Release Note

GCAM-EML ver 1.0.15.630

This Program is developed by the collaborative work of Energy Modeling Laboratory at Ajou University and Joint Global Change Research Institute (JGCRI) / Pacific Northwest National Laboratory (PNNL).

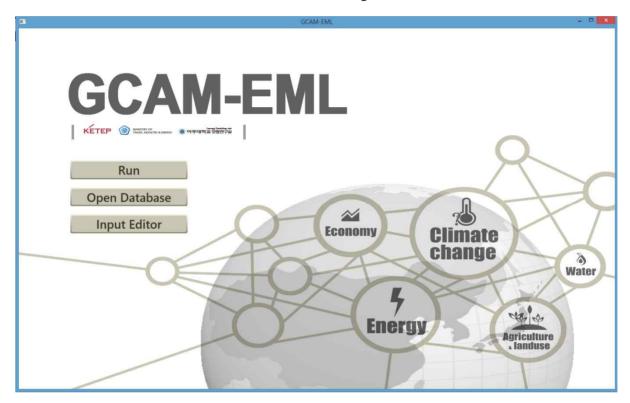
This work was supported by the International Cooperation Research Program (No. 20128510010060) of the Korea Institute of Energy Technology Evaluation and Planning (KETEP) grant funded by the Korea government Ministry of Trade, Industry and Energy.

July 1st, 2015

Energy Modeling Lab Department of Energy Systems Research Ajou University www.eml.ajou.ac.kr

How to Use

Install the program simply by double clicking the *setup.exe* downloaded from the EML website. After finishing the installation process, the main execution file of GCAM-EML can be checked in (usually) C:\Program Files (x86)\GCAM-EML\exe folder. There, double click *Xcam.exe* to start the program. Or you can simply find the shortcut of the *GCAM-EML.exe* in the desktop or start menu. The front-screen of the GCAM-EML would look like the figure below.



As seen in the figure above, there are three options in the program:

1. Run

The first function in the GCAM-EML is *Run*, which is the more advanced and user friendly version of the original GCAM run. To utilize this function, press the *Config...* button to open up the configuration file, which, among others, list up the input xml files that compose the GCAM structure itself. The default file that can be chosen is the configuration.xml as shown in the figure below. After that, press *Start*.

			Open				×
٠	🕘 🔻 🛉 퉬 ト TH	nis PC 🔸 Local Disk (C:) 🕨 Program Fil	es (x86) → GCAM-EML → exe		♥ 🖒 Search exe		Q
Orga	nize 🔻 New folde	er				E • 🔟	0
	^	Name	Date modified	Туре	Size		
	This PC) Graphviz2.30	6/30/2015 9:23 PM	File folder			
	Administrator (p	🕌 input data	6/30/2015 9:23 PM	File folder			
	Ajou (성호관334)	📕 log	6/30/2015 9:24 PM	File folder			
	Desktop Documents	📕 res	6/30/2015 9:23 PM	File folder			
	Documents	configuration.xml		XML File	6 KB		
	E205NAS2	kor_building.xml	6/4/2015 3:23 PM	XML File	1,588 KB		
	eplab (eplab-pc)	kor_building_ref.xml	6/2/2015 1:30 PM	XML File	421 KB		
	kim (kim-pc)	main_queries.xml	3/16/2015 11:00 PM 3/18/2015 11:10 AM	XML File	169 KB 1 KB		
	Music Pictures Videos Local Disk (C:) New Volume (F:)						
	File n	ame: configuration.xml			V XML Files(*	.xml)	¥
					Open	Canc	el
							14

At this point, the model will run as can be seen in the bottom part of the GCAM-EML screen. There, the user can determine at which point (period) the program is currently running. The improved GCAM-EML's GUI also provides several tabs to assist the user understand the progress and the process inside the GCAM running. The *Log Viewer*, for instance, lets the user to see the log, similar to what is shown when running the vanilla GCAM. Figure below shows the example of *Log Viewer* which shows the parsing process of the input files.

3	GCAM-EML - 🗆
	Demographic Resource Sector FinalDemand Consumer Market Solver RES Energy Balance Log veiwer
Config Back	Warning: Calibration failed by 68.08 % Technology roude oil Region: South Korea Sector regional oil Subsecton crude oil Output: 7.3547 Calibration 4.375771 Sector/Output: 7.35465165979977 Sector/Share: 0.594966451493249 Warning: Calibration failed by 60.28 % Technology in atural gas Region: South Korea Sector gas processing Subsecton atural gas Cutput: 5.7711 Calibration: 1.472761 Sector/Output: 5.791146518657 Sector/Share: 0.197233755 Warning: Calibration failed by 60.58 % Technology in etining Region: South Korea Sector on etining Output: 7.0202 Calibration: 4.1616181 Sector/Output: 7.03078112409805 Sector/Share: 0.1972490704101055
Start	Warning: Calibration failed by 637.20 % Technology: coal (conv pul) Region: South Korea Sector: electricity Subsector coal Output: 3.5582 Calibration: 0.4826591572872 Sector/Output: 6.23391517696027 Sector/Share: 0.00174247232 Warning: Calibration failed by 637.20 % Technology: gas (steam/CT) Region: South Korea Sector: electricity Subsector gas Output: 0.0733 Calibration: 0.010214523 Sector/Output: 6.23391517696027 Sector/Share: 0.00163854058164
Stop	Warning: Calibration failed by 637.20 % Technology: gas (CC) Region: South Korea Sector: electricity Subsector: gas Output: 1.4954 Calibration: 0.20284425 SectorOutput: 6.23391517696027 SectorShare: 0.0325388209884032 Warning: Calibration failed by 637.20 % Technology: refined liquids (steam/CT) Region: South Korea Sector: electricity Subsector: refined liquids Output: 0.5584 Calibration: 0.007574761103482 SectorOutput: 6.23391517696027 Secto
USA ^	Warning: Calibration failed by 87.46 % Technology: electricity Region: South Korea Sector: detached lighting Subsector: electricity Output: 0.2336 Calibration: 0.12462839124601 Sector/Output: 0.2336239 SectorShare: 0.5334573699 Warning: Calibration failed by 87.46 % Technology: electricity Region: South Korea Sector: apartment lighting Subsector: electricity Output: 0.2336 Calibration: 0.12462839124601 Sector/Output: 0.2336239 SectorShare: 0.5334573699
Africa_Eastern Africa_Northern	Warning: Calibration failed by 87.46 % Technology: electricity Region: South Korea Sector: row lighting Subsector: electricity Output: 0.2336 Calibration: 0.12462839124601 SectorOutput: 0.2336239 SectorShare: 0.533457369926664
Africa_Southern	Warning: Calibration failed by 874.6% Technology: electricity Region: South Kores Sector multi lighting Subsector electricity Unput: 0.2336 Calibration: 0.12462839124601 SectorOutput: 0.2336239 SectorShare: 0.53345738920661 Warning: Calibration failed by 573.6% Technology: enterniel ligidus Region: South Kores Sector compute Jocoling Subsector refield liquidus Region: South Kores Sector Compute Jocoling Subsector refield liquidus Region: South Kores Sector Compute Jocoling Subsector refield liquidus Calibration: 0.1339570816104 SectorOutput: 0.0337570816104 SectorOutput: 0.0337
Africa_Western Australia NZ	Warning: Calibration failed by 52.58 % Technology: electricity Region: South Korea Sector: commpub cooling Subsector: electricity Output: 0.0410 Calibration: 0.08649309816096 SectorOutput: 0.0937557999999999 SectorShare: 0.5
Brazil	Warning: Calibration failed by 37.17 % Technology: electricity Region: South Korea Sector: commpub lighting Subsector: electricity Output: 0.4252 Calibration: 0.30997441554085 Sector:Output: 0.4252012 SectorShare: 0.729006445 Warning: Calibration failed by 52.58 % Technology: refined liquids Region: South Korea Sector: large cooling Subsector: refined liquids Output: 0.0432 Calibration: 0.10395078616104 SectorOutput: 0.033757999999999 SectorShare:
Canada	warming: calination failed by 22.08 if Technology relatively negative source action large could and a second action actio
Central America and Caril Central Asia	Warning: Calibration failed by 37.17 % Technology: electricity Region: South Korea Sector: large lighting Subsector: electricity Output: 0.4252 Calibration: 0.30997441554085 Sector/Output: 0.4252012 Sector/Share: 0.7290064457509
China	Warning: Model did not calibrate successfully in period 2 Franc Model did not solve within set heration 508
EU-12 EU-15	Notice >>> time 106179
Europe_Eastern	Notice Period 32010 Notice Resetting zero shareweight for Subsector coal in sector commpub heating in region South Korea since calibration values are present.
Europe_Non_EU European Free Trade Assc	Notice: Resetting zero shareweight for Subsector coal in sector commpub cookOther in region South Korea since calibration values are present.
	Debug Starting Solution. Solving for 452 markets. Notrice: Model solved normally: treations period 3: 249. Total iterations: 1264
	Induct induct some infiniary relations period 3 zers: rotal relations. Izoe
0 (1975)	Notice: Period 4:2015
2 (2005)	Debug: Starting Solution. Solving for 452 markets. Notice: Model solved normally: teations period 4: 212. Total iterations: 1476
(2010)	Notice: >>> time 40256
(2015)	Notice: Period 52020 Debug: Starting Solution. Solving for 452 markets.
(2020) (2025)	Vecue; varianti politulurio doving for Eva markets. Notice: Model Solved normally, Iterations period 5: 250. Total iterations: 1725
(2030)	Notice: >>> time 54162
(2035) (2040)	Notice: Period 62025 Debug: Starting Solution. Solving for 452 markets.
10 (2045)	Voide: Nodel solved normally, leading period & 225. Total iterations: 1950
11 (2050)	Notice: >>> time 54724
12 (2055) 13 (2060)	< >
14 (2065)	Running Period 6

The other tabs provides the user with the many data and information that are being processed by the program. Some of them (*Demographic, Resource, Sector, Final Demand, Consumer*) represent the many class of parameters in GCAM, which interact between each other. The *Demographic* tab is a specific class for population and GDP related parameters, such as labor productivity and productivity growth. The *Resource* tab shows the data related with resource in GCAM (coal, crude oil, natural gas, uranium, etc.), such as the grade-wise available resource and its extraction cost. The *Sector* tab deals with the many sectors in GCAM which build the energy and Agricultural and Land Use (AgLU) system. The sectors are the connectors between resources and final demands, including the transformation system and end use services. Information such as efficiency, non-fuel input cost, and base year calibrated-value can be observed in this tab. The *Final Demand* consists of information related with transportation and industry sectors, while the *Consumer* currently holds the information about building sector (residential and commercial). In these tabs, the user can check the parameters that control the demand calculation, such as base-service, incomeelasticity and price-elasticity. At figure below, an example of checking the parameters in gas processing sector is shown.

	Demographic Resource Sect	or FinalDemand Consumer	Market Solver RES Ener	gy Balance Log veiwer											
Config Back	Sector	SubSector	Technology	Technology Vintage											
-	regional biomass	regional biomass	regional biomass	Category	Name	0 (1075)	1 (1990)	2 (2005)	2 (2010)	4 (2015)	5 (2020)	6 (2025)	7 (2020)	0 /2025	0
Pause	regional coal	regional coal	regional coal	sector	<>Price	0 (1313)						0 (2023)	0	0 (2000	0
	regional natural gas	regional natural gas	regional natural gas		< >price >Cost	0			0			0	0	0	0
Start		unconventional oil production			<logitexp< td=""><td>-6</td><td></td><td></td><td>-6</td><td>-6</td><td>-6</td><td>-6</td><td>-6</td><td>-6</td><td>-6</td></logitexp<>	-6			-6	-6	-6	-6	-6	-6	-6
	regional oil	crude oil	crude oil	sub	<>ShareWeight	G	1	1	1	0	0	ð	0	0	0
Stop		unconventional oil	unconventional oil		<logitexp< td=""><td></td><td></td><td></td><td>-6</td><td></td><td></td><td>-6</td><td>-6</td><td>-6</td><td>-</td></logitexp<>				-6			-6	-6	-6	-
	regional com for ethanol	regional com for ethanol	regional corn for ethanol		<fuelprepelast< td=""><td></td><td></td><td></td><td>0</td><td></td><td></td><td>ð</td><td>0</td><td>0</td><td>0</td></fuelprepelast<>				0			ð	0	0	0
dia ^	regional sugar for ethanol	regional sugar for ethanol	regional sugar for ethanol		<fixedinvestment< td=""><td>-1</td><td></td><td></td><td>-1</td><td></td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-</td></fixedinvestment<>	-1			-1		-1	-1	-1	-1	-
lonesia	regional biomassOil	regional biomassOil	OilCrop		>Cost	-1	1.262	1.43	-1	-1	-1	-1	-1	-1	
ban		natural das	natural gas	tech	<>ShareWeight <lifetime< td=""><td></td><td></td><td>5</td><td>5</td><td>1</td><td>5</td><td>5</td><td>1</td><td>5</td><td></td></lifetime<>			5	5	1	5	5	1	5	
exico	gas processing				<fixedoutput< td=""><td></td><td></td><td></td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>T</td></fixedoutput<>				-1	-1	-1	-1	-1	-1	T
		biomass gasification	biomass gasification		<caldataoutput< td=""><td></td><td></td><td>1.14274</td><td>1.60575</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td></td></caldataoutput<>			1.14274	1.60575	-1	-1	-1	-1	-1	
ddle East		coal gasification	coal gasification	Energy[regional natural gas]	<coef< td=""><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>T</td></coef<>	1	1	1	1	1	1	1	1	1	T
kistan	nuclearFuelGenII	enrichedUranium	enrichedUranium		<calinput< td=""><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>-1</td><td>ţ.</td></calinput<>	-1	-1	-1	-1	-1	-1	-1	-1	-1	ţ.
ssia	nuclearFuelGenIII	enrichedUranium	enrichedUranium	NonEnergy	<cost< td=""><td>0.2</td><td>0.2</td><td>0.2</td><td>0.2</td><td>0.2</td><td>0.2</td><td>0.2</td><td>0.2</td><td>0.2</td><td>T</td></cost<>	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	T
uth Africa	refining	oil refining	oil refining	CO2	>emission	0	0	0	0	0	0	0	0	0	Τ
uth America Northern		biomass liquids	cellulosic ethanol												
uth America Southern	1		cellulosic ethanol CCS leve												
ith Asia			cellulosic ethanol CCS leve												
uth Korea			FT biofuels												
utheast Asia	Ť.		FT biofuels CCS level 1												
van			FT biofuels CCS level 2												
000-920 (Contraction of the Contraction of the Cont			biodiesel												
gentina		coal to liquids	coal to liquids												
lombia	1		coal to liquids CCS level 1												
	6		coal to liquids CCS level 2												
	1. Contract (1. Co	gas to liquids	gas to liquids												
	electricity	coal	coal (conv pul)												
1975)	circulary		coal (IGCC)												
1990)			coal (IGCC CCS)												
2005)	3	qas	gas (steam/CT)	10				_							
2010)		gas		<								-			_
2015)	-		gas (CC)												
2020)	2	2	gas (CC CCS)												
2025)	-	refined liquids	refined liquids (steam/CT)												
2030)	-		refined liquids (IGCC)												
2035)	-		refined liquids (IGCC CCS)												
1253381	-	biomass	biomass (conv)												
2040)	3		biomass (IGCC)												
(2045)			biomass (IGCC CCS)												
(2050)		nuclear	Gen_II_LWR												
2 (2055)			Gen_III	1											
8 (2060)	4		3												

Since GCAM is a partial equilibrium, market mechanism is used to find the solution of the model. The tabs *Market* and *Solver* are important to check this process. The *RES* tab stands for the Reference Energy System. This feature is developed to untangle the complexity of energy system in GCAM. Here, the user can choose a specific sector and see its relationships with other sectors within GCAM. Las, the *Energy Balance* tab shows the calibrated-value that is used to calibrate GCAM parameters in the base year. Please also note that the user should choose the specific

region and period before selecting the tabs to check the information there.

Another feature is to *Pause* momentarily the running of GCAM-EML at the current period. Please note that the model will halt after the whole process within a period is done. Then, the user may continue the run by pressing the *Start* again.

The end of the running process would produce an output xml file (*output_db.xml*) in ₩GCAM-EML₩exe₩log folder.

2. Open Database

This option enables the user to easily check the output file of GCAM which is in xml form. This feature upgrades the Model Interface of GCAM. To open the target output db file, please click the *Open Reference DB* button. Then, the user can select the target xml file, for example (output_db.xml). GCAM-EML GUI also gives ability to the user to compare two scenarios at the same time. This feature can be used by selecting the second db file through clicking *Open Scenario DB* and choosing another DB file.

Then, the user can choose one of the many queries available in the UI. The queries are classified into several categories, such as electricity, buildings, industry, and transportation. For example, the user can choose query *Buildings final energy by fuel* and then click *Run Query*. Then, the GCAM-EML UI would produce the information as requested by the user in form of table and graphics. The user can easily compare the results between the two scenario using this feature. Figure below show the example, although in this case the scenarios compared are the same one.

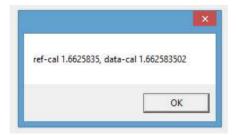
		Building final	
Config Back	Open Reference DB Open Scen	io DB Reference	Reference: Building final
] Pause	ref : output_db.xml sce : output_db.xml	input 0 (1975) 1 (1990) 2 (2005) 3 (2010) 4 (2015) 5 (2020) 6 (2025) 7 defivered biomass 0 0.0183765 0.0153053 0.02549431 0.02648331 0.02489077	12 - delivered biomass - delivered coal
Start	f	delivered coal 0 0.3627172 0.0399344 0.0357903 0.0350618 0.0336656 0.03266489 0.0 elect td bld 0 0.12284752 0.589635 0.7525306 0.8115695 0.82718 0.9200382 0.5	elect_td_bld
Start	Run Query	elect_td_bid 0 012284/52 0.589635 0.7525306 0.8115695 0.882/18 0.9200382 0.5 delivered gas 0 0.025367096 0.48277591 0.5273668 0.5388275 0.54538323 0.55300528 0.5	1
Charac		refined liquid: enduse 0. 0.4201908 0.4400643 0.3184006 0.3235626 0.3042082 0.3109566 0.3	0.9 2095
Stop	Primary Energy Electricity Electricity Electricity Construction Construction Construction End-Use Sectors General Suliding total final energy by Building final energy by Building final energy by Building final energy by Building service output by Building service output by Building service output by Building inservice output by Building final energy by Building service output by Building service output by Building final energy Building service output by Building service output by Building final energe Building Service Prices Building Service Prices Building Service Density Total service cost by unif fi Building service output by	region service se and cloggy vice bescto throlog y ser *	- delivered biomass : 0. - delivered biomas
	Industry Transportation Land Use Agricultural Production Fertilizer Queries Animals Biomass Appenands GHG emissions CO2 Climate Policy Costs Markets and Prices General Socioecomics General	dec.tgt_bid 0 0.2224752 0.556565 0.7555506 0.8115655 0.827755 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.22265726 0.2105656 0.3 refined liquids endure 0 0.4201908 0.4400643 0.3226526 0.3040082 0.3105656 0.3	- delivered das - refined liquids endu

3. Input Editor

The Input Editor simplifies the reading and redefinition of model structure in GCAM. Currently the feature is tailored specifically for the building sector, which is the main object of the project for which GCAM-EML is built. A csv file is used as input file, which sets the structure of building sector such as Building type and the energy services that are demanded by the building. This is done by redefining the consumer, sector, and technologies in the original GCAM structure. The base-year energy consumption (which is used for calibration) is read from the csv input file. Other parameter like the satiation level and base building size are also read in by the program from the same csv file. To read in the csv file, the user can simply click the *Open CSV...* button and choose the target csv as shown in figure below. The example csv file is provided in #GCAM-EMLWexeWinput data folder.

XCAM						_ 0 X
Config_ Bac	Open CSV	Consumer Sector SubSector Technology Period N	on-Period			
	Save	열기				
Stop	1	(C) ► Program File	es (x86) > GCAM-EML > exe > input data	 €₃ [in] 	out data 검색 👂	
	Consumer	- 구성 ▼ 새 돌려 ■ 사진 ^ 이용 ^			ie • 🗖 🛛	
	Sector	·····································	수정한 날짜 유형 2015-06-29 오후 Micros	크기 oft Excel		
	Subsector	·····································	and a state of the second			
	Tech	The Start (✓ [CSV	File(*,csy)	
		Arg Ore(rd). Min_satadonLever.csv			THES ⁽⁻⁽³⁴⁾ · · · · · · · · · · · · · · · · · · ·	

After selecting the appropriate csv file, the program would read in the data and translate it into the xml file for building sector. But before that, the program compares the total size of calibrated values between the new definition/structure and the original (reference). If the value is close enough, as shown in the figure below, then we can simply proceed to the next step. This checking process is important to make sure that there is no error in the model.



After clicking OK, the user can see the inputted data in the GCAM-EML UI as shown in the figure

below. Here, the user can choose to see the data within a consumer/sector/subsector/technology. The user then can check if the input data for the building sector is correct or appropriately set or not. The user also able to change the data right on the UI, simply by clicking and inputting the desired value. Afterwards, the user can click *Save* button to save the resulting file into the xml file. The resulting file would saved as kor_building.xml, which is saved in #GCAM-EML#exe folder. Please note at this point, the same pop up as the one above would show up again to re-check the calibrated-value total.

			Consumer	Sector	SubSector	Technolog	Period Non-Perio	bd											
onfig	Back	Open CSV	detached	detached heating	coal	coal	Cat	Name	0 /1075)	1 (1990)	2 (2005)	2 (2010)	4 (2015)	5 (2020)	6 (2025)	7 (2020)	9 (2025)	0.(2040)	1
		again an the	detached	detached heating	refined liquids						1.045		+ (2013)	5 (2020)	0 (2023)	7 (2030)	0 (2033)	9 (2040)	1
use			detached	detached heating	gas	gas	detached	base-building-size		0.526	1.045	0.7615		0.000	0.954	0.94	2010	0.000	0.
		Open XML	-		-		detached cooking	shell-conductance base-service	1.255		0.233624	1.048	1,018	0.989	0.964	0.94	0.916	0.892	10
			detached	detached heating	electricity	electricity	-coal	efficiency	0.353937	0.362454	0.235024	0.375501	0.379887	0.384309	0.387819	0.391354	0.394915	0.398457	0
itart			detached	detached heating	biomass	biomass		calibrated-value	0.183489	0.253111	0.0279541	0.575501	0.3/900/	0.50#509	0.207012	0.521554	0.536315	0.33043(+°
		Save	detached	detached cooling	gas	gas		input-cost	2.104	2.104	2.104	2.104	2.104	2,104	2.104	2.104	2.104	2.104	2
itop			detached	detached cooling	electricity	electricity		share-weight	1	1	1	0	1	1	1	1	1	1	1
			detached	detached cooking	coal	coal	-refined liquids	efficiency	0.530906	0.543682	0.556722	0.563251	0.569831	0.576463	0.581728	0.587031	0.592372	0.597686	0
			detached	detached cooking	refined liquids	refined lig		calibrated-value	0.0009673	0.0220627	0.0390823	0.0412524					-		f
		Consumer	detached	detached cooking	gas	gas		input-cost	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	3.2951	3.2961	3
		consument	detached	detached cooking	electricity	electricity		share-weight	1	1	1	1	1	1	1	1	1	1	1
			detached	detached lighting	electricity	electricity	-gas	efficiency	0.517817	0.53828	0.559509	0.568903	0.57843	0.588091	0.596432	0.604881	0.61344	0.622041	0
		Sector				· · · · · · · · · · · · · · · · · · ·		calibrated-value	0	0.007578	0.137375	0.0474772							Г
			detached	detached AppOthers	coal	coal		input-cost	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2
		Subsector	detached	detached AppOthers	refined liquids	refined liq		share-weight	0	1	1	1	1	1	1	1	1	1	1
			detached	detached AppOthers	gas	gas	-electricity	efficiency.	0.799684	0.843817	0.890318	0.909794	0.929654	0.949907	0.968197	0.986822	1.00579	1.02499	1
		Tech	detached	detached AppOthers	electricity	electricity		calibrated-value	0.0054778	0.0488859	0.139982	0.0285084		1 1			1		Т
		rection	detached	detached AppOthers	biomass	biomass		input-cost	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2
			apartment	apartment heating	coal	coal		share-weight	1	1	1	1	1	1	1	£	1	1	1
			apartment		refined liquids		detached lighting	base-service	0.0698377		0.233624	0.0172912							
			Contraction of the local of the	apartment heating	To any store store store store	gas	-electricity	efficiency	0.799684	0.843817	0.890318	0.909794	0.929654	0,949907	0.968197	0.986822	1.00579	1.02499	1
			and an open states of the	Contraction of the second s	gas	1		calibrated-value	0.0054778		0.139982	0.0190056							40
			Contraction and the second	apartment heating	electricity	electricity		input-cost	2.537	2.537	2.537	2.537	2,537	2.537	2.537	2.537	2.537	2.537	1
			the second se	apartment heating	biomass	biomass		share-weight	1	1	1	1	1	1 0 33	1	1	1	1	#
			apartment	apartment cooling	gas	gas	detached AppOthers		0.0698377	0.149066	0.233624	0.0172912						2202100	0
			apartment	apartment cooling	electricity	electricity	-coal	efficiency	0.353937	0.362454	0.371148	0.375501	0.379887	0.384309	0.387819	0.391354	0.394915	0.398457	#
			apartment	apartment cooking	coal	coal		calibrated-value input-cost	0.183489	0.253111	0.0279541	2.104	2.104	2.104	2.104	2.104	2.104	2.104	t,
			apartment	apartment cooking	refined liquids	refined liq		share-weight	1.104	2.104	4.104	0	2.104	2,104	1	2.104	1	2,104	2
			apartment	apartment cooking	gas	gas	-refined liquids	efficiency	0.530906	0.543682	0.556722	0.563251	0.569831	0,576463	0.581728	0.587031	0.592372	0.597686	10
			Card and the second sec	apartment cooking	electricity	electricity	-initiate address	calibrated-value	0.0009673		0.0390823		0.309031	0.310403	0.001740	0.301031	0.386316	0.991000	Ŧ
			-					input-cost	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	3.2961	1
			-	apartment lighting	electricity	electricity		share-weight	1	1	1	0	1	1	1	1	1	1	ti
				apartment AppOthers		coal	-gas	efficiency	0.517817	0.53828	0.559509	0.568903	0.57843	0.588091	0.596432	0.604881	0.61344	0.622041	10
				apartment AppOthers	refined liquids	refined liq	1	calibrated-value	0	0.007578	0.137375	0					1		T
			apartment	apartment AppOthers	gas	gas		input-cost	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	2.9599	12
			apartment	apartment AppOthers	electricity	electricity		share-weight	0	1	1	0	1	1	1	16	1	1	T
			apartment	apartment AppOthers	biomass	biomass	-electricity	efficiency	0.799684	0.843817	0.890318	0.909794	0.929654	0.949907	0.968197	0.986822	1.00579	1.02499	1
			row	row heating	coal	coal		calibrated-value	0.0054778	0.0488859	0.139982	0.0190056		()					Т
			row	row heating	refined liquids	refined lig		input-cost	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2.537	2
			row	row heating	gas	gas		share-weight	1	1	1	1	1	1	1	1	1	1	1
			row	row heating	electricity	electricity	-biomass	efficiency	0.265453	0.271841	0.278361	0.281626	0.284916	0.288232	0.290864	0.293515	0.296186	0.298843	0
			row	and the second	biomass	biomass		calibrated-value	0	0	0	0							1
				row heating				input-cost	3.156	3,156	3.156	3.156	3.156	3.156	3.156	3.156	3.156	3.156	3
			row	row cooling	gas	gas	Destroy Demonstration	share-weight	0	0	0	0	1	1	1	1	1	1	1
			row	row cooling	electricity	electricity	detached heating		0.0375354	Contraction of the local division of the loc	0.269053	0.153374		4 - 51				-	4
			row	row cooking	coal	coal V		degree-days	977	758	1001	1049	1100	1153	1211	1272	1335	1398	1

At this point, the user can directly try to run the model with the new input file (kor_building.xml) by clicking the *Config* button, then selecting the *configuration - kor building.xml* (This configuration file has been modified to include the kor_building.xml instead of the original building xml file. After clicking the *Start* button, the model would run properly. As pointed earlier the user can click *Back* and go to *Run* option to be able to check the progress of the model run. The *Log Viewer* tab as well as other informative tabs in this feature are available at the user's dispense.