fr</td> <td></td> <td></td> <td></td> <td></td>	En Es Fr				
sole consonic data   servey intensities   ware bit case study   Der on AAEDD 1   Years   2010/2013/2020/2023/2032/2023/2040/2045/2050   usehold   rvices   akulate   south   south  <	Manage case studies	Definitions (name, years, description)	8	Units	8
scial economic data   sergy intensities   intro   sergy intensities   intro   sergy intensities   intro   construction finds demonstration case correspond to a hypothetical country and scenario specific data by   intro   intro   intro	General information	Name of the case study	_	Population	
autor autor   insport   inspor	ocial economic data		_	Thousand  Million	
within the data used in this demonstration case correspond to a hypothetical scenario for a hypothetica	lengy interiorites				
set-lod     ideas     ideas <t< td=""><td>nsport</td><td></td><td></td><td></td><td></td></t<>	nsport				
sulta		They are there only for illustration purposes and will need to be replaced by actual country and scenario specific da	ta by		
Sectors & Clients       Image: Sector & Clients       Image:	culate				
Sectors & Clients       Agriculture     Construction     Manufacturing     Energy     Service     Household     Transport       Image: Service     Household     Transport     Bectricity     Thermal use     Motive use       Image: Metal ores     Image: Service     Image: Service     Image: Service     Image: Service     Image: Service	sults		4		
Agriculture Construction Manufacturing Energy Service Household Transport	$\leftrightarrow$				
Specific     Electricity     Thermal use     Motive       Metal ones     Image: Comparison of the second seco		Sectors & Clients			1
Electricity     Thermal use     Motive Power       Metal ores     Image: Comparison of the thermal use     Image: Comparison of the thermal use		Agriculture Construction Mining Manufacturing Energy Service Household 7	ransport		
				Electricity Thermal use Power	
Non-metal ores		Metal ores			
		Non-metal ores		0 0 0	×



And we confirm this by looking at its corresponding GDP table.

En Es Fr	Data notes														
Manage case studies	Distribution of GDP by subsectors												di <		
General information													<b>m</b>   <b>x</b>	1 - 1	
Social economic data	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050				
	Agriculture														
Energy intensities	Farming	%	10.00000	100.00000	100.00000	100.00000									
Industry	Others	%													
Transport	Total	%	100.00000	100.00000	100.00000	100.00000									
Household	Construction														
Household	Buildings	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000				
Services	Total	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000				
Calculate	Mining														
	Metal ores	%	15.00000	35.00000	35.00000	35.00000									
Results	Non-metal ores	%	85.00000	40.00000	40.00000	40.00000									
↔	Total	%	100.00000	100.00000	100.00000	100.00000									
	Manufacturing											-			
	Basic materials	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000				
	Total	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000				
	Energy														
	Energy	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000				
	Total	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	-			
	Service											-			
	Commercial and turism	%	16.50000	18.00000	19.00000	19.50000									
	Public administration	%	33.50000	34.00000	34.50000	35.00000									
	Finance and Buss	%	7.00000	7.50000	8.10000	9.00000									
	Personal Services and others	%	43.00000	40.50000	38.40000	36.50000									
	Total	%	100.00000	100.00000	100.00000	100.00000						-			

Note that, in each sector the rows of the last subsectors are shaded. This means that those rows are results of calculations performed by the programme, and the cells are locked from user editing. MAED-D is calculating the last subsector so that the sum of the participation of all subsectors is 100.



A Manage case studies	Distribution of GDP by subsectors												di <	>	18	0
	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart				
General information	Agriculture											-				
Social economic data	Farming	%	10.00000	100.00000	100.00000	100.00000										
Energy intensities	Others	8					7									
	Total	%	100.00000	100.00000	100.00000	100.00000						-				
Industry	Construction	-					-					-				
Transport	Buildings	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					
Household		5	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	-				
Services	Mining											-				
	Metal ores	%	Statement of the local division of the local	35,00000		35.00000										
Calculate	Non-metal ores	%		40.00000	40.00000	40.00000										
Results	Total	8	100.00000	100.00000	100.00000	100.00000						-				
1777	Manufacturing			_		-						-				
0	Basic materials	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					
	Totai	90	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	=				
	Energy		_	_	_	-						•				
	Energy	3	The second s	100.00000		and the second se	CAPITURE STORE	100.00000	100.00000	100.00000	100.00000					
	Total	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	-				
	Service											-				
	Commercial and turism	%	16.50000	18.00000	19.00000	19.50000										
	Public administration	%	33.50000	34.00000	34.50000	35.00000										
	Finance and Buss	%	7.00000	7.50000	8.10000	9.00000										
	Personal Services and others	%	43.00000	40.50000	38.40000	36.50000										
	Total	%	100.00000	100.00000	100.00000	100.00000						-				

Let us try deleting a subsector. We can delete the same one that we added earlier. We must go to the structure of the agriculture sector in the general information page. Click the delete button (red cross next to the subsector name) on the subsector, Others. The subsector disappears from this menu. And, after clicking the Save; proceed, button, this subsector disappears from all tables in MAED.



MAED Model for Analysis of Energy	Demand	MAED D	About
En Es Fr	General information Name of the case study Demo MAEDD 1		
Manage case studies	Definitions (name, years, description)	Units	8
General information	Name of the case study	Population	
Social economic data	Demo MAEDD 1	Thousand  Million	
Energy intensities ~	Years 2010.2015.2020.2025.2030.2035.2040.2045.2050	GDP  Million [10 <sup>rg</sup> Billion [10 <sup>rg</sup> Trillion [10 <sup>rg</sup> US Dollar	*
Transport	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country.	Transport Pessenger (pkm)           Million [10*]         Isilion [10*]	
Household Services	They are there only for illustration purposes and will need to be replaced by actual country and scenario specific data by the user of the model.	Transport Freight (km)           Million [10"]         Billion [10"]	
Calculate		Energy unit GWyr O PJ O Tcal O Mitoe O GBTU	
Results	<u>4</u>		
$\leftrightarrow$			
	Sectors & Clients		8
	Agriculture Construction Mining Manufacturing Energy Service Household Transport	_	
	•	Specific Motive Electricity Thermal use Power use	
	Farming		
	Others		$\otimes$

Let us return to the GDP table. Note that the Energy Sector appears shaded in the GDP table. This is because MAED calculates the share of this sector of the economy so that the sum of all sectors is set to 100.



MAED Model for Analysis of Ener	rgy Demand														naed d 🗸	About
En Es Fr	Social economic data Name of the case study Demo MAEDD 1															
Manage case studies	Demography GDP															
General information	Demography GDP															
Social economic data	GDP												di i	< >	±	7
Energy intensities	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart				
Industry	GDP	US\$ Million	54.13092	67.78036	84.06328	103.26305										
	GDP Growth rate	% p.a.	-	4.60000	4.40000	4.20000										
Transport	GDP per capita	US\$/Cap	2229.86802	2516.56917	2840.79860	3207.55620										
Household	Sectorial shares of GDP											-				
Services	Agriculture	%	21.50000	19.40000	17.40000	15.50000										
	Construction	%	2.30000	2.30000	2.30000	2.20000										
Calculate	Mining	%	5.10000	4.80000	4.30000	3.80000										
Results	Manufacturing	%	15 20000	16 10000	16.80000	16.90000										
	Energy	%	5.90000	5.60000	5.00000	4.30000										
↔	Nies and P		50.00000	51.00000	54.00000	57.00000										
	Total	%	100.00000	100.00000	100.00000	100.00000										
	* Enter GDP data for first Year & Averag Data notes Distribution of GDP by subsectors	e annual growth rate in	or each perior	a/ unicotep									di	<   >	<b>±</b>	8 0
	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart				
	Agriculture											-				
	Farming	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					
	Total	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					
	Construction															
	Construction Buildings	%	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000					

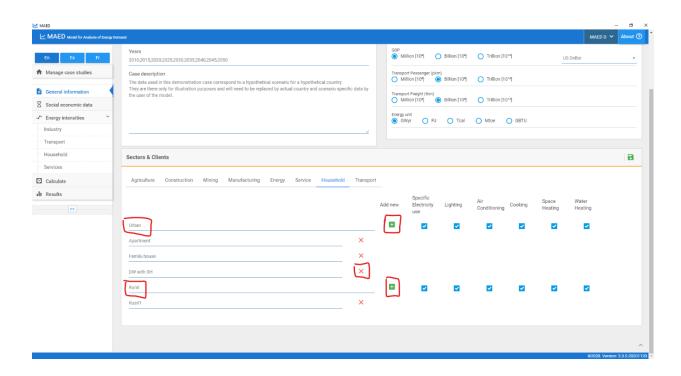
Also note that the transport sector does not appear in the sectoral share of GDP in this table. The GDP component of the transport sector must be added to the service sector. And the same must be done with the energy consumed in the facilities associated with transportation. For example, electricity consumed at airports.

MAED Model for Analysis of Energy Der	nand													MAED D	Abou
En Es Fr	Social economic data Name of the case study Demo MAEDD 1														
Manage case studies	Demography GDP														
General information	Uchiography ODP														
Social economic data	GDP												di <	> 🛓	80
Energy intensities ~	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart			
ndustry	GDP	US\$ Million	54.13092	67.78036	84.06328	103.26305									
	GDP Growth rate	% p.a.		4.60000	4.40000	4.20000									
ransport	GDP per capita	US\$/Cap	2229.86802	2516.56917	2840.79860	3207.55620									
lousehold	Sectorial shares of GDP											-			
ervices	Agriculture	%	21.50000	19.40000	17.40000	15.50000									
	Construction	%	2.30000	2.30000	2.30000	2.20000									
Calculate	Mining	5	5.10000	4.80000	4.30000	3.80000									
Results	Manufacturing	%	15.20000	16.10000	16.80000	16.90000									
_	Energy	\$	5.90000	5.60000	5.00000	4.30000									
e9	Service	%	50.00000	51.80000	54.20000	57.30000									
	Total		100.00000	100.00000	100.00000	100.00000									
	* Enter GDP data for first Year & Avera Data notes Distribution of GDP by subsectors												ılı   <	> 🛓	8 (
	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050	Chart			
	Agriculture		2010	2010	2020	2020	2000	2000	2010	2010	2000				
	Farming	e	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000				
	Total			100.00000											
												-			
												-			
	Construction Buildings		100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000	100.00000				



# Activity 3: Household Sector

We are now going to work with the structure of the residential sector; this is referred to as the household sector in MAED. Let us go to the Household tab in the Sectors & Clients block on the General Information page. In this case study, a few types of household have been established for urban and rural areas. In each area, you can add or delete household types. Again, the number of different types of households to be included depends on the availability of information or the type of study to be done. For example, in this case, we wish to study the different types of urban households. There are three urban household types. However, there is only one rural household type, this is because all sectors/clients in MAED need to have at least one subsector/sub-client.



#### Activity 4: Fuel Types

Now, let us move on to define the structure of the transportation sector. We must first specify the fuels we want to model. To access the fuel types, click the Fuel Types Definition button in the Transport tab.



MAED Model for Analysis of Energy D									MAED D Y	About ⑦
WIAED Model for Analysis of Energy D	2010,2013,2020,2023,2030,2033,2040,2043,2030								MAED D +	About
En Es Fr	Case description The data used in this demonstration case correspond to They are there only for illustration purposes and will need			Transport Per		lion [10"] O Trillion [10"]				
	the user of the model.	to be replaced by decad country a	a sectano opecnie data sy	Transport Fre		lion [10 <sup>9</sup> ] O Trillion [10 <sup>12</sup> ]				
General information				Energy unit						
Social economic data				GWyr	O PJ 🕻	Tcal 🔿 Mtoe 🔿 GBT	ſU			
→ <sup>e-</sup> Energy intensities ~			<u>4</u>							
·· Industry										
Transport	Sectors & Clients									
Household				)						
Services	Agriculture Construction Mining Manuf	acturing Energy Service	Household Transport					_		-
Calculate				J					FUEL TYPES DE	FINITION
II Results	_				Public			Ľ		
		Freight	Passenger InterCity		Passenger InterCity	Passenger Urban		Car A	Air plane	
	Local trucks diesel	Diesel	¥	٣			*			×
	Long dist trucks diese	Diesel	·	٣		-	*			×
	Train diesel	Diesel	• Diesel	٣	<b>~</b>		*			×
	Train electric	electricity	* electricity	•	<b>~</b>	_	*			×
	Train steam	Steam Coal	Steam Coal	٣	<b>~</b>	-	*			×
	Barge	Diesel	T	•						×
	Pipeline diesel	Diesel	φ	٣			*			×
	Pipeline elect	electricity	7	٣			*			×
	Car gasoline	-	Gasoline	٣		Gasoline	*	~		×

You can add or delete fuels using the respective buttons from this menu. Each fuel specified needs to be associated with a fuel type using the drop-down menu. The MAED methodology groups fuel into three fuel types: electricity, steam coal, and motor fuel.



MAED Model for Analysis of Energ	y Demand 2010/2010/20/20/20/20/20/20/20/20/20/20/20/20/20									MAEI	DD 🗸 About
n Es Fr	Case description The data used in this demonstration case corres				Transport Per Million	ssenger (pkm) [10 <sup>4</sup> ] OBillion	FUEL TYP	PES			
Manage case studies	They are there only for illustration purposes and the user of the model.	will need to be replaced by actual of	country and sce	nario specific data by	Transport Fre	ight (tkm) [10 <sup>4</sup> ] O Billion		Fuel Name	Fuel Type		
ieneral information					Energy unit	O RJ O		electricity	Electricity	1.)	×
nergy intensities ~						0.00	2	Steam Coal	Electricity		×
dustry							3	Diesel	Steam Coal Motor Fuel		×
ansport	Sectors & Clients										×
ousehold							4	Gasoline	Motor Fuel	*	
ervices	Agriculture Construction Mining	Manufacturing Energy	Service H	ousehold Transport			5	JetFuel	Motor Fuel	٣	×
alculate							6	LPG	Motor Fuel	*	×
esults	0	Freight	Pa	assenger InterCity		Public Passenger P	7	CNG	Motor Fuel	*	×
						InterCity	8	Alcohol	Motor Fuel		×
	Local trucks diesel	Diesel	* -		*						
	Long dist trucks diese	Diesel	- •		٠						
	Train diesel	Diesel	▼ D	iesel							
	Train electric	electricity	v ei	lectricity	*						
	Train steam	Steam Coal	* S	team Coal							
	Barge	Diesel	• -		Ŧ						
	Pipeline diesel	Diesel	• -		•						
	Pipeline elect	electricity	• -		•						

# Activity 5: Transport Modes

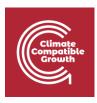
The next step is to define the transport modes. The transport modes can be accessed using the Transport tab in the Sectors & Clients block in the General Information page. Each transport mode can be associated with the three transport subsectors: Freight, Passenger InterCity, and Passenger Urban.

With the buttons, add, or delete, the user creates or deletes transport modes. And with the check boxes the user decides in which subsector the transport mode defined belongs to. For example, long-distance trucks belong to freight transport. Each transport mode can be associated with any of the subsectors but must be associated with at least one subsector. We can associate a transport mode with a subsector by selecting the fuel type used for that subsector for that transport mode; this is done using the drop-down menu. If no fuel type is selected for a transport subsector, then that transport mode will not be modelled for that transport subsector.



AED Model for Analysis of Energy	y Demand							MAED	b 🗸 About
Es Fr			<u>&amp;</u>						
nage case studies	Sectors & Clients								
neral information									
ial economic data	Agriculture Construction Min	ing Manufacturing Energy	Service Household Transport						
ergy intensities ~								FUEL TYPE	S DEFINITION
stry	•	Freight	Passenger InterCity	Public Passen	ger Passenger Urban		Car	Air plane	
sport			$\cap$	InterCi	ty				
sehold	Local trucks diesel	Diesel		<u>(</u> )		O			×
	Long dist trucks diese	Diesel	electricity		_	*			×
culate	Train diesel	Diesel	▼ Steam Coal	<b>~</b>	-	*			×
	Train electric	electricity	T Diesel Gasoline						×
	Train steam	Steam Coal	<ul> <li>JetFuel</li> </ul>	<b>~</b>		*			×
	Barge	Diesel	LPG			*			×
	Pipeline diesel	Diesel	CNG     Alcohol			*			×
	Pipeline elect	electricity	¥	, .					×
	Car gasoline	_	v Gasoline	· 🗆	Gasoline	*	~		×
	Car diesel		• Diesel	· 🗆	Diesel	,	~		×
	Car alcohol	_	v Alcohol	· 🗆	Alcohol		~		×
	Car LPG	_	Ψ	· 🗆	LPG		~		×
	Car elect		· ···	•	electricity				×

Finally, we must tell the programme which transport modes are cars or airplanes. We must also tell the programme if the transport mode for intercity passengers is considered public. These can be done by using the checkboxes. There is no limit to the number of modes you want to use.



ED Model for Analysis of Energ	gy Demand							MAED D	) V Abo
Es Fr	· · · · · · · · · · · · · · · · · · ·		<u>l</u>						
age case studies	Sectors & Clients								1
ral information	•								
l economic data	Agriculture Construction Mining	Manufacturing Energy	Service Household Transport	-					
y intensities ~								FUEL TYPE	S DEFINITIO
try		Freight	Passenger InterCity	Pas	ublic senger Passenger Urban		Car	Air plane	
port				_	erCity		$\cap$	$\frown$	
hold	Local trucks diesel	Diesel	· ···	Ľ		*			×
late	Long dist trucks diese	Diesel	*	*		*			×
late	Train diesel	Diesel	Diesel	٣	✓	٣			×
	Train electric	electricity	<ul> <li>electricity</li> </ul>	7	✓	*			×
	Train steam	Steam Coal	<ul> <li>Steam Coal</li> </ul>	٣	-	*			×
	Barge	Diesel	· · · · ·		-	*			×
	Pipeline diesel	Diesel	· · ·	*	-				×
	Pipeline elect	electricity	·						×
	Car gasoline		v Gasoline			*			×
						*	~		
	Car diesel		v Diesel	<b>T</b>	Diesel	*	<b>~</b>		×
	Car alcohol		* Alcohol	<b>v</b>	Alcohol	*	~		×
	Car LPG		·	*	LPG	*	<b>~</b>		×
	Car elect	_	·		electricity	*	~		×

# Activity 6: End-Use Categories

The final step in defining the structure of the model is the configuration of end-use categories. We must remember that, in MAED, there are 3 end-use categories: motive power, thermal uses, and specific uses of electricity. In the previous version of MAED the user was forced to fill in data tables for the three categories, in each sector or subsector defined. However, some end-use categories may not exist or may not be significant in some subsectors. Furthermore, even if that end-use exists, the data for that end-use may not be available for some subsectors. In the new version, we can define which categories of end-uses are present in each subsector. This is done by using check boxes. Let us focus, for instance, on the farming subsector of the agriculture sector. Note that all end-uses have been chosen in the sector definition block.



MAED	xenand	MAED D	- D
En Es Fr	General information Name of the case study Demo MAEDD 1		
Anage case studies	Definitions (name, years, description)	Units	8
General information	Name of the case study	Population	
Social economic data	Demo MAEDD 1	O Thousand   Million	
• Energy intensities  · Industry	Years 2010,2015,2020,2025,2030,2035,2040,2045,2050	ODP         Image: Second	*
Transport	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country.	Transport Pessenger (pkm) Million [10 <sup>4</sup> ] Million [10 <sup>4</sup> ] Trillion [10 <sup>14</sup> ]	
Household	They are there only for illustration purposes and will need to be replaced by actual country and scenario specific data by the user of the model.	Transport Freight (tim) Million [10 <sup>4</sup> ) Billion [10 <sup>4</sup> ]  Trillion [10 <sup>14</sup> ]	
Calculate		Energy unit	
I Results		GWyr O PJ O Tcal O Mtoe O GBTU	
•			
	Sectors & Clients		8
	Agriculture Construction Mining Manufacturing Energy Service Household Transport	Specific Martin	
	0	Electricity Thermal use Power use	
	Farming		١
		e2020 16	rsion: 2.0.0.2020

We should now be able to enter energy usage data for each of the three end-use categories. Let us confirm this by looking at the usage tables of the three end-use categories. Let us first look at the energy intensities of motive power.



En Es Fr	Energy intensities Name of the case study Demo MAEDD 1													
Manage case studies	El-Motive El-Specific Electricity	El-Thermal	Penetratio	n of Energy Fi	orms in	Efficiencies in		perature level i	n		tion of Energy Forms in	Efficiencie		
General information	Power use	use	ACM			ACM	Man	Ifacturing		Manufa	cturing	Manufact	uring	
Social economic data	Energy intensities of Motive Power	(final energy per un	it of value a	dded)								di 🔦 👌	• 8	0
Energy intensities ~					201001	-0.55								
Industry	Agriculture	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart			
Transport	Farming	kWh/US\$	1.40000	1.30000	1.25000	1.20000								
Household	Construction	KIIII OOD	1.40000	1.00000	1.20000	1120000					8			
	Buildings	kWh/US\$	0.10000	0.10000	0.10000	0.10000								
Services	Mining										-			
Calculate	Metal ores	kWh/US\$	0.30000	0.30000	0.30000	0.30000								
Results	Non-metal ores	kWh/US\$	0.20000	0.20000	0.20000	0.20000								
•	Manufacturing										•			
	Basic materials	kWh/US\$	0.15000	0.15000	0.15000	0.15000								
	Data notes													_

Let us now look at energy intensities of specific electricity use.

En Es Fr	Energy intensities Name of the case study Demo MAEDD 1													
Manage case studies	El-Motive	El-Thermal		n of Energy Fc	orms in	Efficiencies in		perature level i	n		ion of Energy Forms in		ciencles in	
General information	Power use	use	ACM			ACM	Manu	facturing		Manufac	turing	Ma	nufacturing	
Social economic data	Energy intensities of Specific Electr	city use (final ener	gy per unit o	of value adde	ed)							di   <	• 1± 16	a   @
Energy intensities	Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart			
Industry	Agriculture	Unit	2010	2010	2020	2020	2000	2000	2010	2010				
Transport	Farming	kWh/US\$	0.14500	0.15000	0.15500	0.16000								
Household	Construction										-			
Services	Buildings	kWh/US\$	0.02000	0.02000	0.02000	0.02000								
	Mining										8			
Calculate	Metal ores	kWh/US\$	0.10000	0.10000	0.10000	0.10000								
Results	Non-metal ores	kWh/US\$	0.10000	0.10000	0.10000	0.10000								
0	Manufacturing Basic materials	kWh/US\$	1.38400	1.38400	1.38400	1.38400								
	Data notes													

Let us finally look at energy intensities of thermal use.



Manage case studies       E-Monipe case studi	EHAOline El-Specific Electricity El-Thermal Penetration of Energy Forms in ACM Temperature level in Manufacturing Penetration of Energy Forms in Manufacturing Efficiencies in ACM   Social economic data   Second economic data   Energy intensities of Thermal uses (useful energy per unit of value added)   Intersopti   Household   Services   Calculate   Mining   Calculate   Mining   <	En Es Fr	Energy intensities Name of the case study Demo MAEDD 1												
Concent Information       Power       use       ACM       Manufacturing       Manufac	General information     Power     use     ACM     Manufacturing     Manufacturing     Manufacturing       Social economic data       Energy intensities of thermal uses (useful energy per unit of value added)       Image: Industry       Industry       Transport       Household       Services       Calculate       Image: Industry       Image: Industry       Image: Industry       Calculate       Image: Industry       Image: Industry </th <th>Manage case studies</th> <th>í.</th> <th></th> <th>]</th> <th></th>	Manage case studies	í.		]										
Energy intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)         Intensities of inermal uses (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities (useful energy per unit of value abade)         Intensities (useful energy per unit of value abade)           Intensities of inermal uses (useful energy per unit of value abade)         Intensities (useful energy per unit of value abade) <thintensities (useful="" ener<="" th=""><th>Energy intensities of Internal uses (useful energy per unit of value databat)         Industry         <thindustry< th="">         Industry         Indus</thindustry<></th><th>General information</th><th></th><th></th><th></th><th>n of Energy Fi</th><th>orms in</th><th></th><th></th><th></th><th>in</th><th></th><th></th><th></th><th></th></thintensities>	Energy intensities of Internal uses (useful energy per unit of value databat)         Industry         Industry <thindustry< th="">         Industry         Indus</thindustry<>	General information				n of Energy Fi	orms in				in				
hem       Unit       2010       2015       2020       2023       2040       2045       2050       Chart         Agriculture       Image: Construction	Energy Intensities         Item         Unit         2010         2015         2020         2023         2030         2034         2080         Chart           Industry         Indus	Social economic data	Francisco de la constance de l		J	- 44 - 45									0
Industry       Inem       Unit       2010       2010       2020       2020       2030       2030       2040       2045       2080       Chart         Agricultary       Agricultary       Agricultary       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I	Industry       Imm       Unit       2010       2010       2020       2020       2030       2030       2040       2045       2050       Chart         Agricultare       Agricultare       Imma       Imma <t< td=""><td>* Enerny intensities</td><td>Energy intensities of Thermal uses (us</td><td>erui energy per u</td><td>nit of value</td><td>added)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>IIII S   3   <b>⊻</b>   <b>⊡</b></td><td>0</td></t<>	* Enerny intensities	Energy intensities of Thermal uses (us	erui energy per u	nit of value	added)								IIII S   3   <b>⊻</b>   <b>⊡</b>	0
Agriculture     Agri	Agriculture     Agri		Item	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart		
Household         Construction         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I	Household         Construction         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I		Agriculture												
Services         Exalidings         KWn/US         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.100000         0.10000         0.10000	Buildings         kWh/US         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.10000         0.00000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.00000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0	Transport	Farming	kWh/US\$	0.05800	0.05700	0.05600	0.05500							
Alling         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I <td>Alling         Maing         <t< td=""><td>Household</td><td>Construction</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<></td>	Alling         Maing         Maing <t< td=""><td>Household</td><td>Construction</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Household	Construction												
Calculate         Metal oxes         kWn/US         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000	Calculate         Metal ares         KWh/US         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.08000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000	Services	Buildings	kWh/US\$	0.10000	0.10000	0.10000	0.10000							
Mon-metal ores         kWh/USS         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000	Mon-metal ores         KWh/USS         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000         0.07000														
Manufacturing         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L         L <thl< thr="">          000&lt;</thl<>	Manufacturing     Manufacturing       Basic materials     kWh/USS     3.60000     3.2000     3.00000     0	Calculate													
Besic materials         kWh/USS         3.60000         3.40000         3.00000         3.00000         Image: Comparison of the second	ee         Basic materials         kWh/USS         3.60000         3.20000         3.00000	Results		kWh/US\$	0.07000	0.07000	0.07000	0.07000							
Udski, Inistellais Kritti 033 3.00000 3.40000 3.00000															
Data notes	Data notes	6-9	Basic materials	kWh/US\$	3.60000	3.40000	3.20000	3.00000							
			Data notes												_

Let us consider the scenario where the specific uses of electricity and thermal uses are not present in the farming subsector. To model this, we uncheck the Specific Electricity Use and Thermal Use boxes and click save.



MAED		- a ×
MAED Model for Analysis of Energy	Demand	MAED D 🗸 About 🕐
En Es Fr	General information Name of the case study Demo MAEDD 1	
Manage case studies	Definitions (name, years, description)	Units
General information	Name of the case study	Population
Social economic data	Demo MAEDD 1	Thousand I Million
→ Energy intensities ~	Years 2010;2015;2020;2025;2030;2035;2040;2045;2050	GDP         Itilion [10 <sup>4</sup> ]         Billion [10 <sup>4</sup> ]         US Dollar         •
- Transport	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country.	Transport Pessenger (pkm) O Million [10"] O Trillion [10"] O Trillion [10"]
- Household - Services	The could be and the definition our conception we on possible definition in a importance county). They are there only for illustration purposes and will need to be replaced by actual country and scenario specific data by the user of the model.	Transport Freight (Km) Million [10 <sup>4</sup> ]  Billion [10 <sup>4</sup> ]  Trillion [10 <sup>4</sup> ]
Calculate		Energy unit
II Results		
	Sectors & Clients	a
	Agriculture Construction Mining Manufacturing Energy Service Household Transport	ort
		Specific Motive Electricity Thermal use Power use
	Ferming	
		@2020. Version: 2.0.0.2020112

Let us now look at the three energy usage tables again. Farming is still present in the energy intensity of motive power. However, it is no longer present in the energy intensities of specific electricity use and the energy intensities of thermal use.



En Es Fr	Energy int Name of the case	ensities e study Demo MAEDD 1												
Manage case studies							-	-						
General information	El-Motive El-Specific Electricity Power use						n	Penetra Manufa	tion of Energy Forms in cturing	Efficiencies in Manufacturing				
Social economic data	Energy intens	sities of Specific Electric	ity use (final ener	gy per unit o	f value add	ed)							di   <   >   ±	8 0
Energy intensities	Item		Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart		
Industry	Construc	tion	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart		
Transport	Buildings		kWh/US\$	0.02000	0.02000	0.02000	0.02000							
Household	Mining													
Services	Metal or	es	kWh/US\$	0.10000	0.10000	0.10000	0.10000							
	Non-met		kWh/US\$	0.10000	0.10000	0.10000	0.10000							
Calculate	Manufac													
Results	Basic ma	aterials	kWh/US\$	1.38400	1.38400	1.38400	1.38400							
0	Data notes													
	Data notes													

En Es Fr	Energy intensities Name of the case study Demo MAEDD 1												
Manage case studies	El-Motive El-Specific Electricit	El-Thermal	Penetration	n of Energy Fo	orms in	Efficiencies in	Tem	perature level in		Penetrat	ion of Energy Forms in	Efficier	ncies in
General information	Power use					ufacturing Manufacturing							
Social economic data	Energy intensities of Thermal uses	(useful energy per u	init of value	added)								di   <   >	
* Energy intensities ~				-								1	
Industry	Item Construction	Unit	2010	2015	2020	2025	2030	2035	2040	2045	2050 Chart		
Transport	Buildings	kWh/US\$	0.10000	0.10000	0.10000	0.10000							
Household	Mining		0.10000	0.10000	0.10000	0.10000					8		
	Metal ores	kWh/US\$	0.08000	0.08000	0.08000	0.08000							
Services	Non-metal ores	kWh/US\$	0.07000	0.07000	0.07000	0.07000							
Calculate	Manufacturing										-		
Results	Basic materials	kWh/US\$	3.60000	3.40000	3.20000	3.00000							
	Data notes												
	Data notes												
60	Data notes												
	Data notes												
60	Data notes												
6	Data notes												
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	Data notes												
	Data notes												
	Data notes												

In the manufacturing sector, thermal usage is further divided into three temperature ranges: Temp High, Temp Medium, and Temp Low. When modelling thermal use of subsectors in the manufacturing sector,



we also need to select which temperature ranges of thermal use to model for each subsector. In this case study, all three temperature ranges have been chosen for Basic Materials.

En Es Fr	General information Name of the case study Demo MAEDD 1							
Manage case studies	Definitions (name, years, description)	Units						
General information	Name of the case study	Population						
Social economic data	Demo MAEDD 1	Thousand Million						
Energy intensities ~	Years 2010,2015,2020,2025,2030,2035,2040,2045,2050	GDP Million [10"] Dillion [10"] US Dollar						
Transport	Case description	Transport Pessenger (pkm)						
Household	The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country. They are there only for illustration purposes and will need to be replaced by actual country and scenario specific data by	Million [10 <sup>4</sup> ]  Billion [10 <sup>4</sup> ]  Trillion [10 <sup>14</sup> ]						
Services	the user of the model.	Transport Freight (ikm) Million [10 <sup>4</sup> ]  Billion [10 <sup>4</sup> ]  Trillion [10 <sup>14</sup> ]						
Calculate		Energy unit						
Results		GWyr O PJ O Tcal O Mtoe O GBTU						
	Sectors & Clients							
	Agriculture Construction Mining Manufacturing Energy Service Household Transport							
	•	Specific Electricity Thermal use Temp High Temp Temp Low Power use						
	Basic materials							

The household sector contains the following additional end-use sub-types: Lighting, Air Conditioning, Cooking, Space Heating, and Water Heating.

MAED Model for Analysis of Energy									MAED D	~ 4
	emana 2010;2013;2020;2023;2030;2033;2040;2043;2030								MAED D	ľ í
En Es Fr Manage case studies	Case description The data used in this demonstration case correspond to a hypothetical scenario for a hypothetical country. They are there only for illustration purposes and will need to be replaced by actual country and scenario speci	fic data hu	Transp O M	ort Pessenger (pkm lillion [104]	) Billion [10¶	O Trillion [1	I 012]			
-	the user of the model.	inc data by	Transp M	ort Freight (tkm) Iillion [10ª]	Billion [10ª]	O Trillion [1	012]			
General information			Energy	unit						
Social economic data			O G		🔵 Tcal	O Mtoe	O GBTU			
Energy intensities ~										
Industry										
Transport	Sectors & Clients									
lousehold Services	Agriculture Construction Mining Manufacturing Energy Service Household	Transport								
Calculate				Specific 4		Air		Space	Water	
Results		A	Add new	Electricity use	Lighting	Conditioning	Cooking	Heating	Heating	
••	Urban		÷				<b>~</b>	<b>Z</b>		
	Apartment	×								
	Familu house	×								
	DW with SH	×								
	Cooking	×								
	Rural		+	_	_	_	_	_	_	
	Rurai		<b>T</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<ul><li>✓</li></ul>	<b>~</b>	
		×								

The model structure is now configured. And all input data tables, and output tables, correspond to the defined structure.

The model is ready to be loaded with the input data.