Agri-food projections
AGMEMOD
for EU member states

AGMEMOD Hands-on Training

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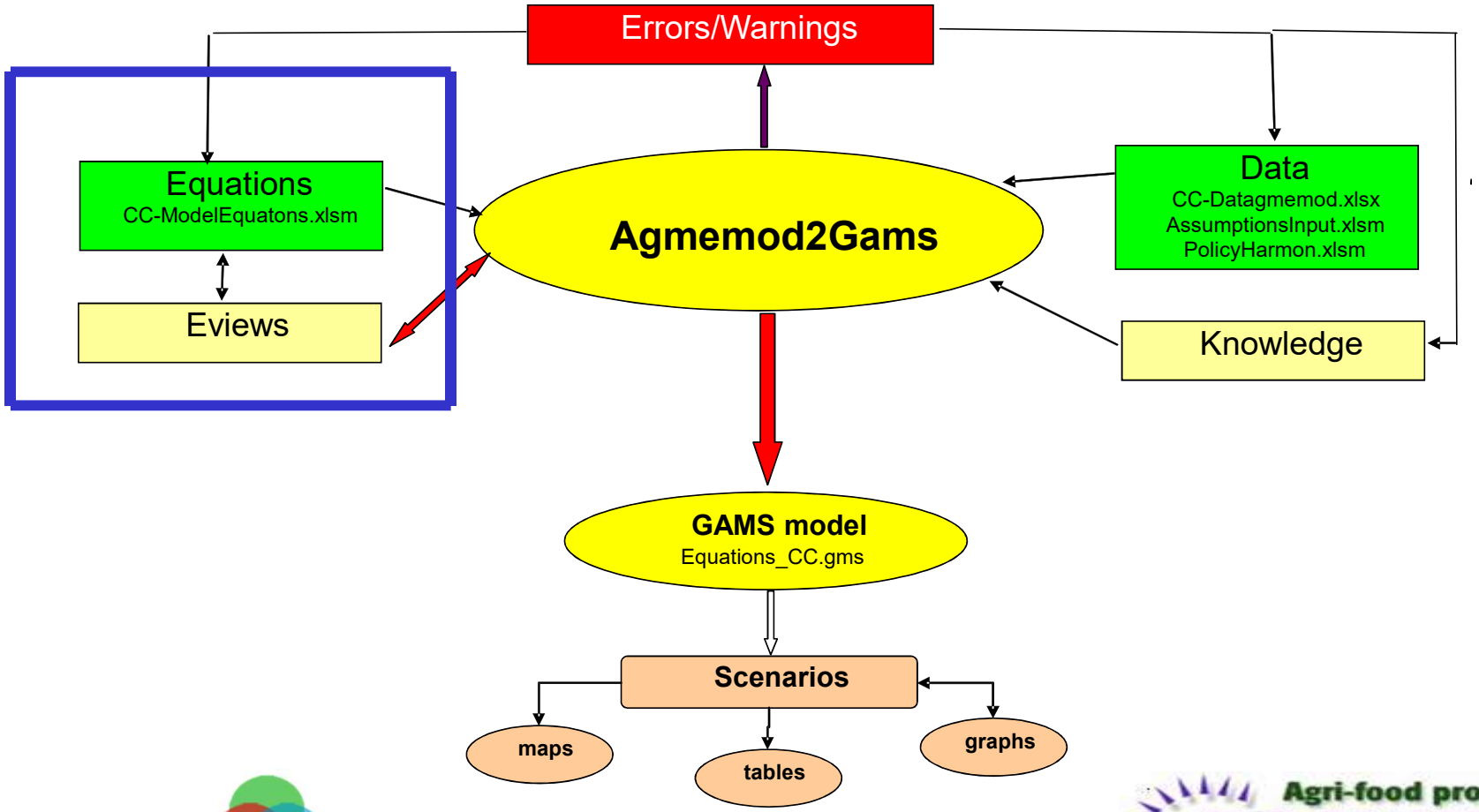
The Hague, 27-29 August 2019

THÜNEN LEI WAGENINGEN Joint Research

Country models

- **Myrna van Leeuwen –**
  - **Need to be updated**

From Data handling to output analysis: **Equations**



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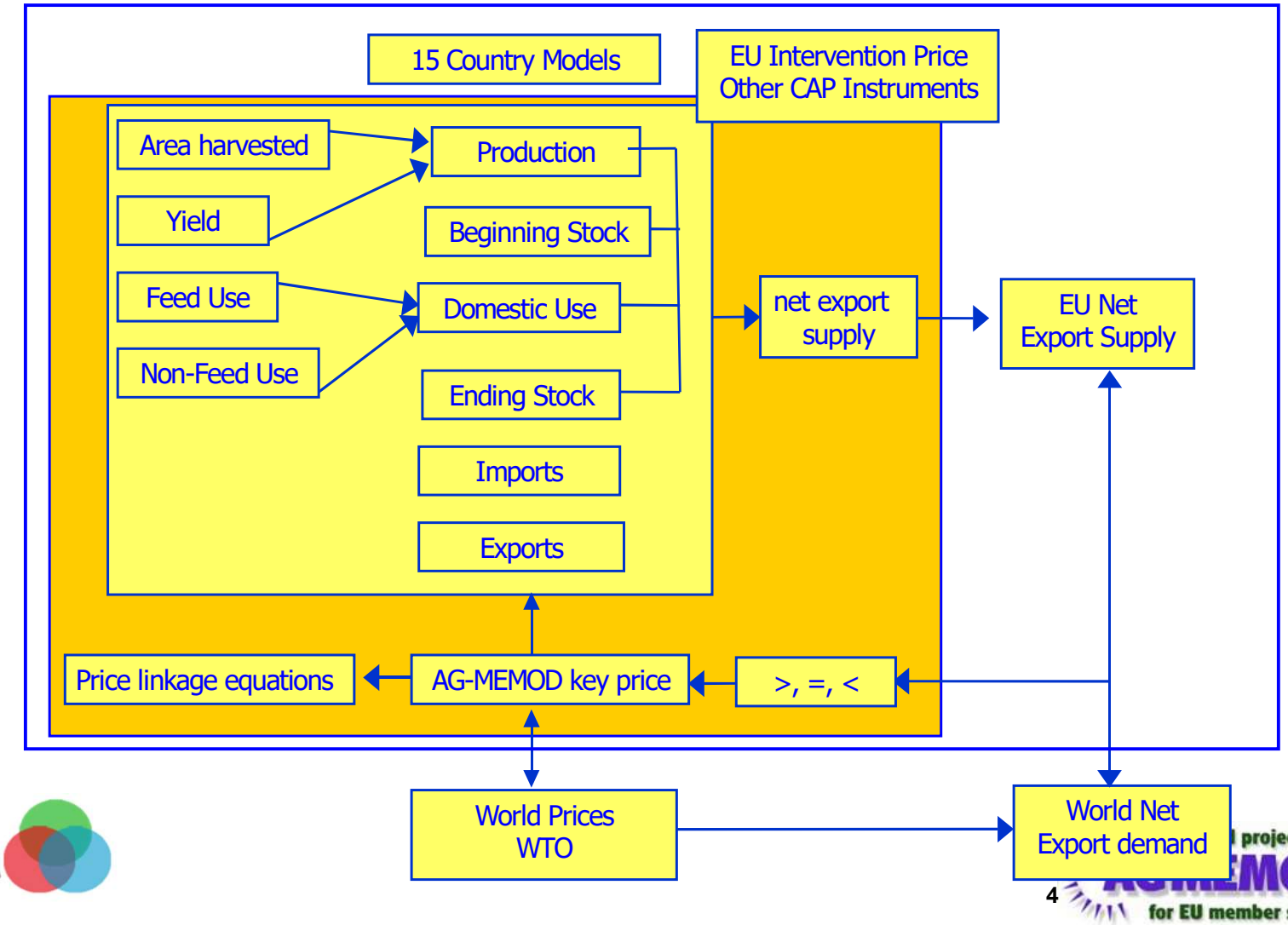
The basic framework



Commodities in AGMEMOD

not all commodities are covered in all countries

- soft wheat, durum wheat, barley, maize, rye, oats, rice, other grains
- rapeseed, sunflower seed, soybeans, vegetable oils and meals hereof
- raw milk, butter, whole and skimmed milk powder, cheese, drinking milk, cream, other fresh products, other dairy products
- live animals (cattle, pigs, sheep and goats)
- meat (beef and veal, pork, chicken, other poultry, sheep and goat meat)
- eggs
- potatoes
- sugar beets and sugar
- bioethanol from cereals and biodiesel from rapeseeds
- oranges, tomatoes, processed tomatoes, apples and wine
- olives and olive oil
- Under development: teff, casava, beans

> 70% of EU agricultural production has been modelled

5

AGMEMOD country scope

- Austria
- Belgium-Luxembourg
- Bulgaria
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania
- Netherlands
- Poland
- Portugal
- Romania
- Slovenia
- Slovak Republic
- Spain
- Sweden
- United Kingdom
- Croatia
- Turkey
- Russia
- Ukraine

Under construction

- Macedonia
- Kenya, Ethiopia, Uganda
- Brazil
- some markets in China

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AGMEMOD country scope

- Austria
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- Bulgaria
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania

Concerning the regional scope: countries can be separated into different regions in accordance with the requirements of the analysis

- Netherlands
- Poland
- Portugal
- Romania
- Slovenia
- Slovak Republic
- Spain
- Sweden
- United Kingdom
- Croatia
- Turkey
- Russia
- Ukraine

Under construction

- Macedonia
- Kenya, Ethiopia, Uganda
- Brazil
- some markets in China

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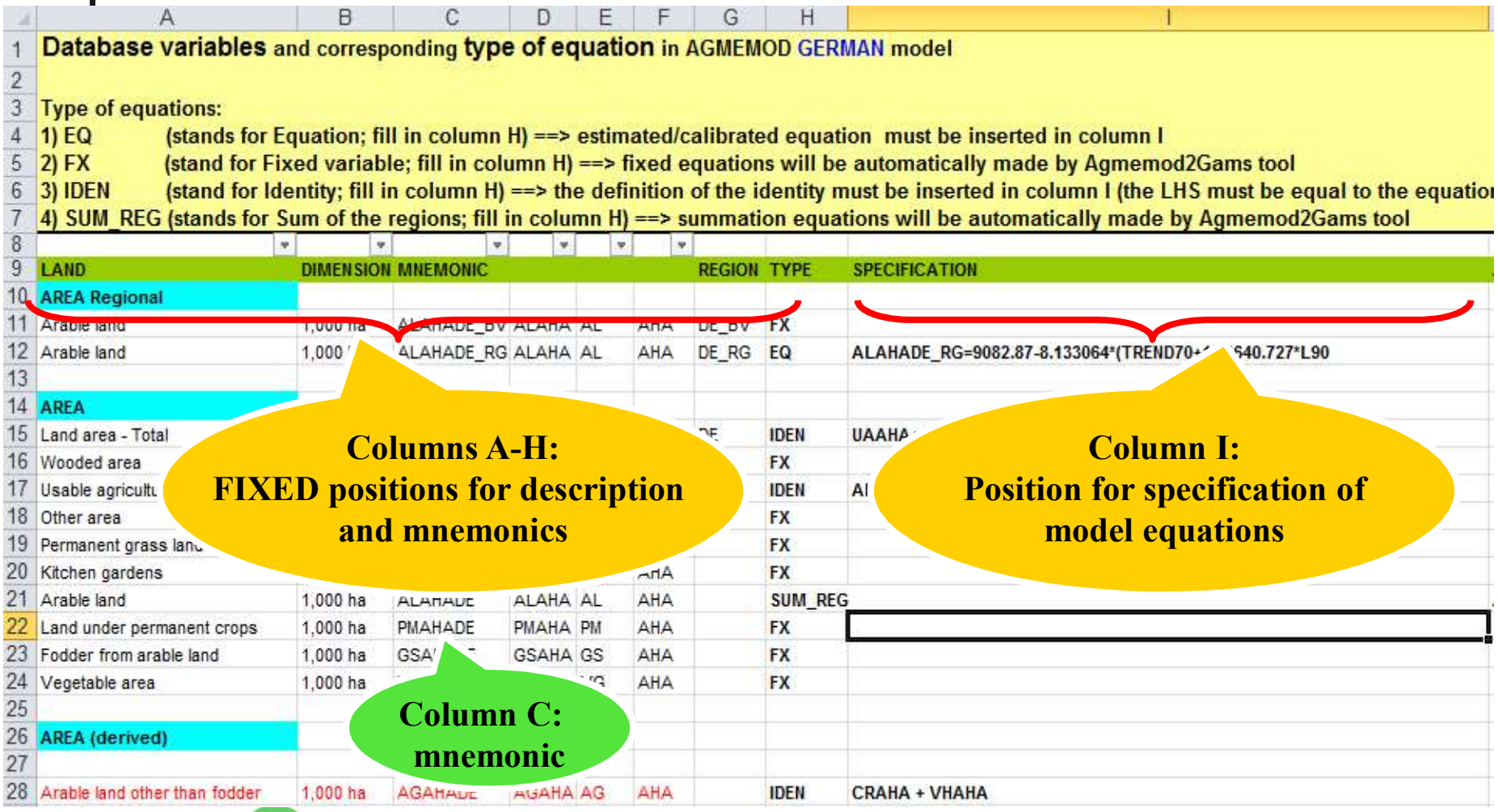
Model equation files (xls)

Need to be updated

Model in Excel

- CC_ModelEquations.xls file:
  - *database* sheet with EQ, IDEN and FX type of functions for all variables from *database* sheet in CC_Datagmemod.xlsx
  - *derived_crop* sheet with EQ, IDEN and FX type of functions for all variables in *derived_crop* sheet of CC_Datagmemod.xlsx
  - *derived_livestock* sheet with EQ, IDEN and FX type of functions for all variables in *derived_livestock* sheet of CC_Datagmemod.xlsx

E.g. *basedata* in DE-ModelEquations_baseline.xlsm



	A	B	C	D	E	F	G	H	I
1	**Database variables** and corresponding **type of equation** in AGMEMOD GERMAN model								
2									
3	Type of equations:								
4	1) EQ (stands for Equation; fill in column H) ==> estimated/calibrated equation must be inserted in column I								
5	2) FX (stand for Fixed variable; fill in column H) ==> fixed equations will be automatically made by Agmemod2Gams tool								
6	3) IDEN (stand for Identity; fill in column H) ==> the definition of the identity must be inserted in column I (the LHS must be equal to the equatio								
7	4) SUM_REG (stands for Sum of the regions; fill in column H) ==> summation equations will be automatically made by Agmemod2Gams tool								
8									
9	LAND	DIMENSION	MNEMONIC				REGION	TYPE	SPECIFICATION
10	AREA Regional								
11	Arable land	1,000 ha	ALAHADE_BV	ALAHA	AL	AHA	DE_BV	FX	
12	Arable land	1,000	ALAHADE_RG	ALAHA	AL	AHA	DE_RG	EQ	ALAHADE_RG=9082.87-8.133064*(TREND70+ \$40.727*L90
13									
14	AREA								
15	Land area - Total						DE	IDEN	UAAHA
16	Wooded area							FX	
17	Usable agricultu							IDEN	AI
18	Other area							FX	
19	Permanent grass land							FX	
20	Kitchen gardens					AHA		FX	
21	Arable land	1,000 ha	ALAHADE	ALAHA	AL	AHA		SUM_REG	
22	Land under permanent crops	1,000 ha	PMAHADE	PMAHA	PM	AHA		FX	
23	Fodder from arable land	1,000 ha	GSA	GSAHA	GS	AHA		FX	
24	Vegetable area	1,000 ha			VG	AHA		FX	
25									
26	AREA (derived)								
27									
28	Arable land other than fodder	1,000 ha	AGAHADE	AGAHA	AG	AHA		IDEN	CRAHA + VHAHA

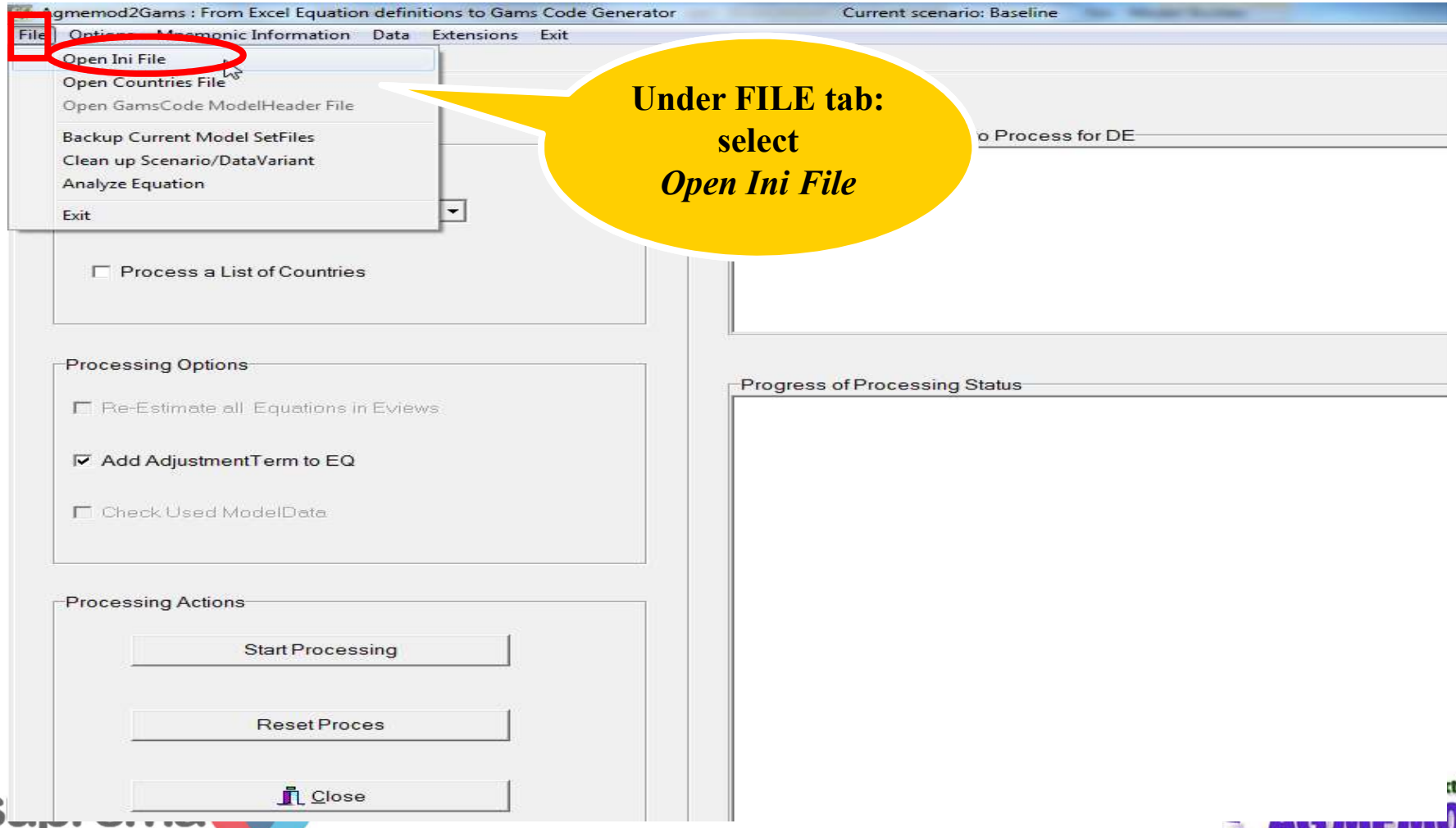
Columns A-H: FIXED positions for description and mnemonics

Column I: Position for specification of model equations

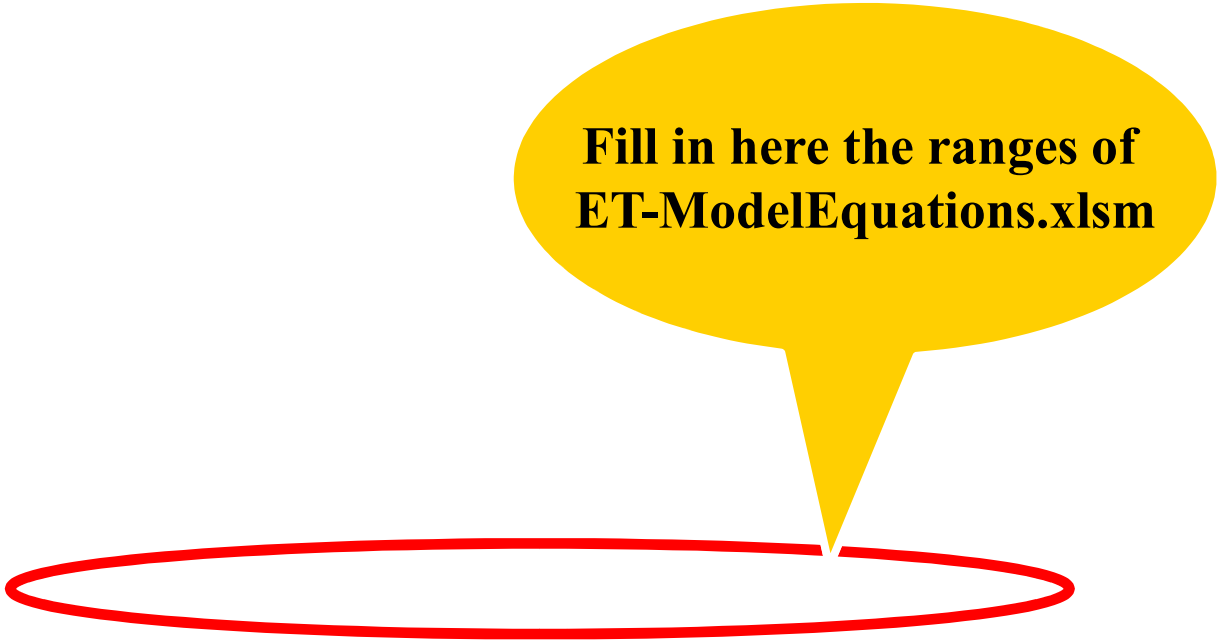
Column C: mnemonic

Ranges in CC-ModelEquations file

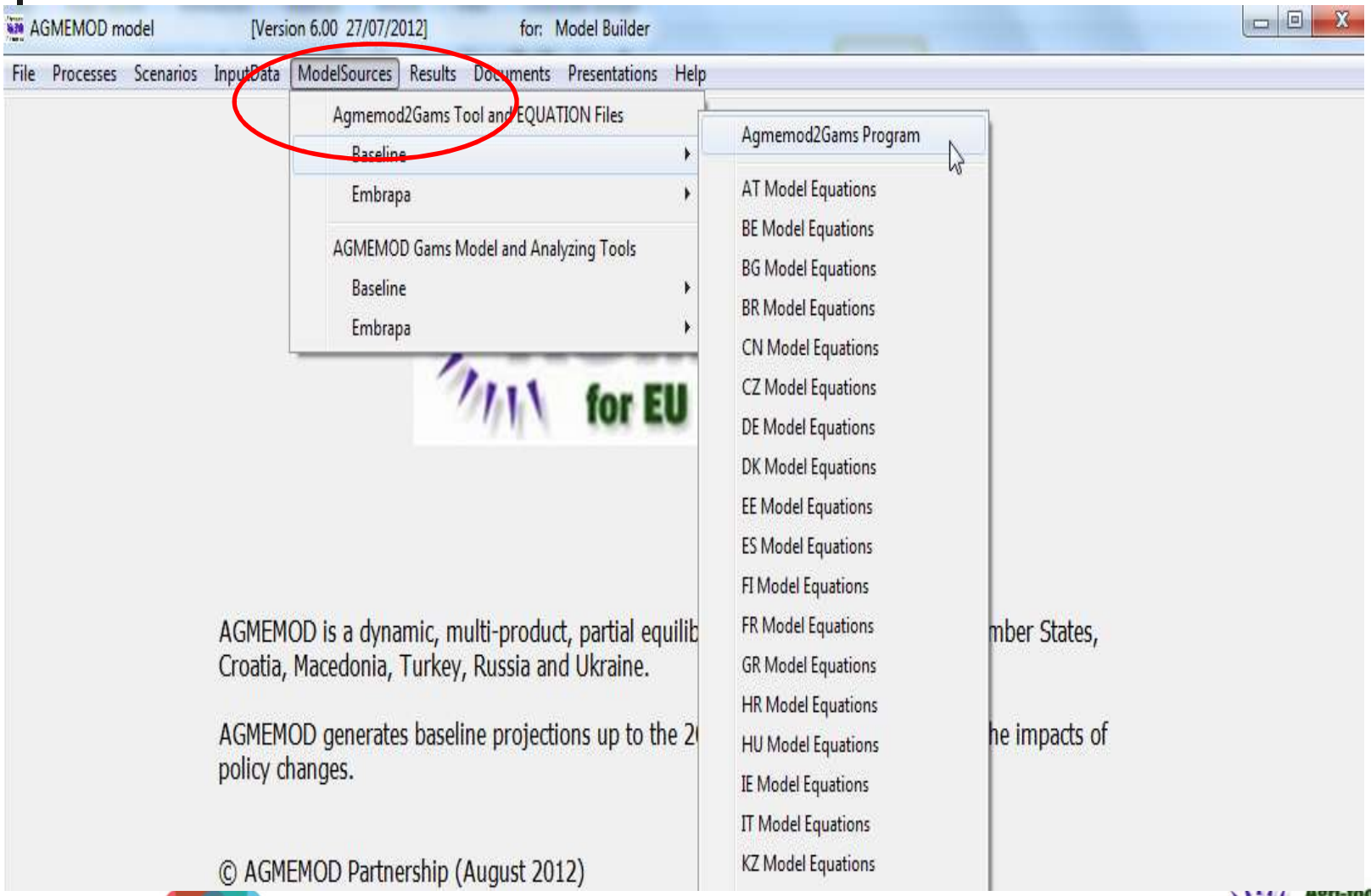
- This is managed in Agmemod2Gams.ini



Adjust ranges in Layout sheet



Equations in user interface



Model in GAMS *[show]*

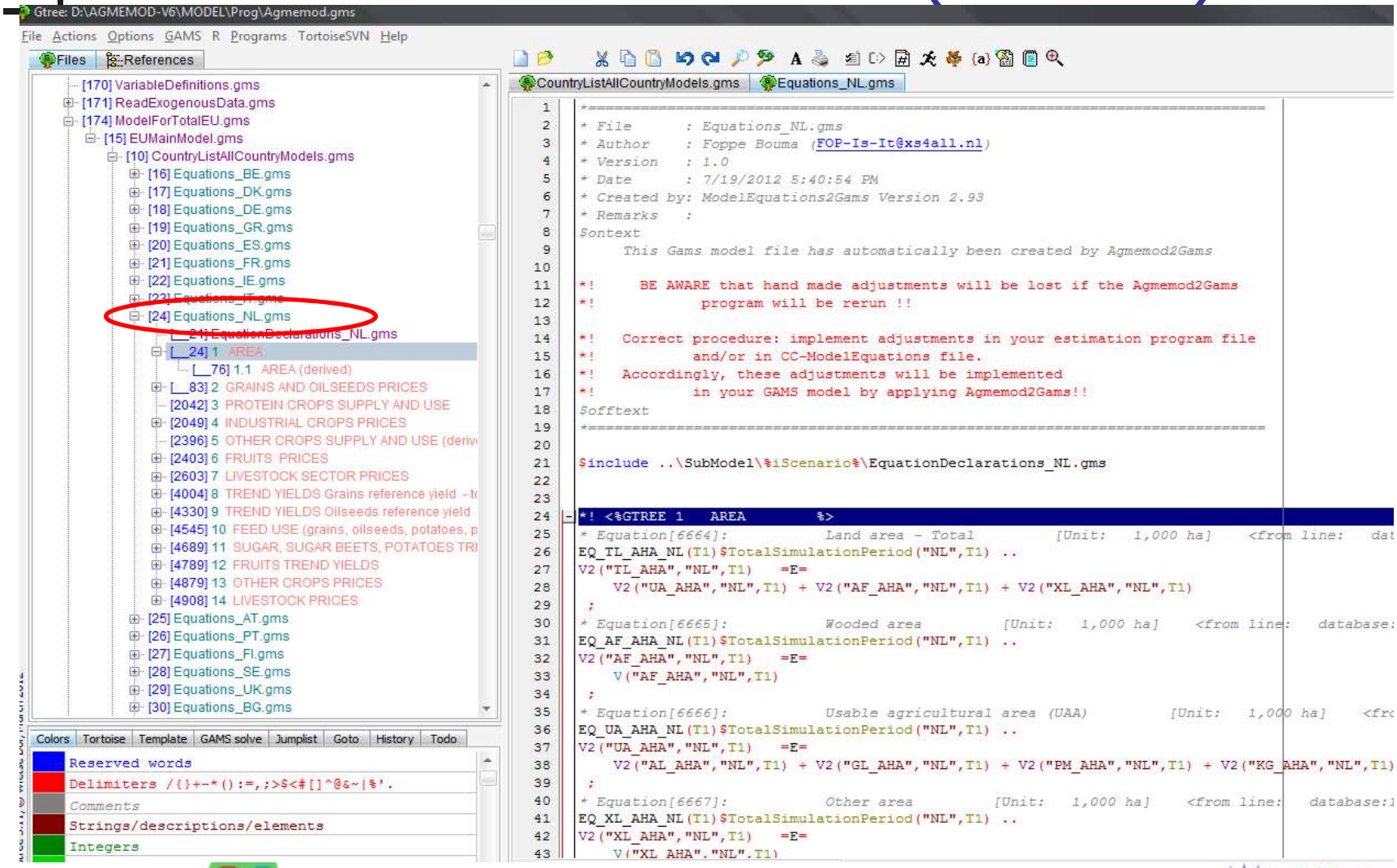
- Agmemod2Gams tool:
  - transfers equations from CC_ModelEquations.xlsm (and CC-Eviews.wf1) into GAMS code
  - applies consistency tests on data use and data availability (own and **foreign!** data)
  - applies consistency tests on use of mnemonics
    - **one-to-one** relation between number of variables in CC-Datagmemod.xlsx and the CC_ModelEquations.xlsm files
- Equations_CC.gms file:
  - contains uniform GAMS code across countries
  - harmonized time index

Estimation and calibration (Eviews, R)

Estimation and calibration

- TO BE PREPARED

View CC model GAMS code (in Gtree)



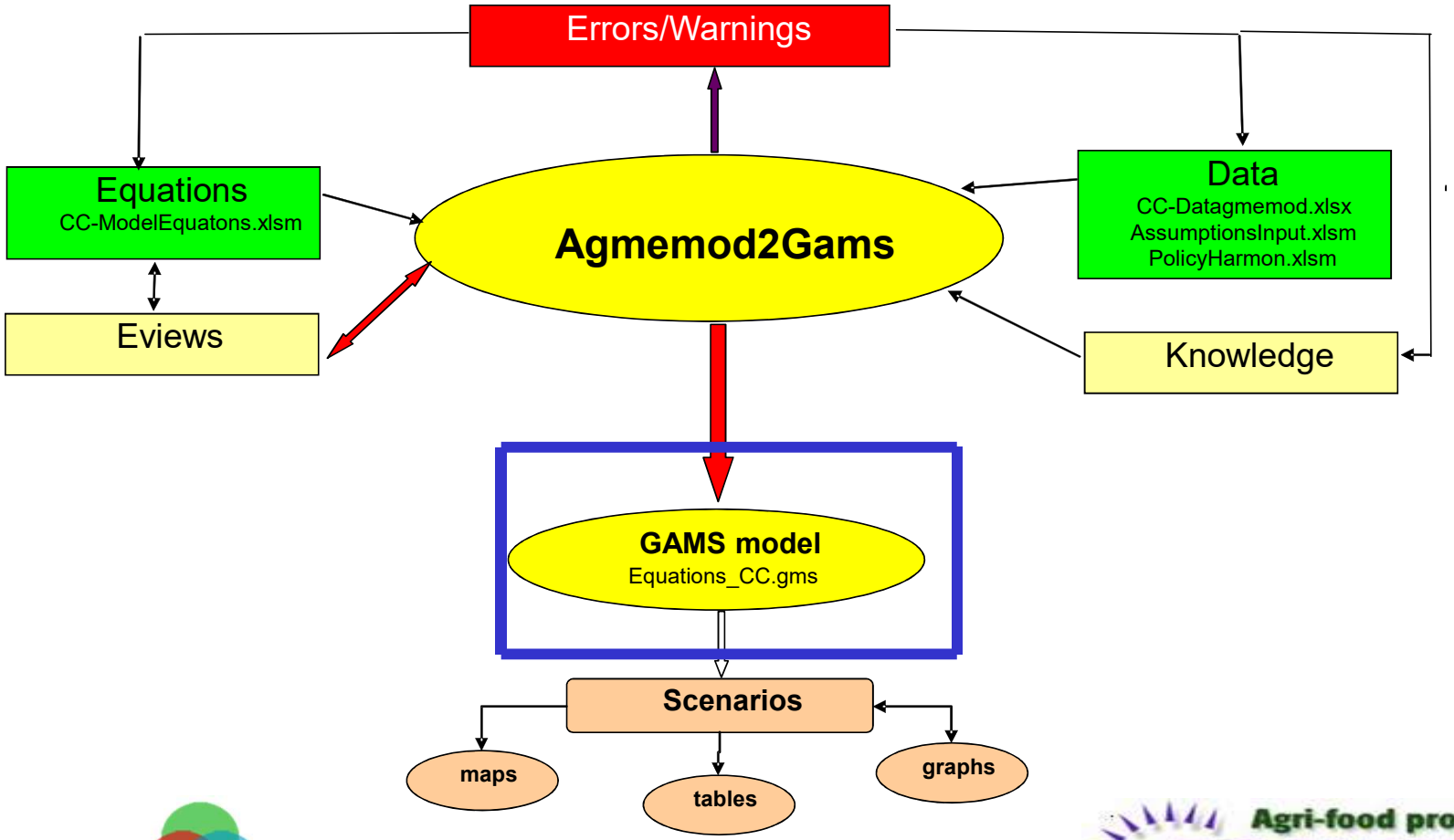
Questions so far?

Agmemod2Gams and checking models

- Mariia Bogonos -

Mariia, adjust/extend according to own convenience

From Data handling to output analysis: **model solving**



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Agmemod2Gams and transferring Excel code into GAMS code

from excel to gams...

- TO BE PREPARED

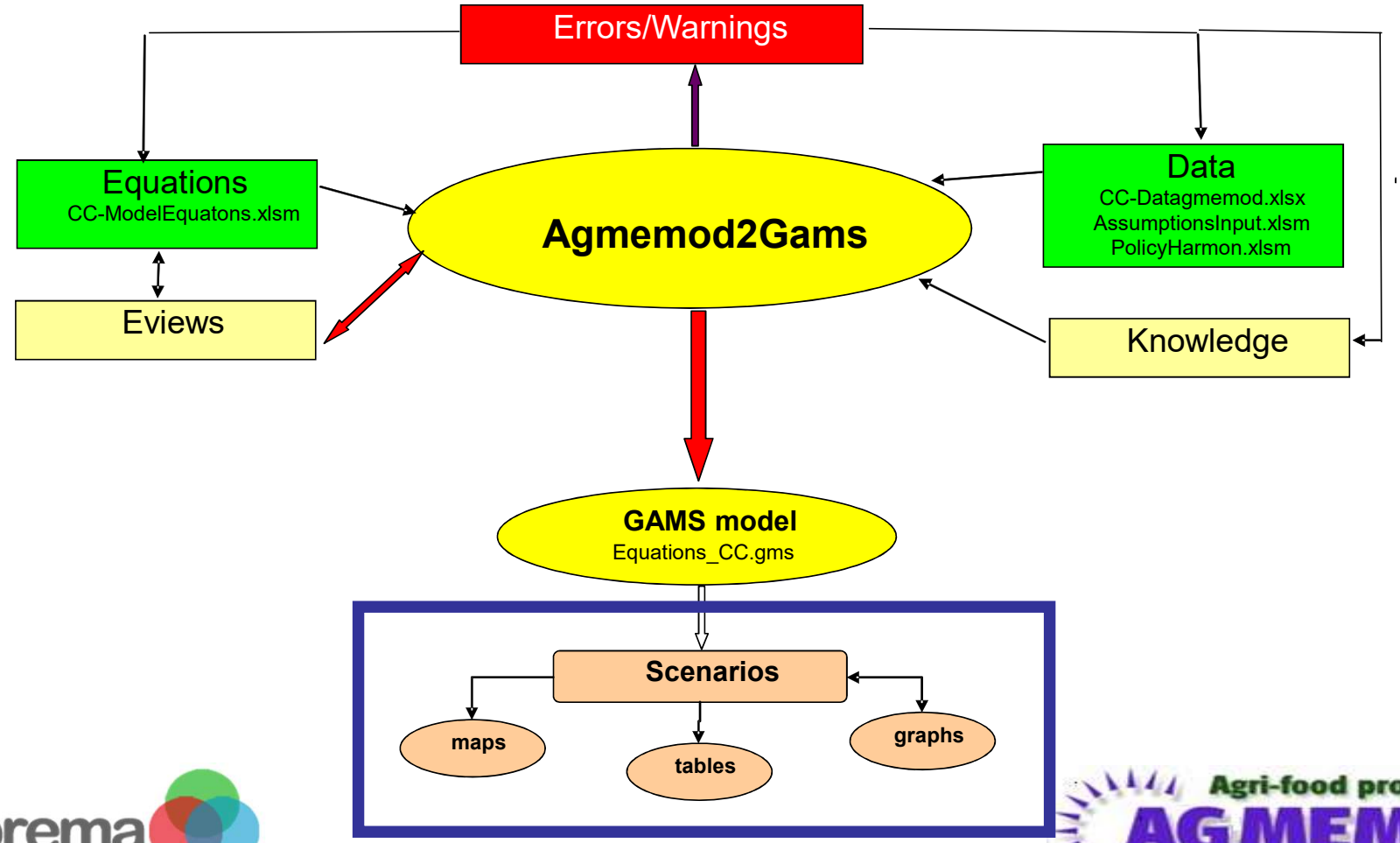
Running and solving the model

- TO BE PREPARED

Output options; result files (gdx, xls)

– Max Zirngibl –

From Data handling to output analysis: **Results**



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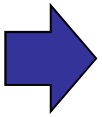
Output options I

- Tables:
  - Excel files
  - GDX files
- Maps:
  - GIS files

Output options II

- 2 options to generate output:
  - **Country dependent** results
    - Excel files
    - GDX files
  - **Scenario dependet** results among all countries
    - Excel files
    - GDX files



Scenario dependent output is most useful and used option

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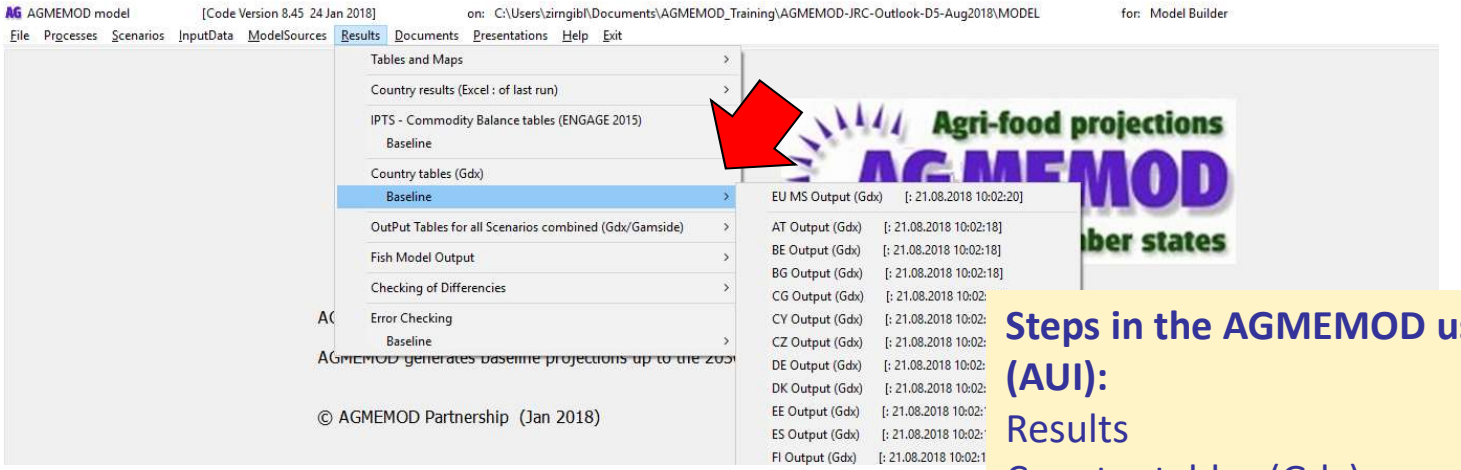
Result output options: overview

- 4 tools for creating the output:
  - AGMEMOD GDX Output tables
    - Output tables **by country** (1)
    - Commodity output tables **all scenarios** combined (2)
    - Using the Data Explorer Tool
  - AGMEMOD Gams analyzing tools
    - Output combining **all scenarios**
    - **Two** Excel **tools**:
      - TI graph tool (3)
      - TI GDX2Excel tool (4)

AGMEMOD GDX output tables

- "Country tables (GDX)" (1):
  - GDX output using the Data Explorer Tool
  - Excel theoretically also possible



Steps in the AGMEMOD user interface (AUI):

Results

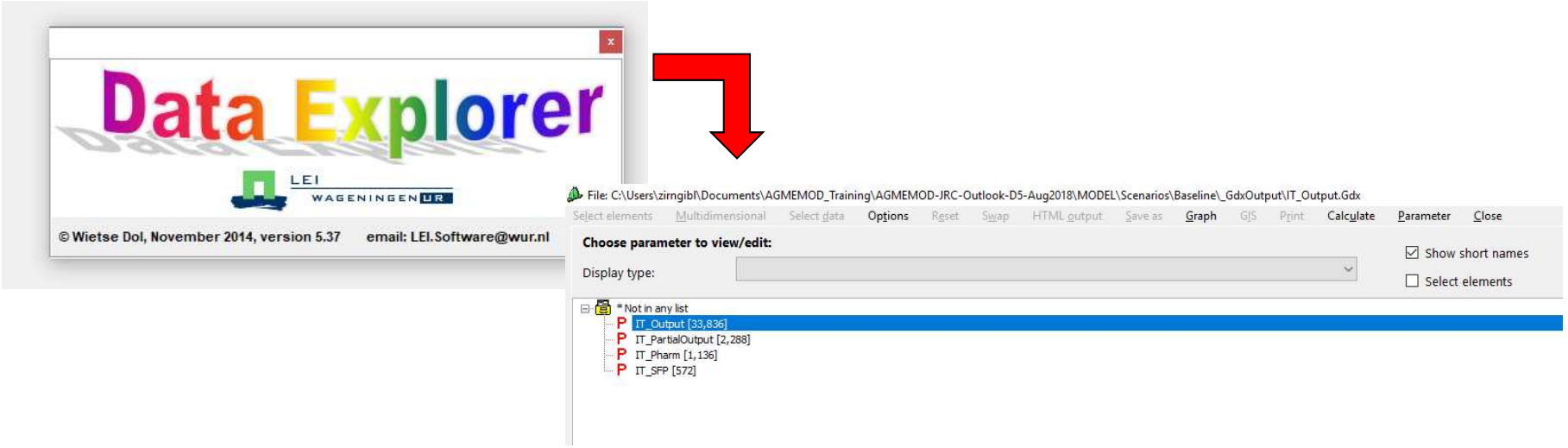
Country tables (Gdx):

- Baseline
- ScenarioName (optional)

CC Output (Gdx)

AGMEMOD GDX output tables

- "Country tables (GDX)" (1):
  - **CC_Output**: all results for the desired country of the last model run
  - **CC_PartialOutput**: Results of a country for a chosen subset of products

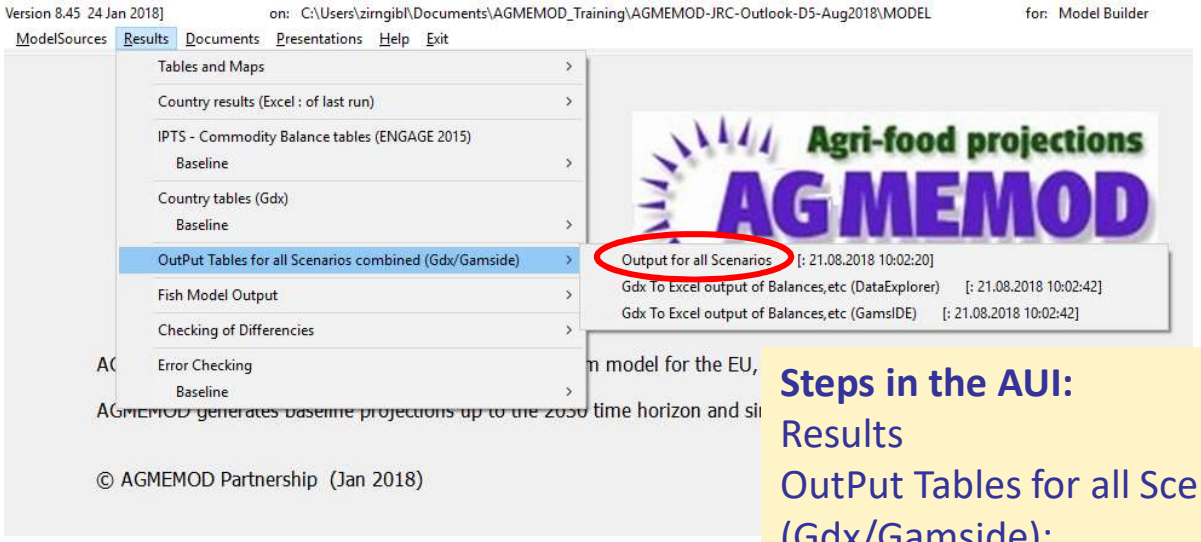


AGMEMOD GDX output tables

- "Country tables (GDX)" (1):
  - **Advantages:**
    - All desired results for specific country available very quick
  - **Disadvantage:**
    - No comparison between scenarios possible
    - Only results of one scenario

AGMEMOD GDX output tables

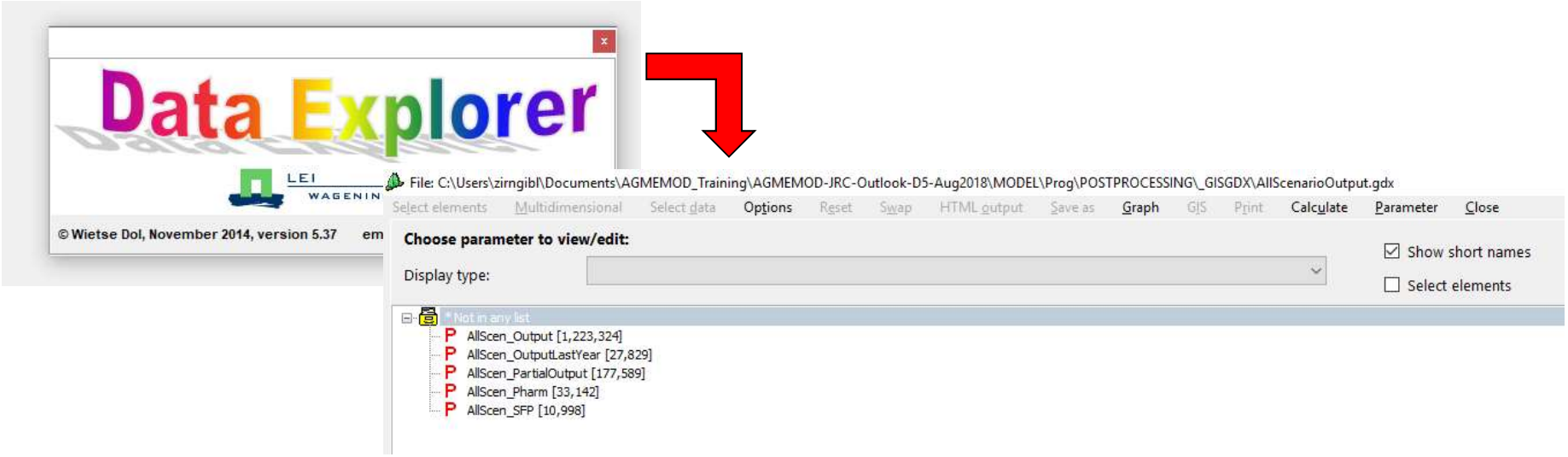
- "Commodity output tables all scenarios combined (GDX)" (2):
  - GDX output using the Data Explorer Tool



Steps in the AUI:
Results
OutPut Tables for all Scenarios combined (Gdx/Gamside):
Output for all Scenarios

AGMEMOD GDX output tables

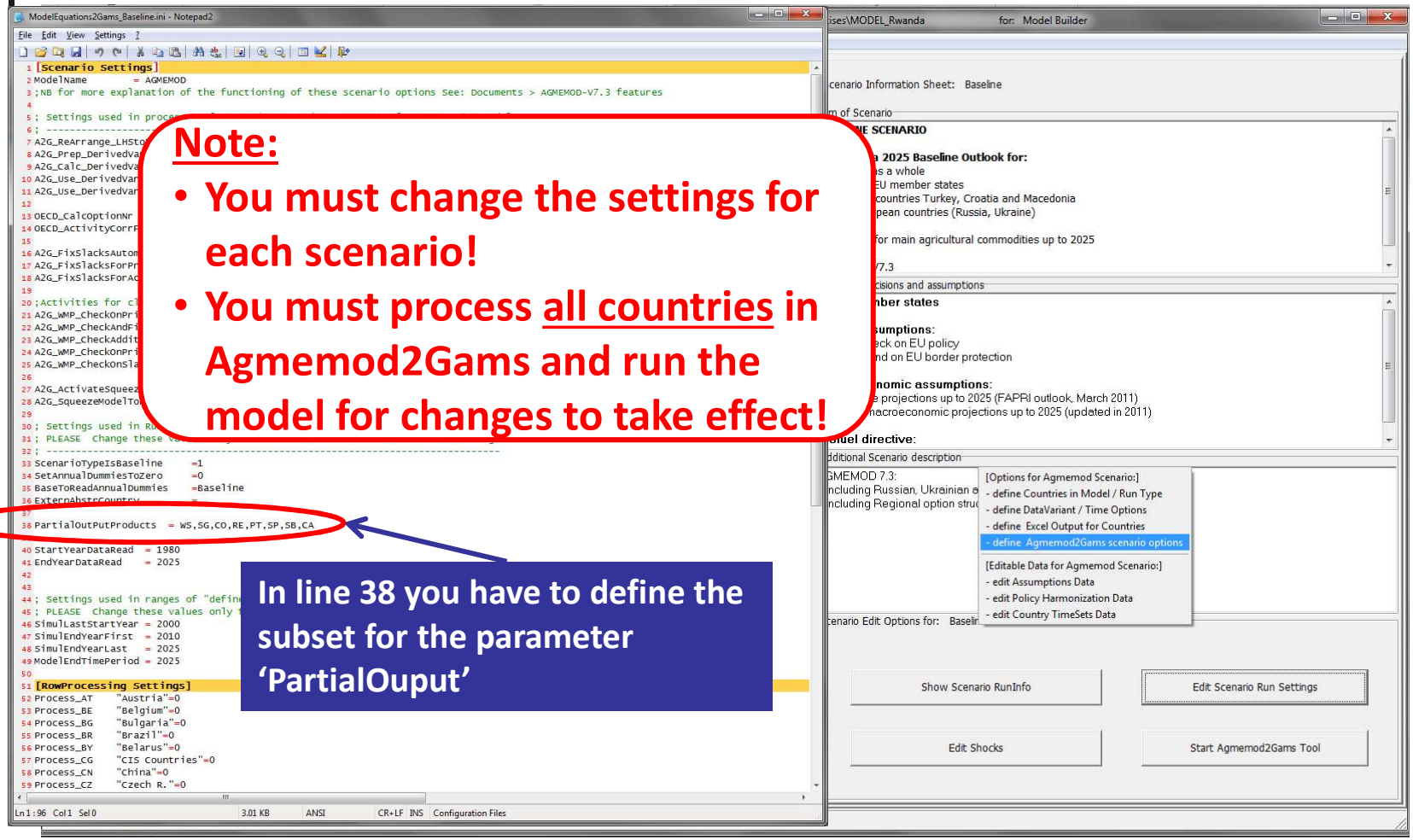
- "Commodity output tables all scenarios combined (GDX)" (2):
  - **AllScen_Output**: Results of all countries, scenarios, products activities and years
  - **AllScen_PartialOutput**: Results like above for a chosen subset of products



AGMEMOD GDX output tables

- "Commodity output tables all scenarios combined (GDX)" (2):
  - **Advantages:**
    - The export of data is fast, flexible and extensive data presentation options by Data Explorer
    - Additional possibility to analyze single balances for products (e.g. demand, supply)
  - **Disadvantages:**
    - Depending on the needs the option AllScen_PartialOutput is very time consuming to adjust
    - For new users the Data Explorer Tool may be confusing at the beginning

AGMEMOD GDX output tables



Result output options: overview

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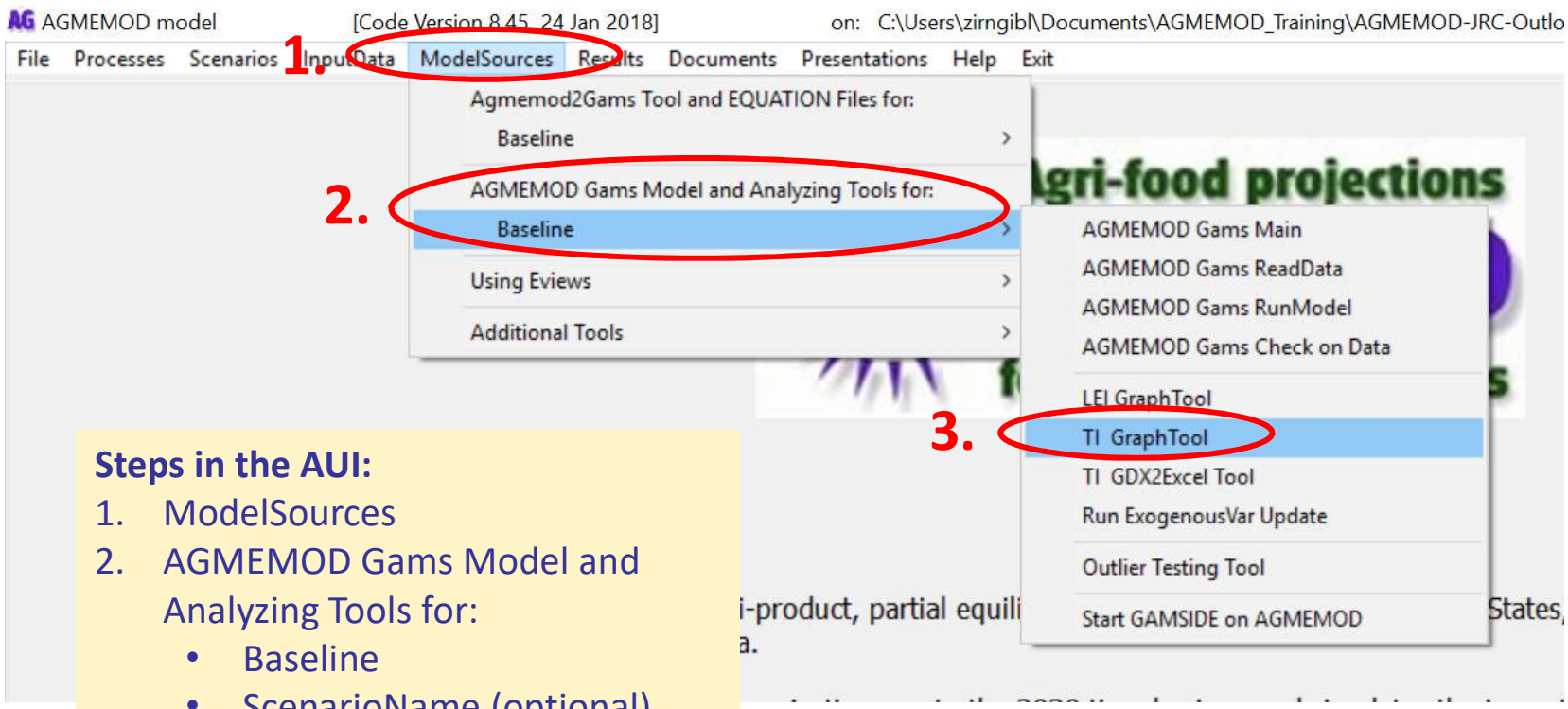
      - TI graph tool (3)
      - TI GDX2Excel tool (4)

AGMEMOD Gams analyzing tools

- "TI graph tool" (3):
  - Excel output via Excel interface
  - Scenario dependent
    - Puts out the data of a scenario run
  - Compares baseline results with scenario results
  - Excel software linked to GDX output files

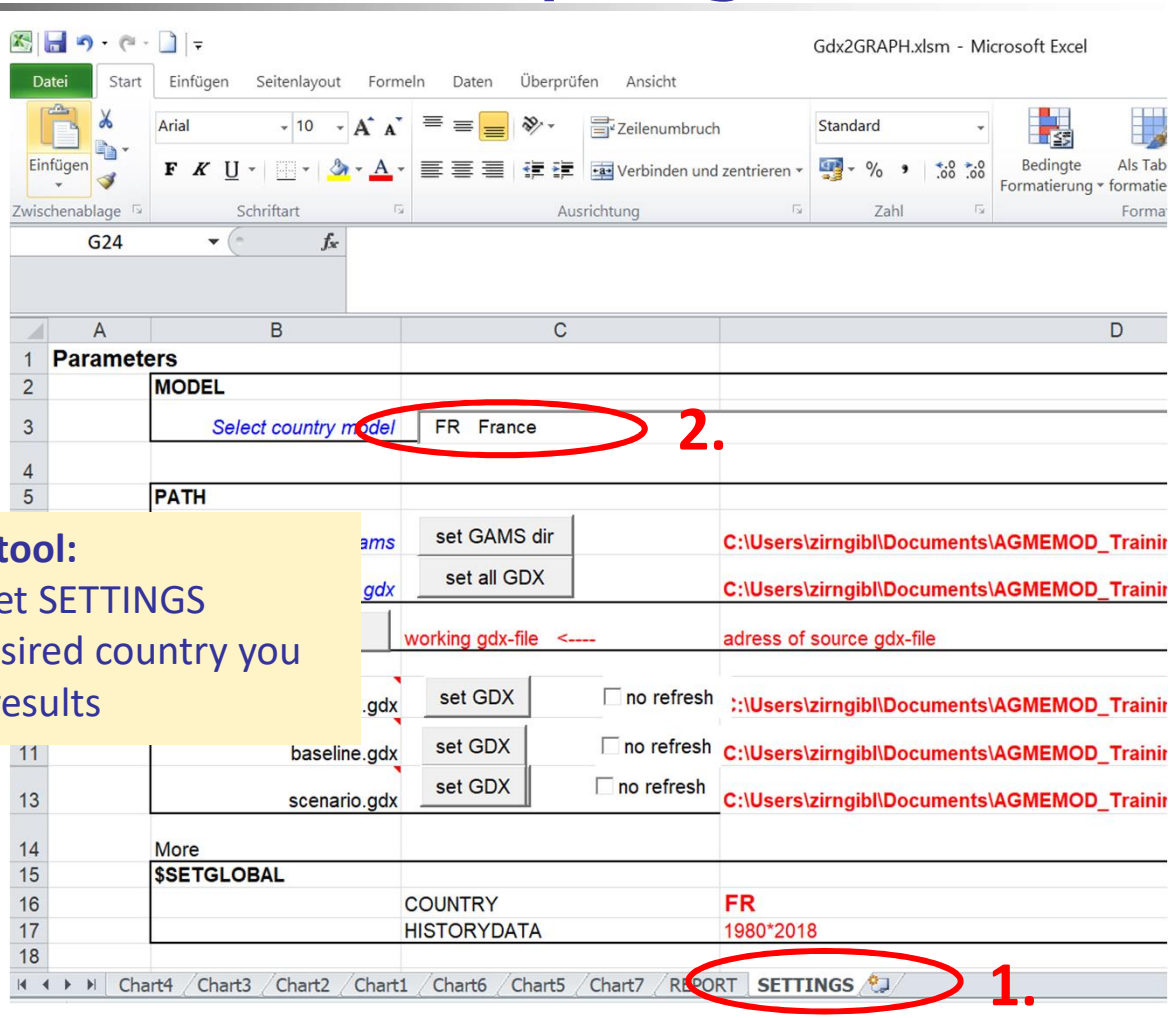
AGMEMOD Gams analyzing tools



Steps in the AUI:

1. ModelSources
2. AGMEMOD Gams Model and Analyzing Tools for:
   - Baseline
   - ScenarioName (optional)
3. TI Graph Tool

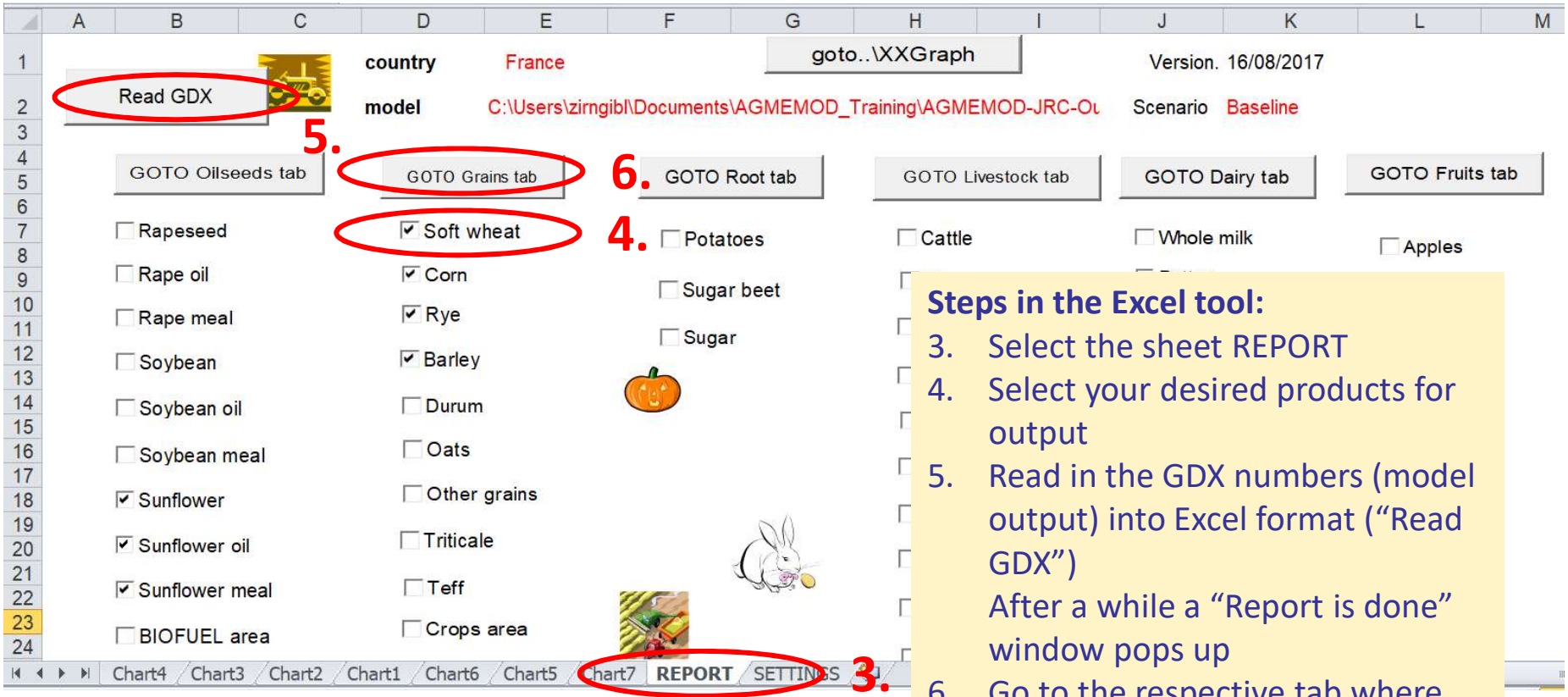
AGMEMOD Gams analyzing tools



Steps in the Excel tool:

1. Select the sheet SETTINGS
2. Choose the desired country you like to obtain results

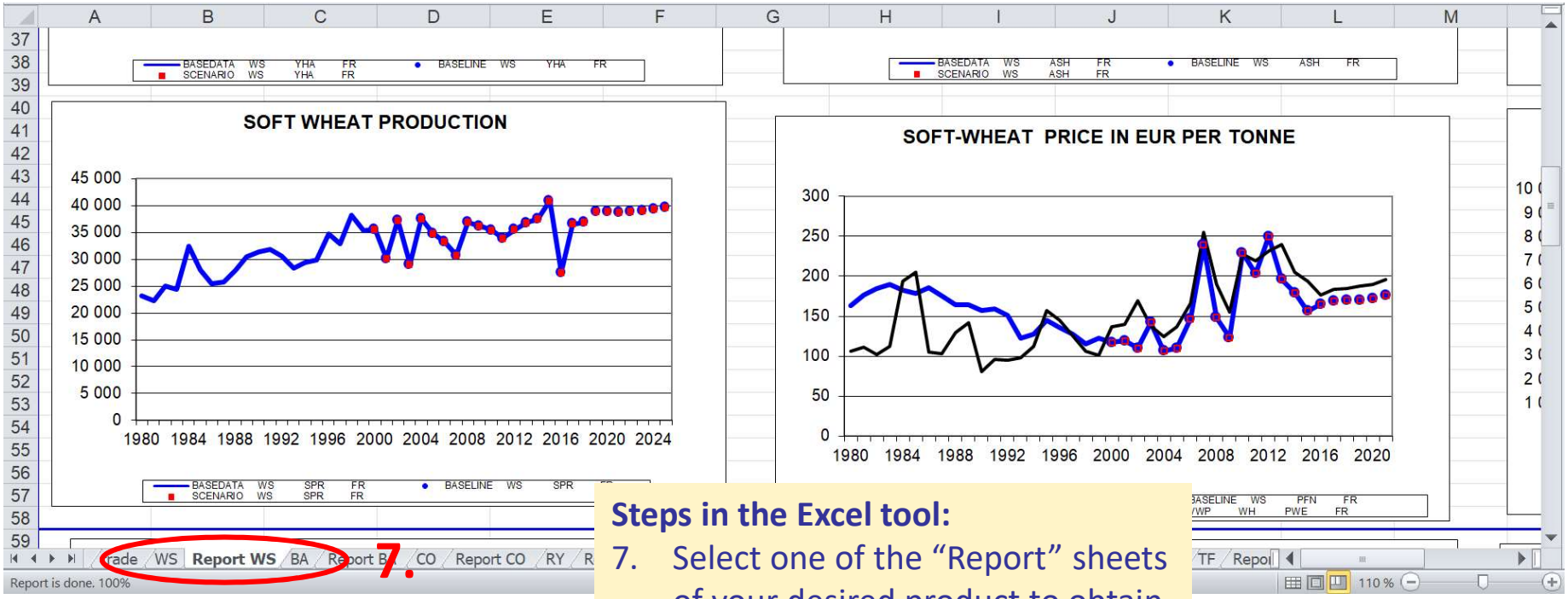
AGMEMOD Gams analyzing tools



Steps in the Excel tool:

3. Select the sheet REPORT
4. Select your desired products for output
5. Read in the GDX numbers (model output) into Excel format ("Read GDX")
   After a while a "Report is done" window pops up
6. Go to the respective tab where your results appear ("GOTO xxx tab")

AGMEMOD Gams analyzing tools



Steps in the Excel tool:

7. Select one of the "Report" sheets of your desired product to obtain graphics

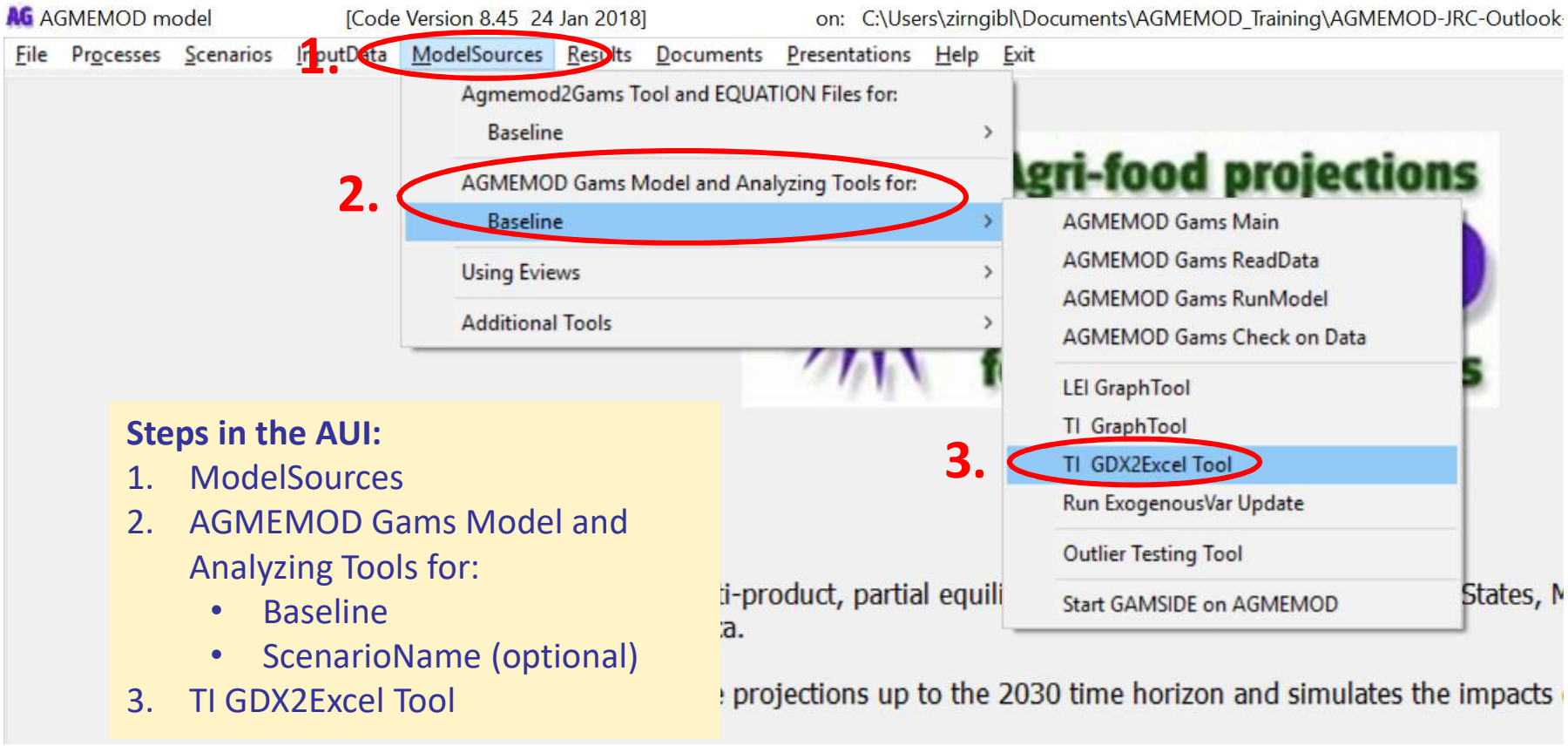
AGMEMOD Gams analyzing tools

- "TI graph tool" (3):
  - **Advantages:**
    - Easy to use interface
    - Quick graphic output
  - **Disadvantages:**
    - When many products are chosen, it takes a lot of time and memory to read in all GDX files into Excel
    - Set of products and activities predetermined

AGMEMOD Gams analyzing tools

- "TI GDX2Excel Tool" (4):
  - Excel output via Excel interface
  - Scenario dependent
    - Puts out the data of a scenario run
  - Compares baseline results with scenario results
  - Excel software linked to GDX output files

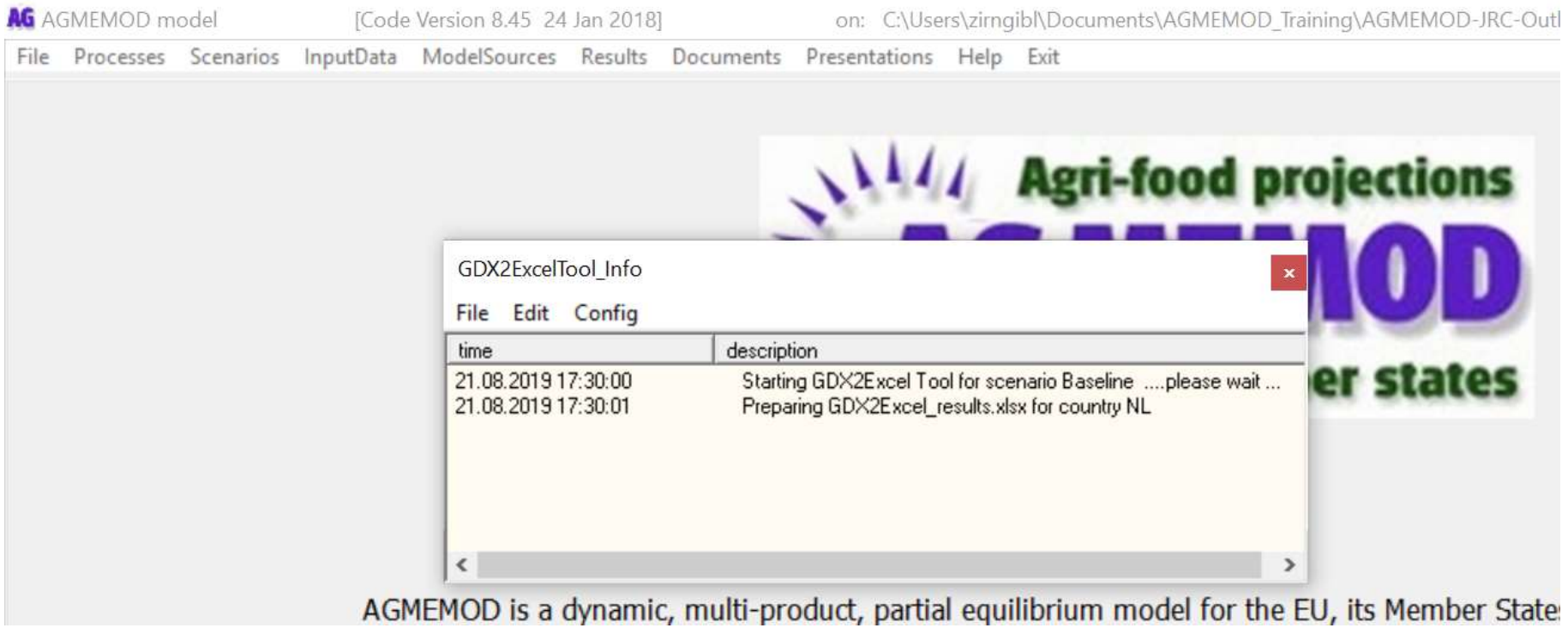
AGMEMOD Gams analyzing tools



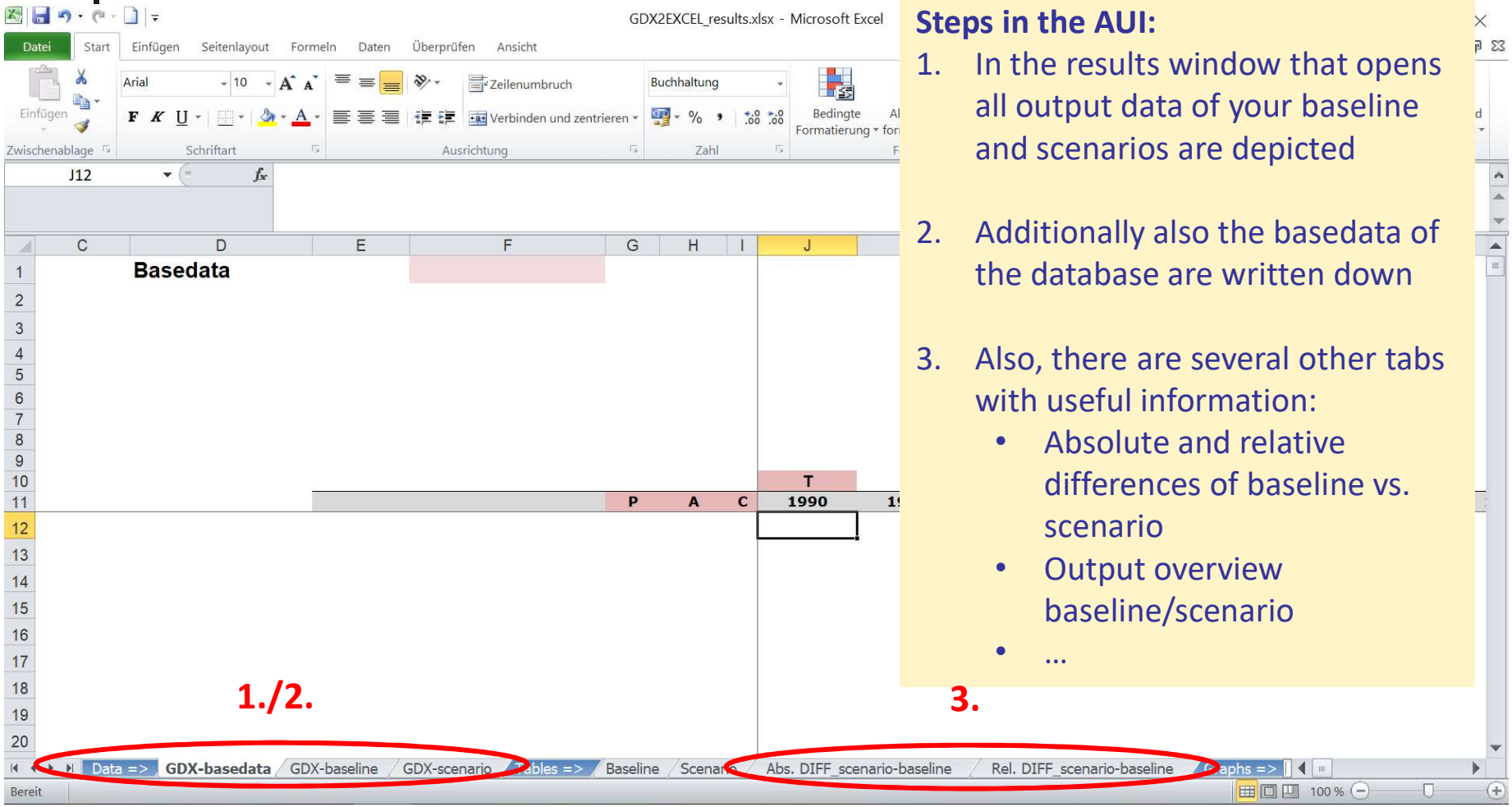
Steps in the AUI:

1. ModelSources
2. AGMEMOD Gams Model and Analyzing Tools for:
   - Baseline
   - ScenarioName (optional)
3. TI GDX2Excel Tool

AGMEMOD Gams analyzing tools



AGMEMOD Gams analyzing tools



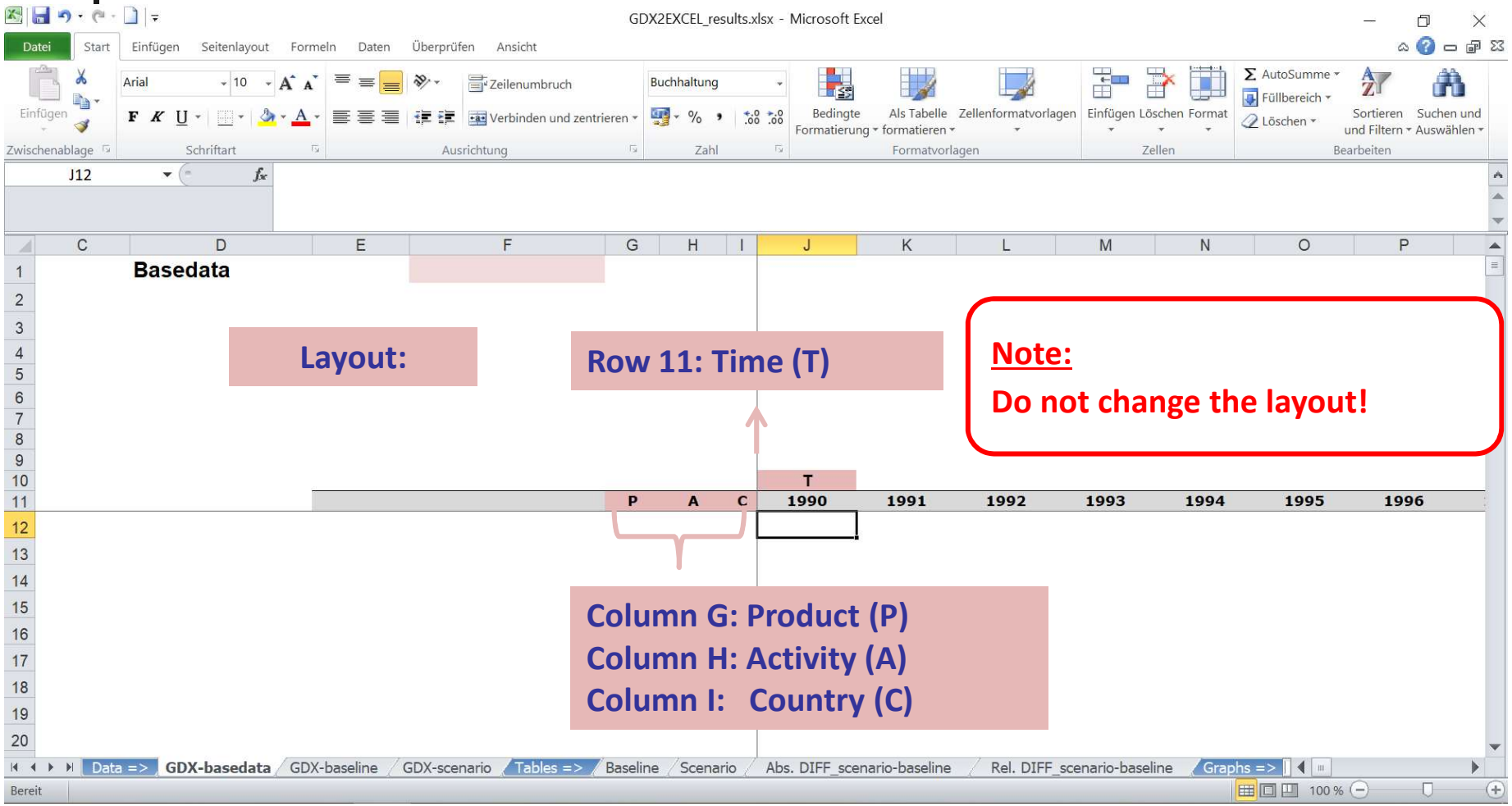
Steps in the AUI:

1. In the results window that opens all output data of your baseline and scenarios are depicted

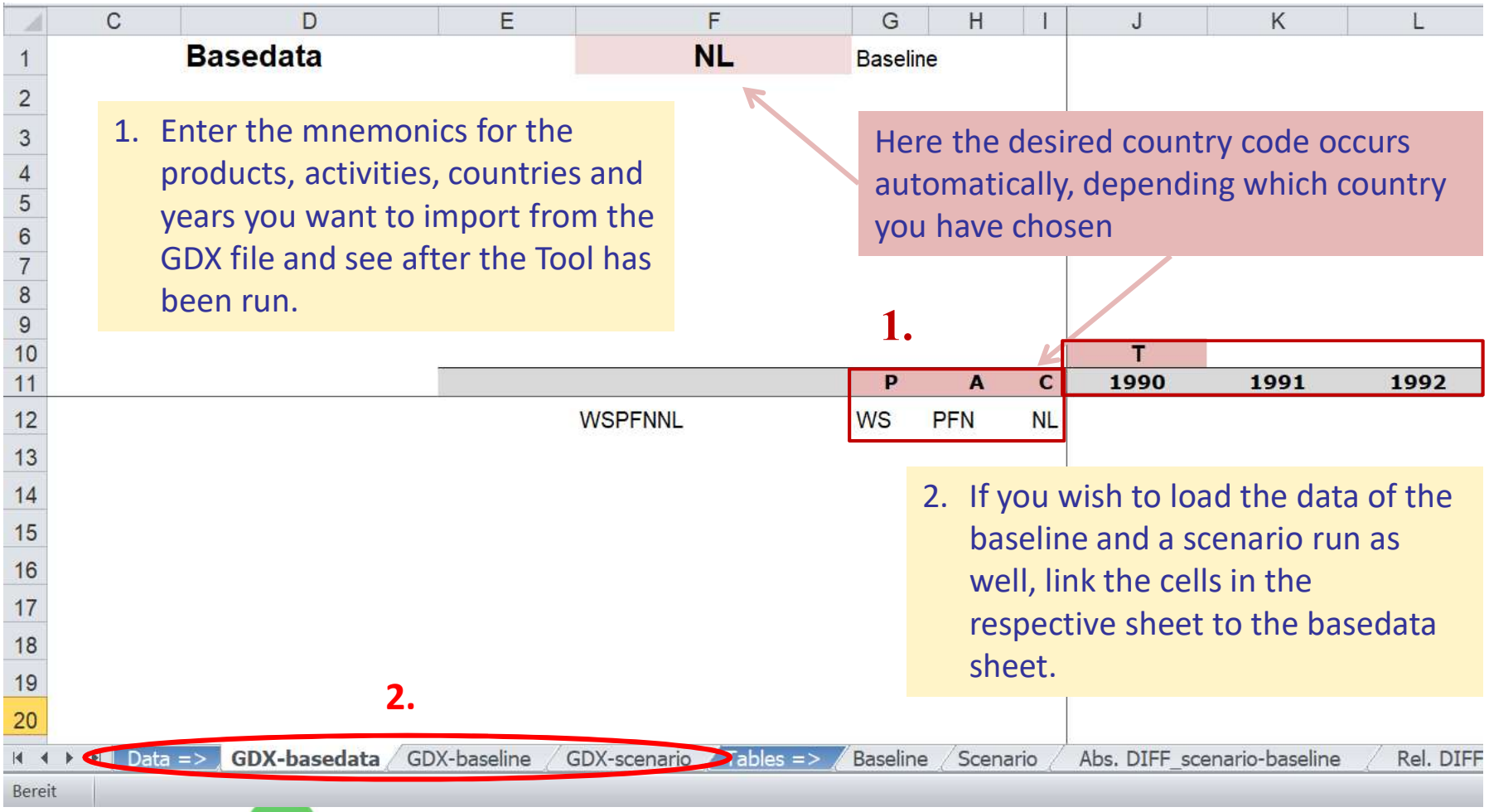
2. Additionally also the basedata of the database are written down

3. Also, there are several other tabs with useful information:
   - Absolute and relative differences of baseline vs. scenario
   - Output overview baseline/scenario
   - …

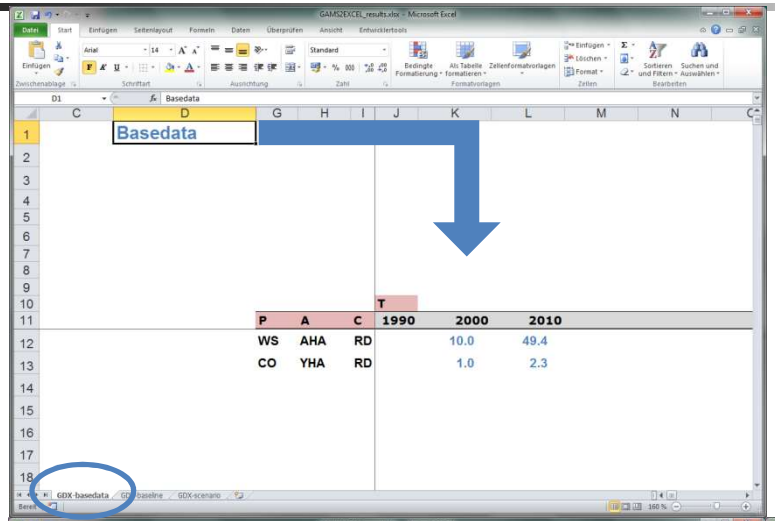
AGMEMOD Gams analyzing tools

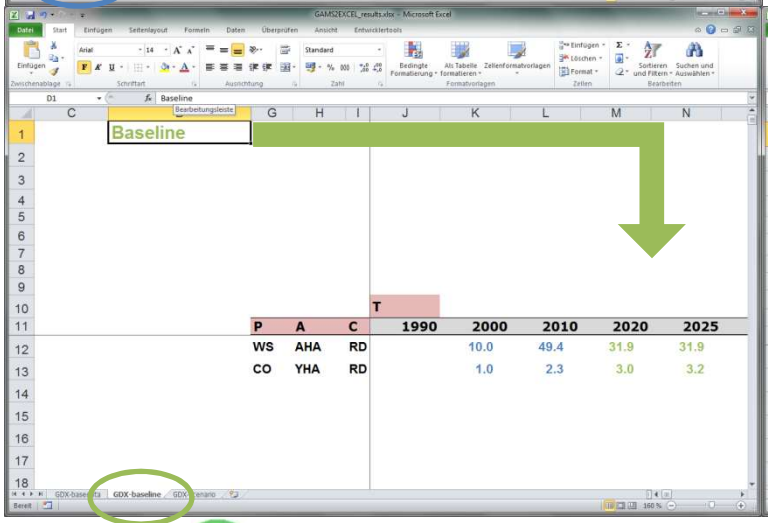


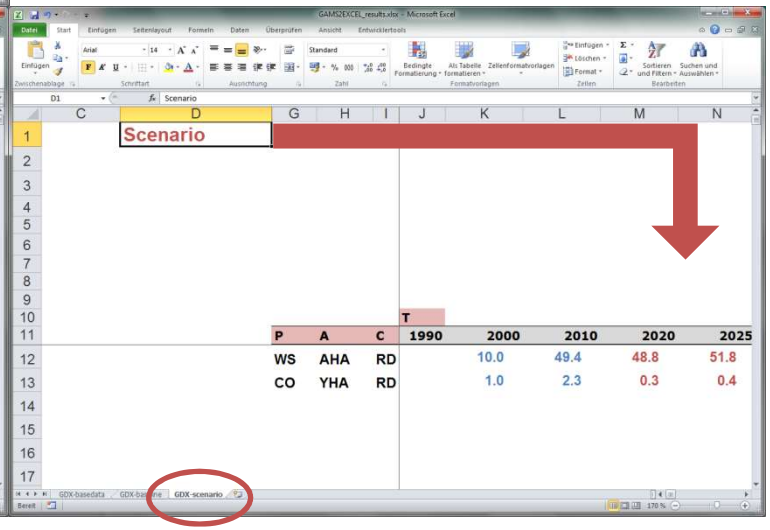
AGMEMOD Gams analyzing tools



AGMEMOD Gams analyzing tools



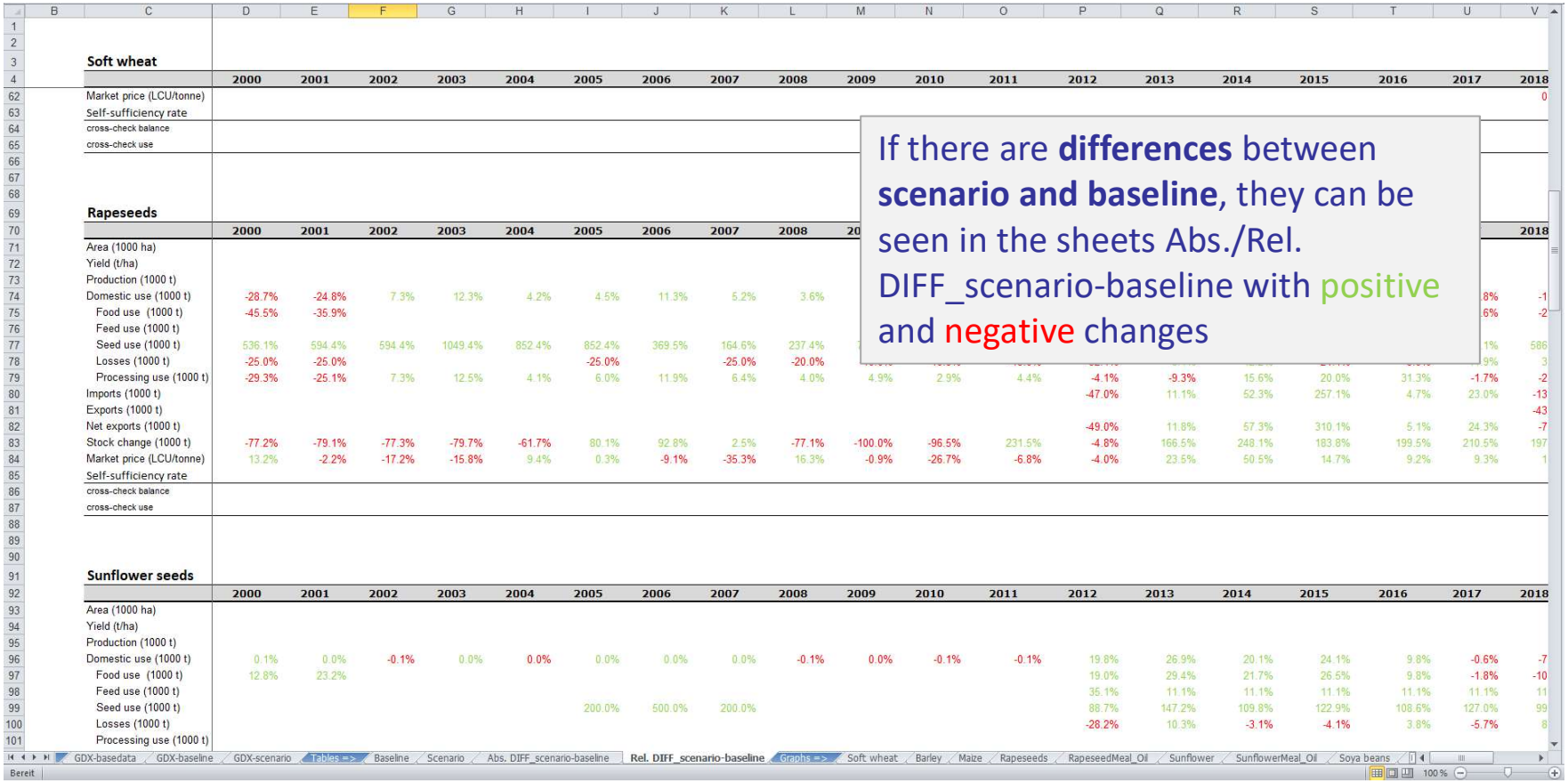




GDX2Excel Tool:

The excel file has now been updated with the **basedata**, the **baseline** results and the **scenario** results.

AGMEMOD Gams analyzing tools



Soft wheat

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Market price (LCU/tonne)																			0
Self-sufficiency rate																			
cross-check balance																			
cross-check use																			

Rapeseeds

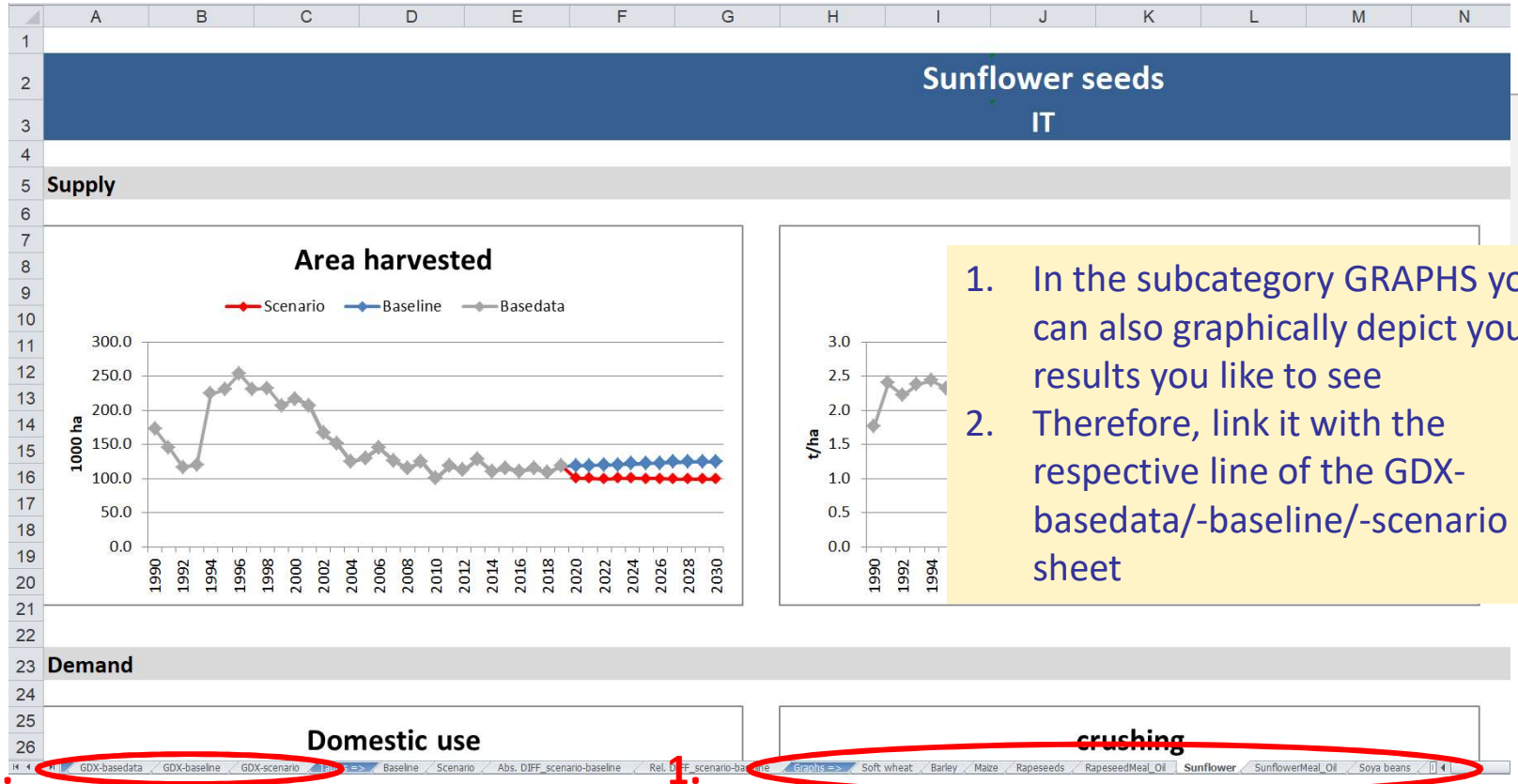
	2000	2001	2002	2003	2004	2005	2006	2007	2008	20									2018
Area (1000 ha)																			
Yield (t/ha)																			
Production (1000 t)																			
Domestic use (1000 t)	-28.7%	-24.8%	7.3%	12.3%	4.2%	4.5%	11.3%	5.2%	3.6%									8%	-1
Food use (1000 t)	-45.5%	-35.9%																6%	-2
Feed use (1000 t)																			
Seed use (1000 t)	536.1%	594.4%	594.4%	1049.4%	852.4%	852.4%	369.5%	164.6%	237.4%									1%	586
Losses (1000 t)	-25.0%	-25.0%				-25.0%		-25.0%	-20.0%									9%	3
Processing use (1000 t)	-29.3%	-25.1%	7.3%	12.5%	4.1%	6.0%	11.9%	6.4%	4.0%	4.9%	2.9%	4.4%	-4.1%	-9.3%	15.6%	20.0%	31.3%	-1.7%	-2
Imports (1000 t)													-47.0%	11.1%	52.3%	257.1%	4.7%	23.0%	-13
Exports (1000 t)																			-43
Net exports (1000 t)													-49.0%	11.8%	57.3%	310.1%	5.1%	24.3%	-7
Stock change (1000 t)	-77.2%	-79.1%	-77.3%	-79.7%	-61.7%	80.1%	92.8%	2.5%	-77.1%	-100.0%	-96.5%	231.5%	-4.8%	166.5%	248.1%	183.8%	199.5%	210.5%	197
Market price (LCU/tonne)	13.2%	-2.2%	-17.2%	-15.8%	9.4%	0.3%	-9.1%	-35.3%	16.3%	-0.9%	-26.7%	-6.8%	-4.0%	23.5%	50.5%	14.7%	9.2%	9.3%	1
Self-sufficiency rate																			
cross-check balance																			
cross-check use																			

Sunflower seeds

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Area (1000 ha)																			
Yield (t/ha)																			
Production (1000 t)																			
Domestic use (1000 t)	0.1%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	-0.1%	19.8%	26.9%	20.1%	24.1%	9.8%	-0.6%	-7
Food use (1000 t)	12.8%	23.2%											19.0%	29.4%	21.7%	26.5%	9.8%	-1.8%	-10
Feed use (1000 t)													35.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11
Seed use (1000 t)						200.0%	500.0%	200.0%					88.7%	147.2%	109.8%	122.9%	108.6%	127.0%	99
Losses (1000 t)													-28.2%	10.3%	-3.1%	-4.1%	3.8%	-5.7%	8
Processing use (1000 t)																			

If there are **differences** between **scenario and baseline**, they can be seen in the sheets Abs./Rel. DIFF_scenario-baseline with positive and negative changes

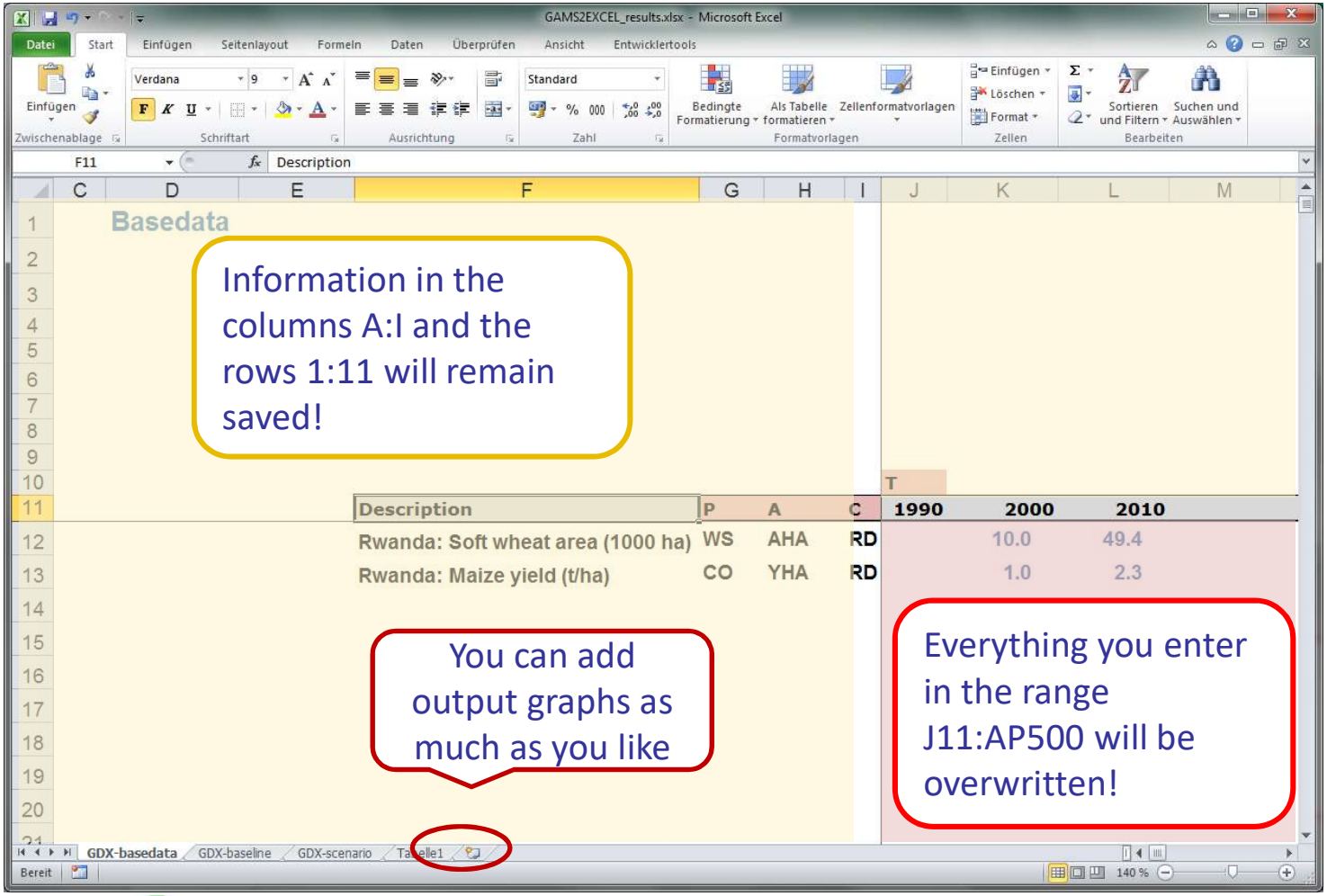
AGMEMOD Gams analyzing tools



1. In the subcategory GRAPHS you can also graphically depict your results you like to see
2. Therefore, link it with the respective line of the GDX-basedata/-baseline/-scenario sheet

1. 2.

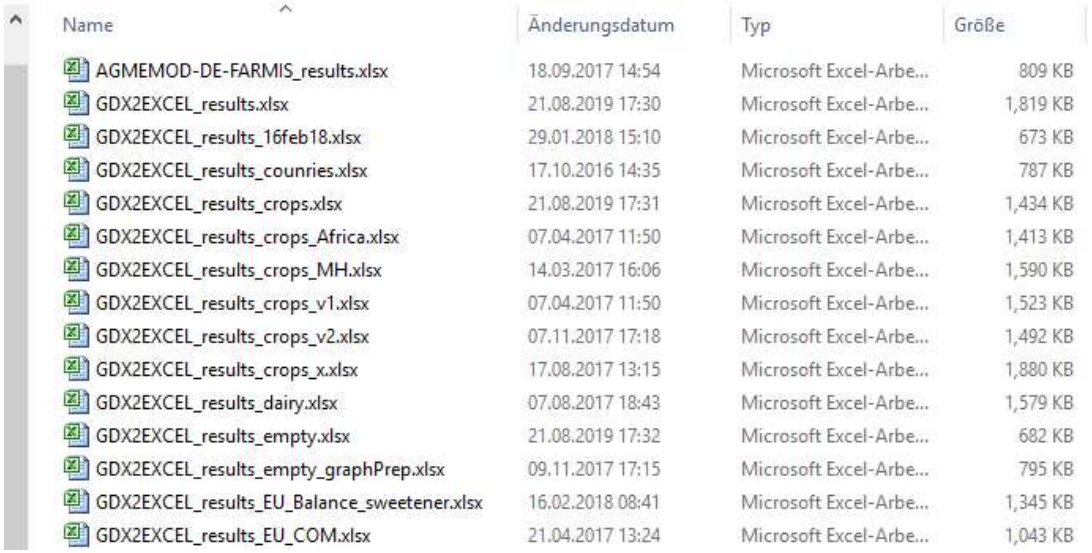
AGMEMOD Gams analyzing tools



AGMEMOD Gams analyzing tools

- There already exist a lot of output tables which are available and adjustable under:

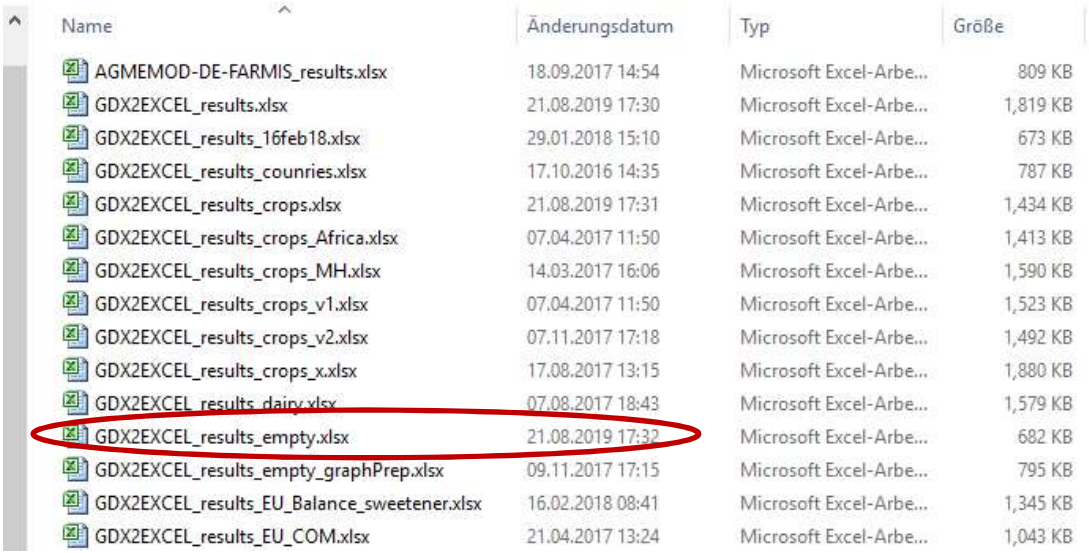
...\MODEL\XX_GRAPH\GDX2Excel_Output



Name	Änderungsdatum	Typ	Größe
AGMEMOD-DE-FARMIS_results.xlsx	18.09.2017 14:54	Microsoft Excel-Arbe...	809 KB
GDX2EXCEL_results.xlsx	21.08.2019 17:30	Microsoft Excel-Arbe...	1,819 KB
GDX2EXCEL_results_16feb18.xlsx	29.01.2018 15:10	Microsoft Excel-Arbe...	673 KB
GDX2EXCEL_results_counries.xlsx	17.10.2016 14:35	Microsoft Excel-Arbe...	787 KB
GDX2EXCEL_results_crops.xlsx	21.08.2019 17:31	Microsoft Excel-Arbe...	1,434 KB
GDX2EXCEL_results_crops_Africa.xlsx	07.04.2017 11:50	Microsoft Excel-Arbe...	1,413 KB
GDX2EXCEL_results_crops_MH.xlsx	14.03.2017 16:06	Microsoft Excel-Arbe...	1,590 KB
GDX2EXCEL_results_crops_v1.xlsx	07.04.2017 11:50	Microsoft Excel-Arbe...	1,523 KB
GDX2EXCEL_results_crops_v2.xlsx	07.11.2017 17:18	Microsoft Excel-Arbe...	1,492 KB
GDX2EXCEL_results_crops_x.xlsx	17.08.2017 13:15	Microsoft Excel-Arbe...	1,880 KB
GDX2EXCEL_results_dairy.xlsx	07.08.2017 18:43	Microsoft Excel-Arbe...	1,579 KB
GDX2EXCEL_results_empty.xlsx	21.08.2019 17:32	Microsoft Excel-Arbe...	682 KB
GDX2EXCEL_results_empty_graphPrep.xlsx	09.11.2017 17:15	Microsoft Excel-Arbe...	795 KB
GDX2EXCEL_results_EU_Balance_sweetener.xlsx	16.02.2018 08:41	Microsoft Excel-Arbe...	1,345 KB
GDX2EXCEL_results_EU_COM.xlsx	21.04.2017 13:24	Microsoft Excel-Arbe...	1,043 KB

AGMEMOD Gams analyzing tools

- To create your own output file use the file "GDX2Excel_results_empty"



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GDX2EXCEL_results_counries.xlsx	17.10.2016 14:35	Microsoft Excel-Arbe...	787 KB
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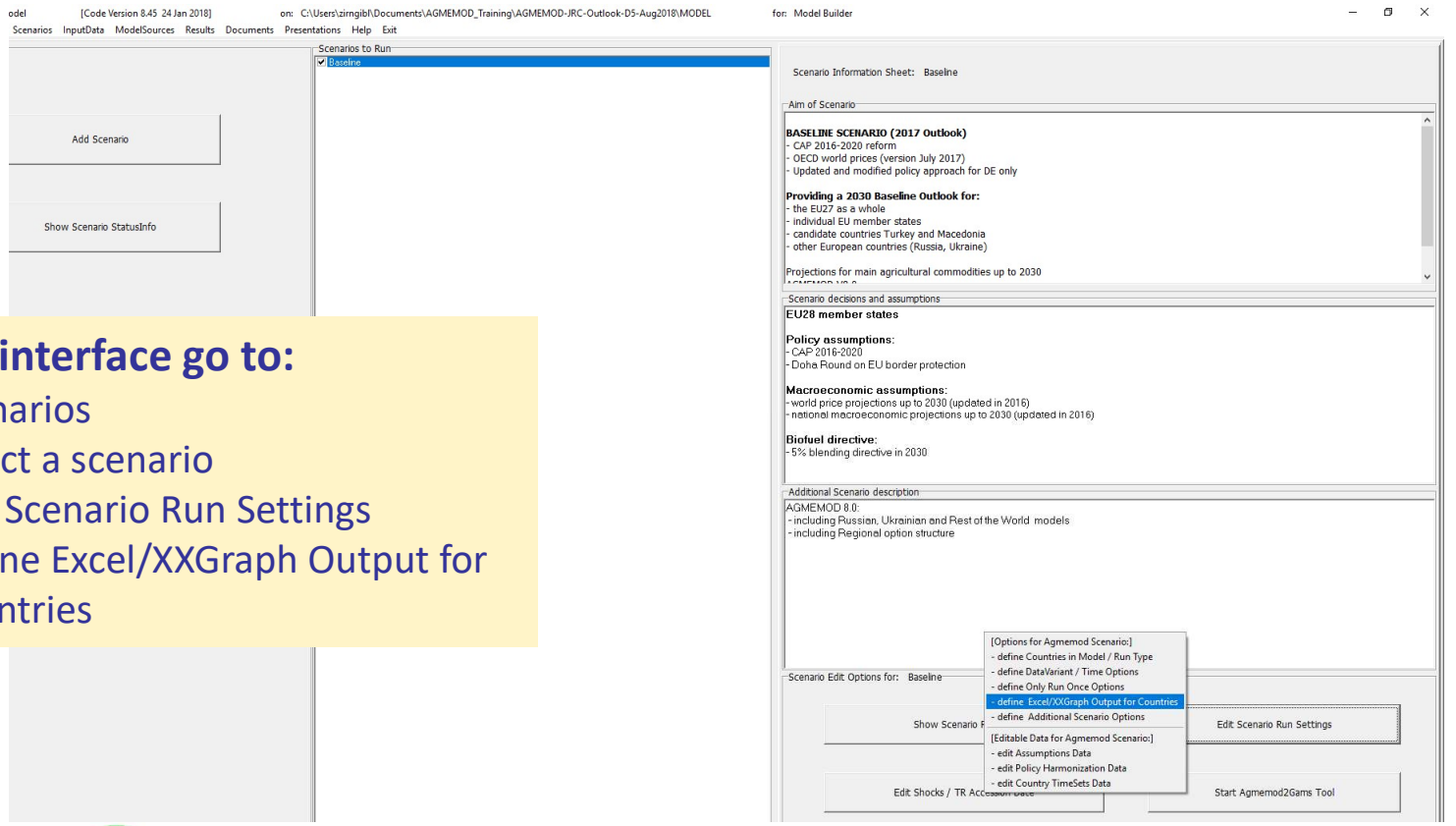
GDX2EXCEL_results_EU_COM.xlsx	21.04.2017 13:24	Microsoft Excel-Arbe...	1,043 KB

AGMEMOD Gams analyzing tools

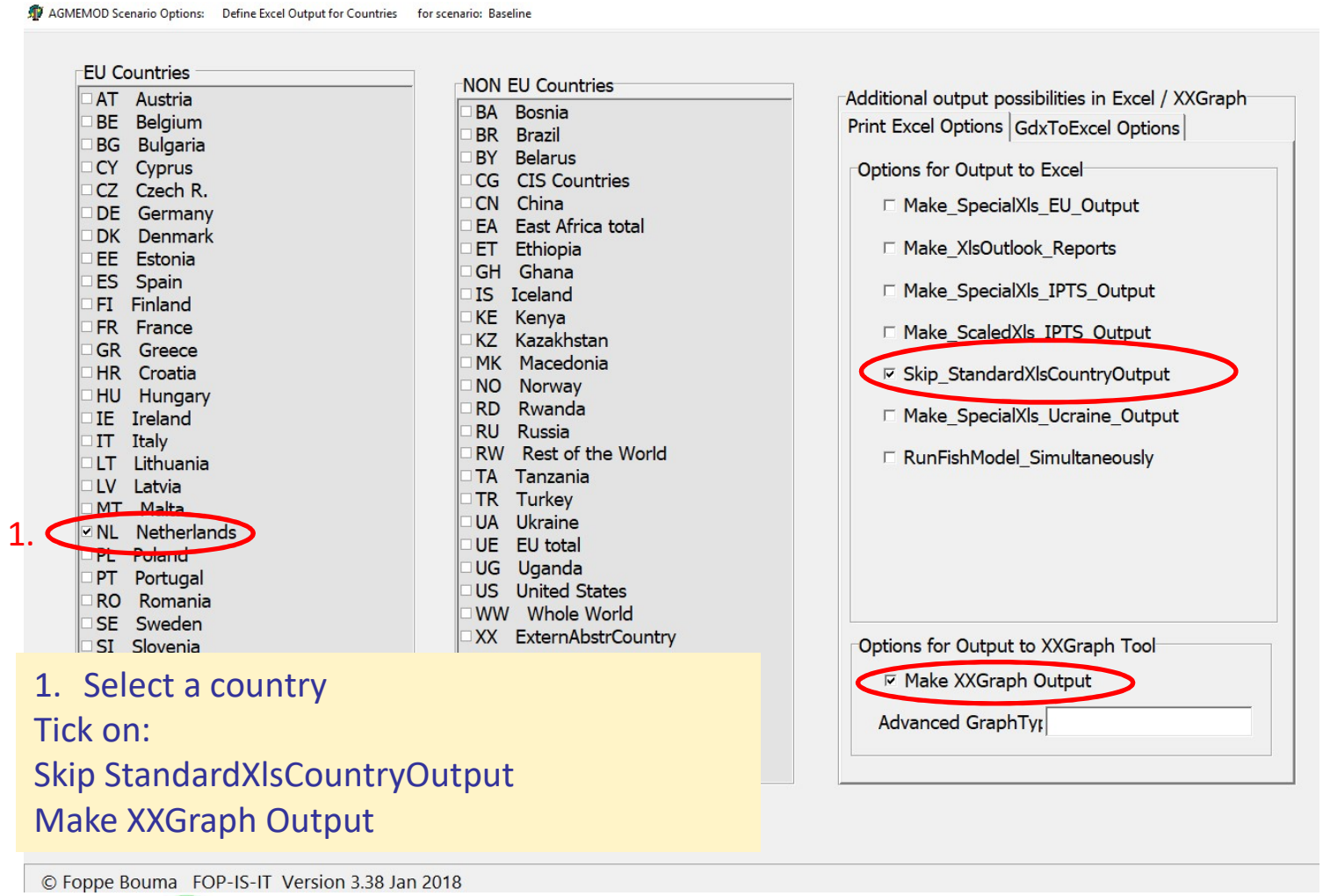
- To choose which country and which table you want to automatically open after running the tool:



In the interface go to:

1. Scenarios
2. Select a scenario
3. Edit Scenario Run Settings
4. Define Excel/XXGraph Output for Countries

AGMEMOD Gams analyzing tools



1.

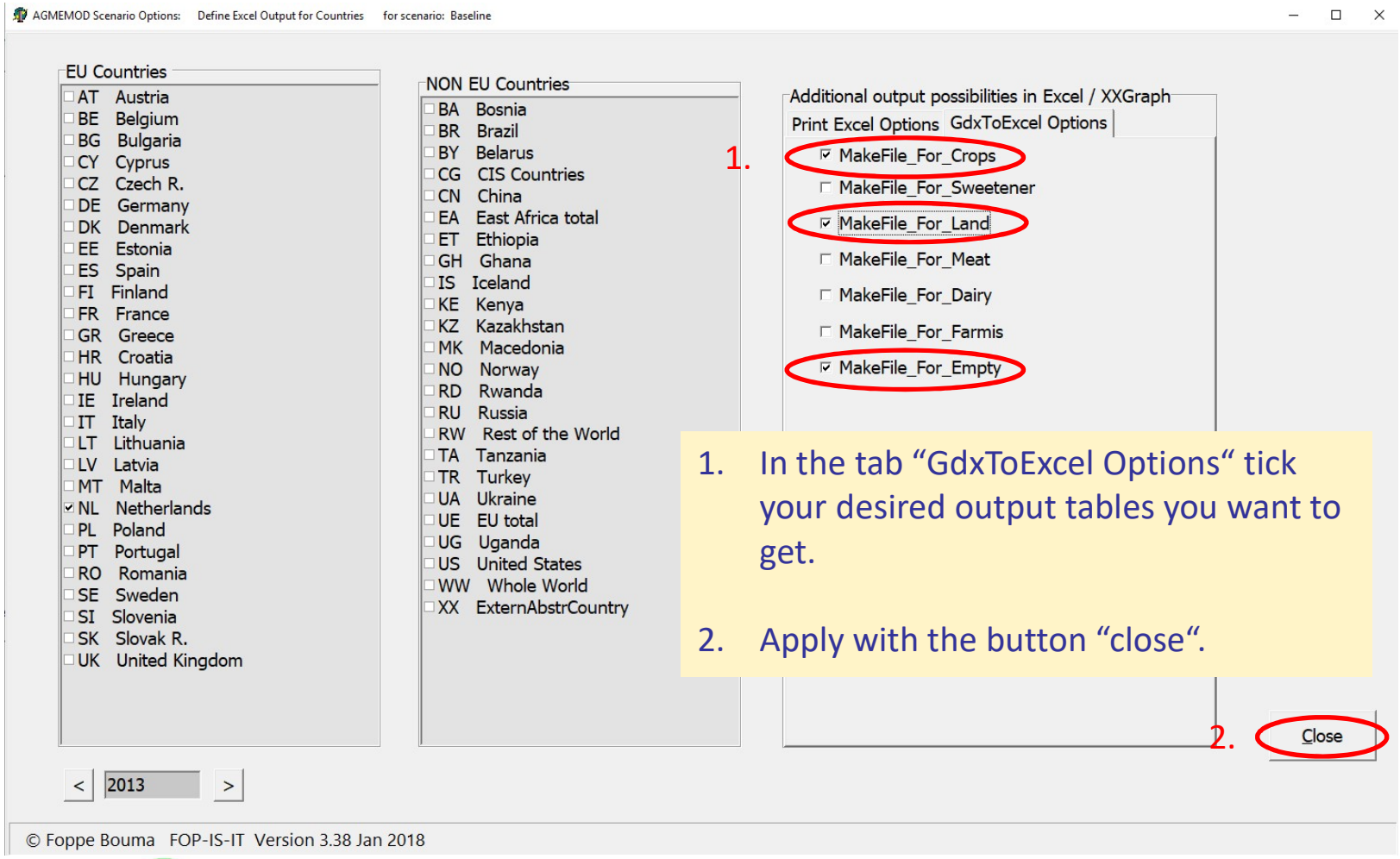
1. Select a country

Tick on:

Skip StandardXlsCountryOutput

Make XXGraph Output

AGMEMOD Gams analyzing tools



AGMEMOD Gams analyzing tools

- "TI GDX2Excel Tool" (4):
  - **Advantages:**
    - Easy to use and personalize
    - Detailed graphic output
    - High information content
  - **Disadvantages:**
    - You always need to re-run the tool to get new results if you add new products in the output tables -> time consuming

Which tool to use?

- In the end it is **up to you** which tool you use
- **Depending on your needs** you can also **combine** the **tools**

Updating model equations and GAMS code

Equations in GAMS

Equations can be estimated in AGMEMOD with R

- Data updates
- Equation improvements
- Estimation with graph display
- Equation transfer into excel

Improvement of equations:

- Look into other countries to get "inspired"
- Think of the economic relationship of the desired product

Equations in GAMS

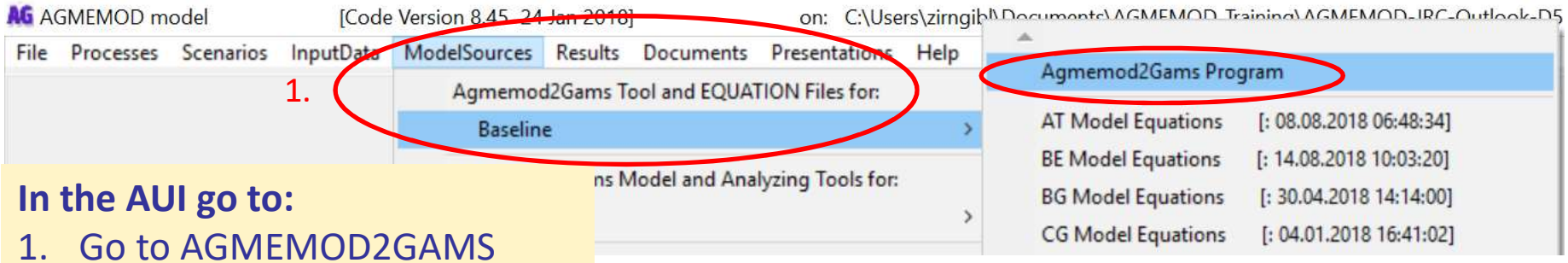
- Agmemod2Gams tool:
  - transfers equations from CC_ModelEquations.xlsm (and CC-Eviews.wf1) into GAMS code
  - applies consistency tests on data use and data availability
  - applies consistency tests on use of mnemonics
    - one-to-one relation between number of variables in CC-Datagmemod.xlsx and the CC_ModelEquations.xlsm files
- Equations_CC.gms file:
  - contains uniform GAMS code across countries
  - harmonized time index

Equations in GAMS

- To adjust equations in the model, it is not necessary for you to adjust the equations in the GAMS code

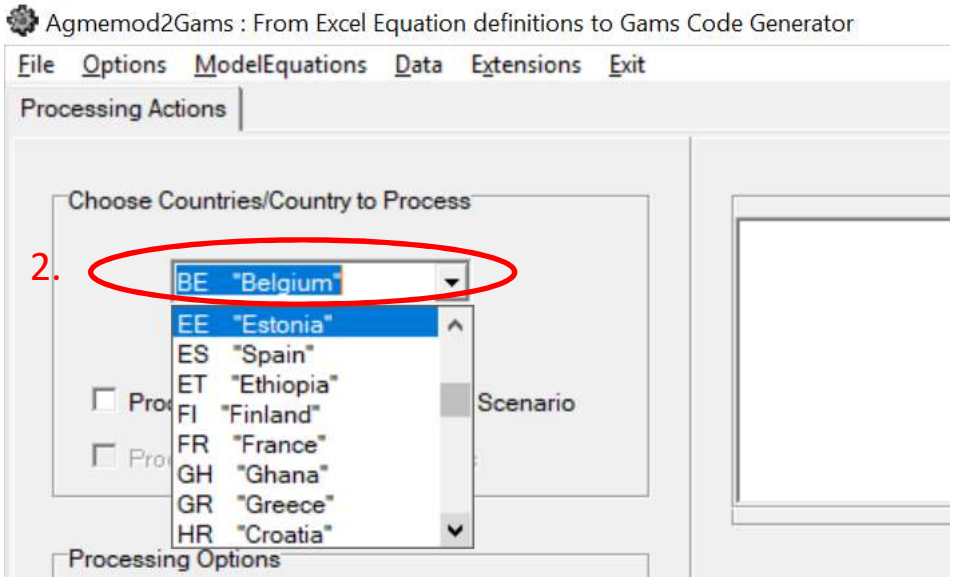
- Re-estimation in R with the AGMEMOD2GAMS program is sufficient
  - AGMEMOD2GAMS program writes them into GAMS code

The A2G tool and R



In the AUI go to:

1. Go to AGMEMOD2GAMS through the scenario you want to do re-estimations, here: Baseline



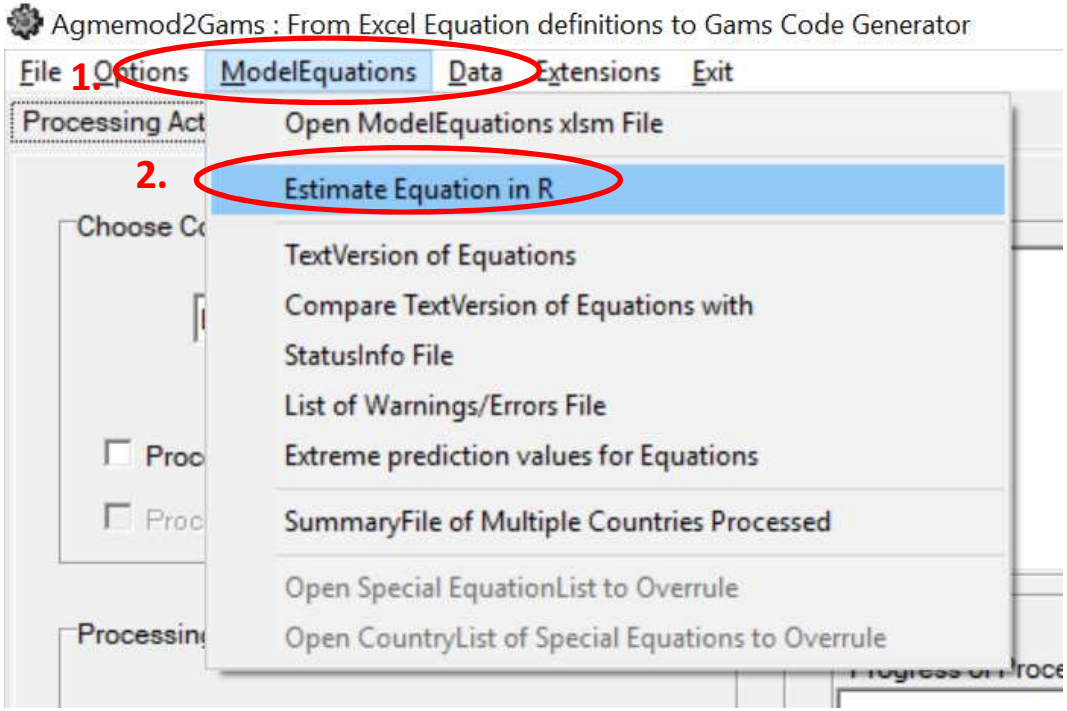
In the A2G tool go to:

2. In AGMEMOD2GAMS: Click on ModelEquations and select your country

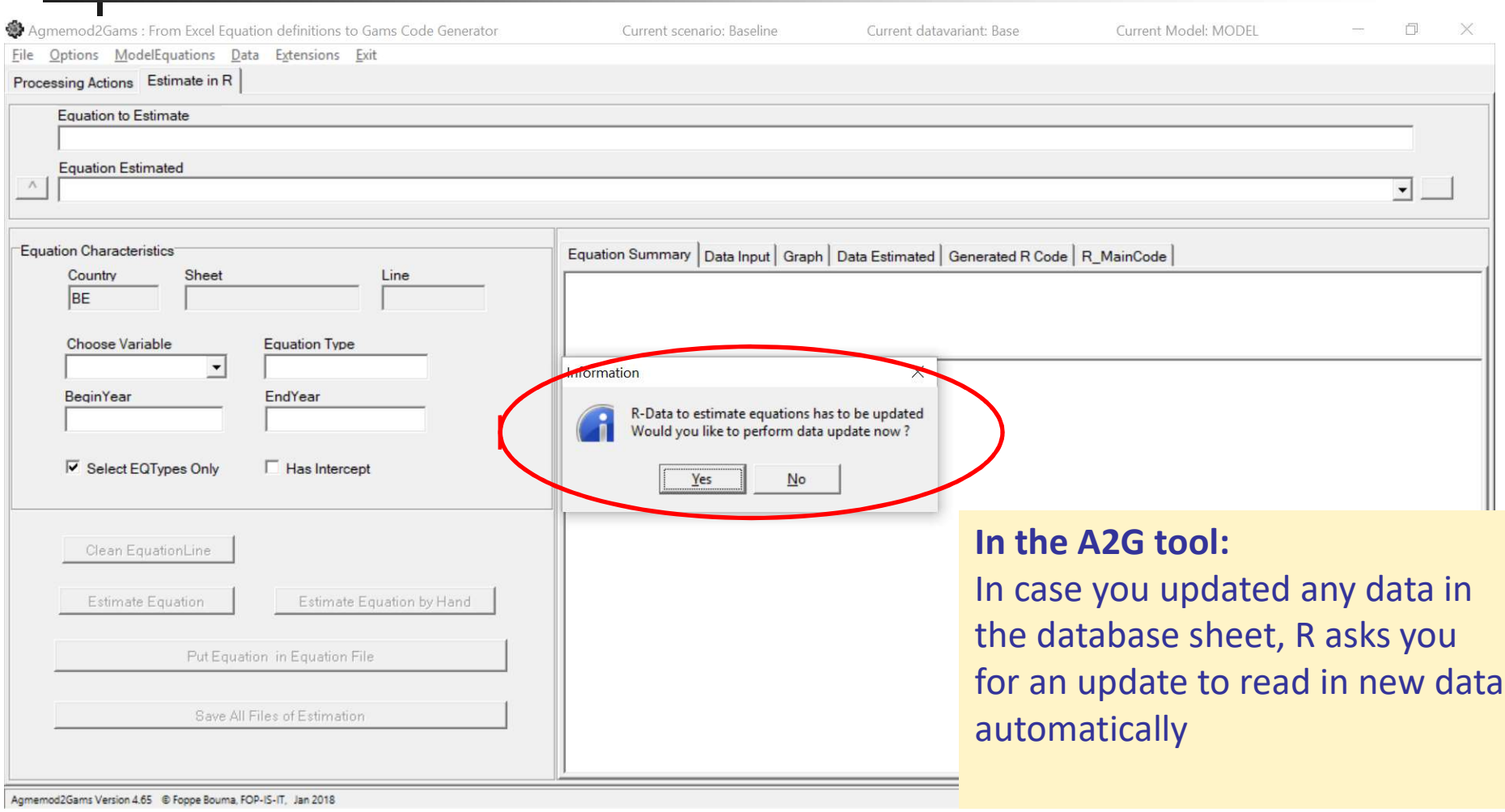
The A2G tool and R

In the A2G tool go to:

1. *ModelEquations*
2. *Estimate Equation in R* to open the estimation dialog in R



R data update



In the A2G tool:

In case you updated any data in the database sheet, R asks you for an update to read in new data automatically

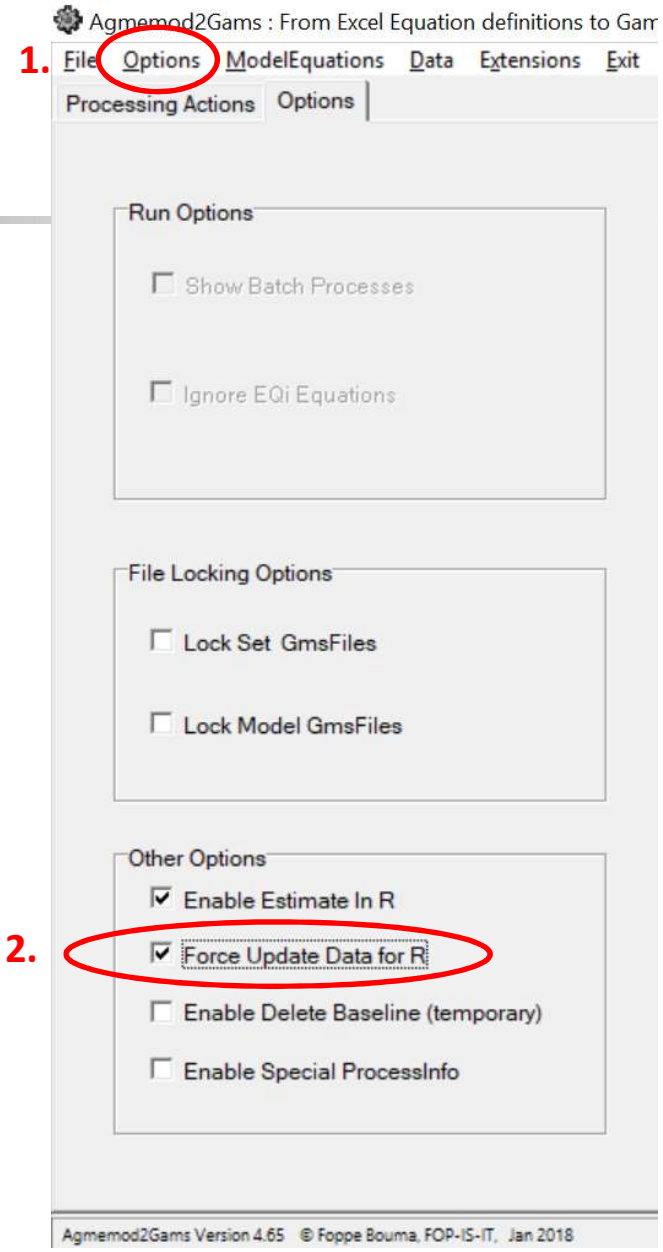
R data update

- However, you can also force R to update itself with the new data of the database

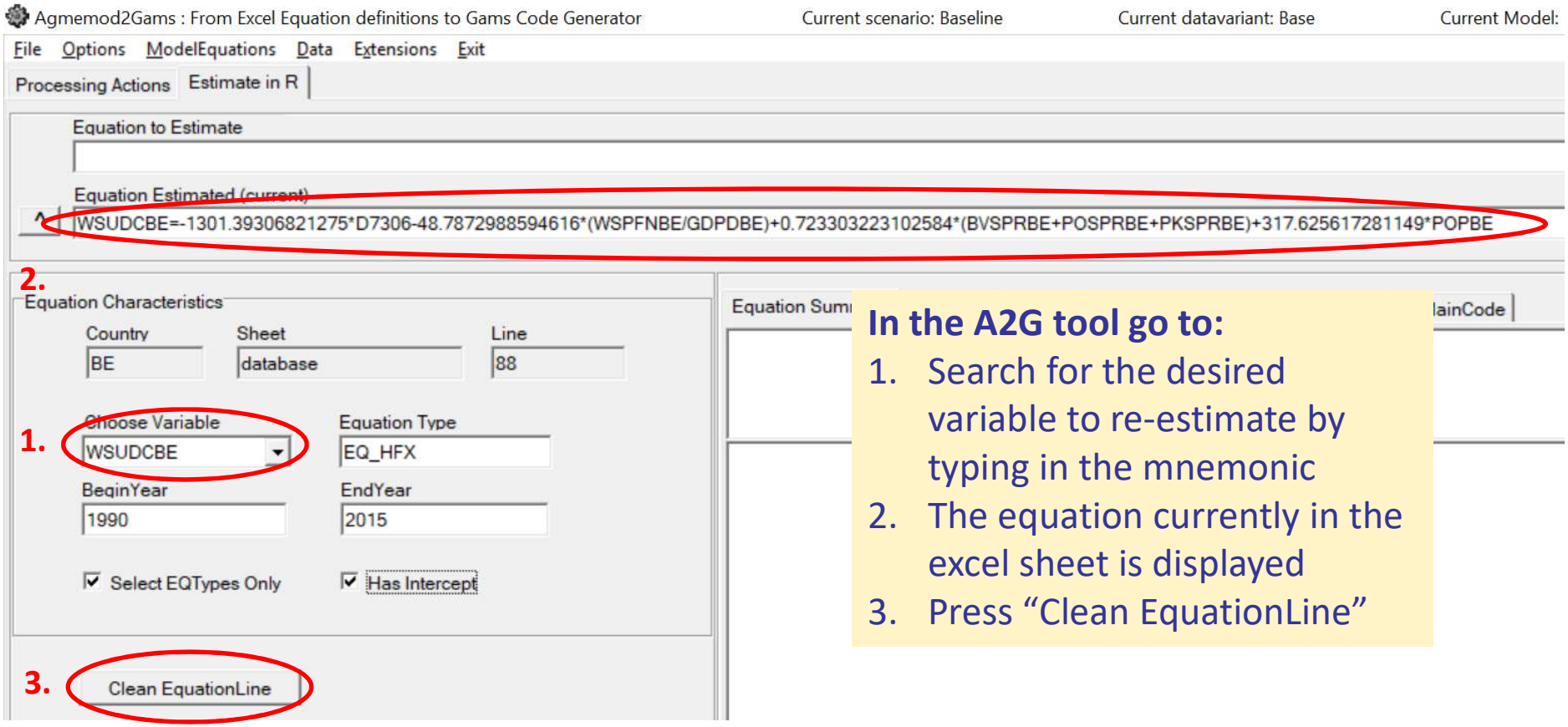
In the A2G tool go to:

1. *Options*
2. Tick on *Force Update Data for R*

- After opening R again, a window pops up and data will be updated



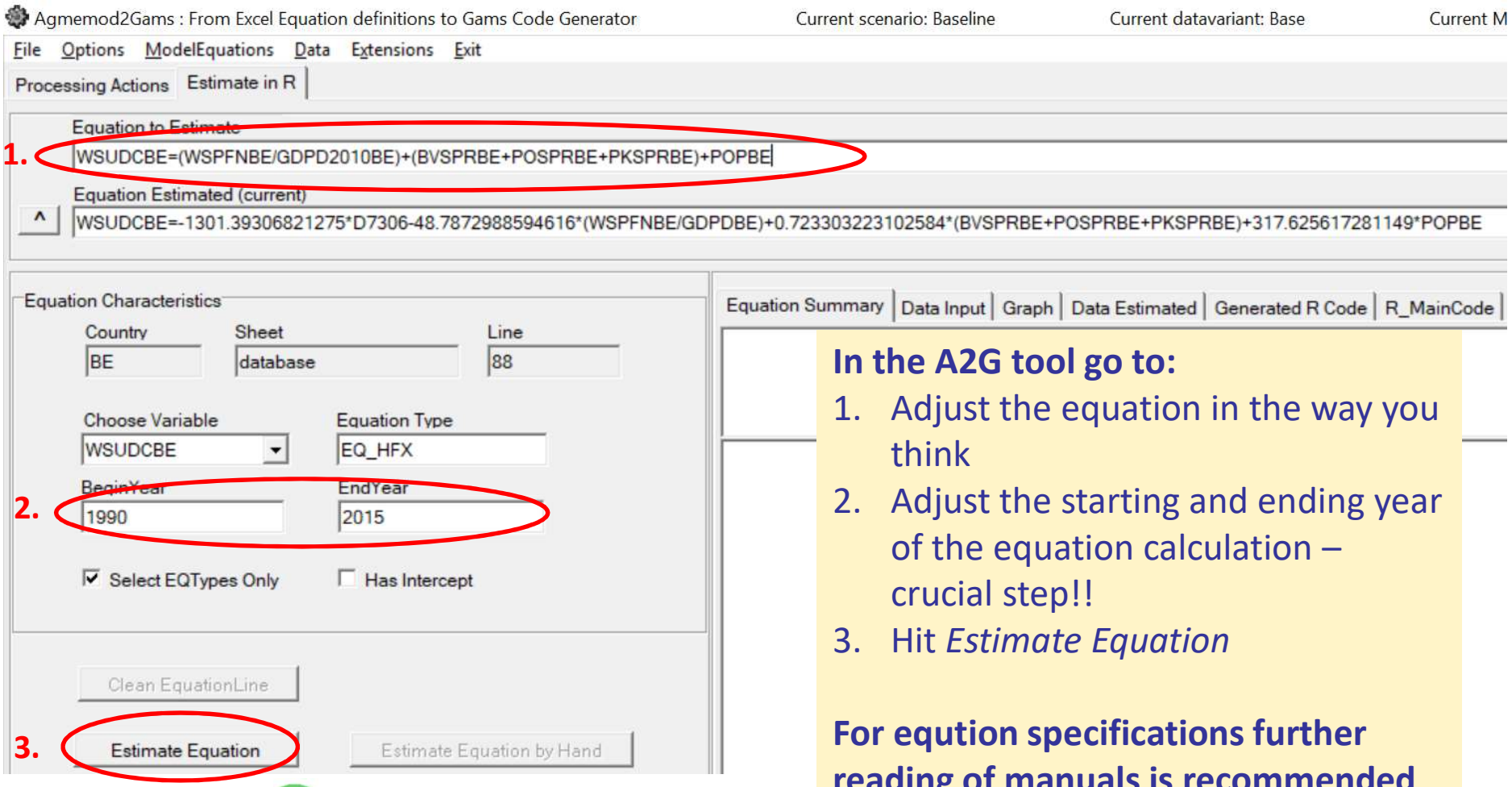
Re-estimation and adjustment of equations



In the A2G tool go to:

1. Search for the desired variable to re-estimate by typing in the mnemonic
2. The equation currently in the excel sheet is displayed
3. Press “Clean EquationLine”

Re-estimation and adjustment of equations



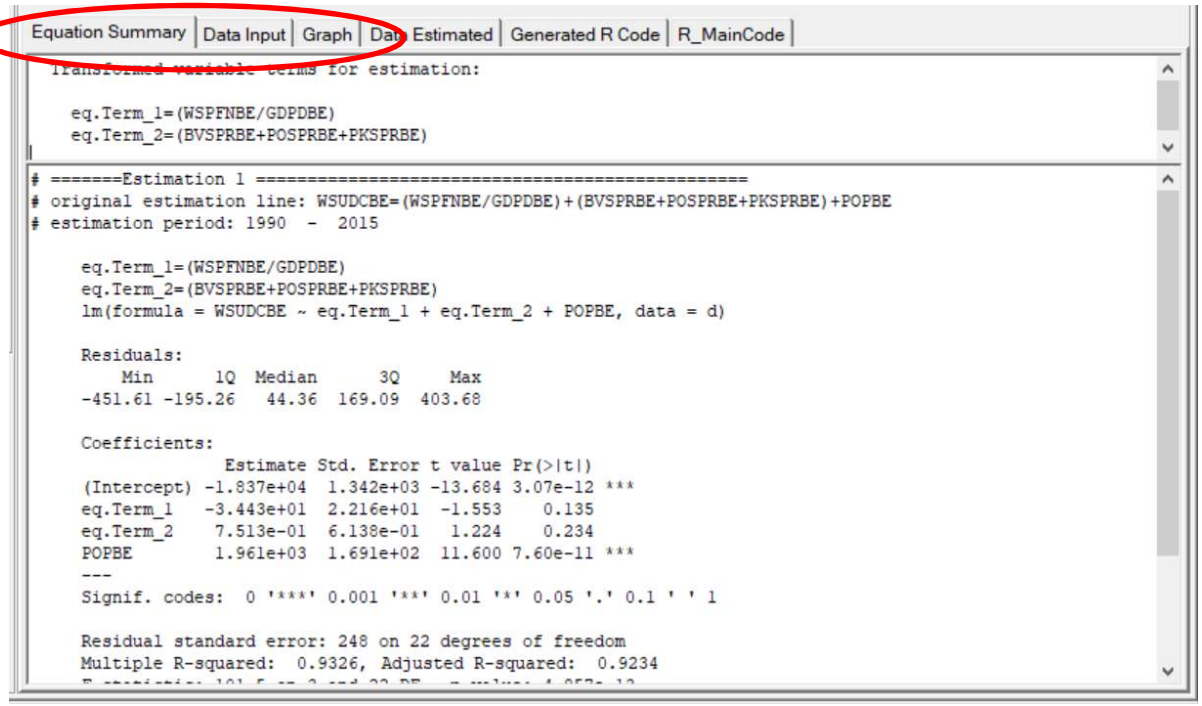
In the A2G tool go to:

1. Adjust the equation in the way you think
2. Adjust the starting and ending year of the equation calculation – crucial step!!
3. Hit *Estimate Equation*

For eqution specifications further reading of manuals is recommended

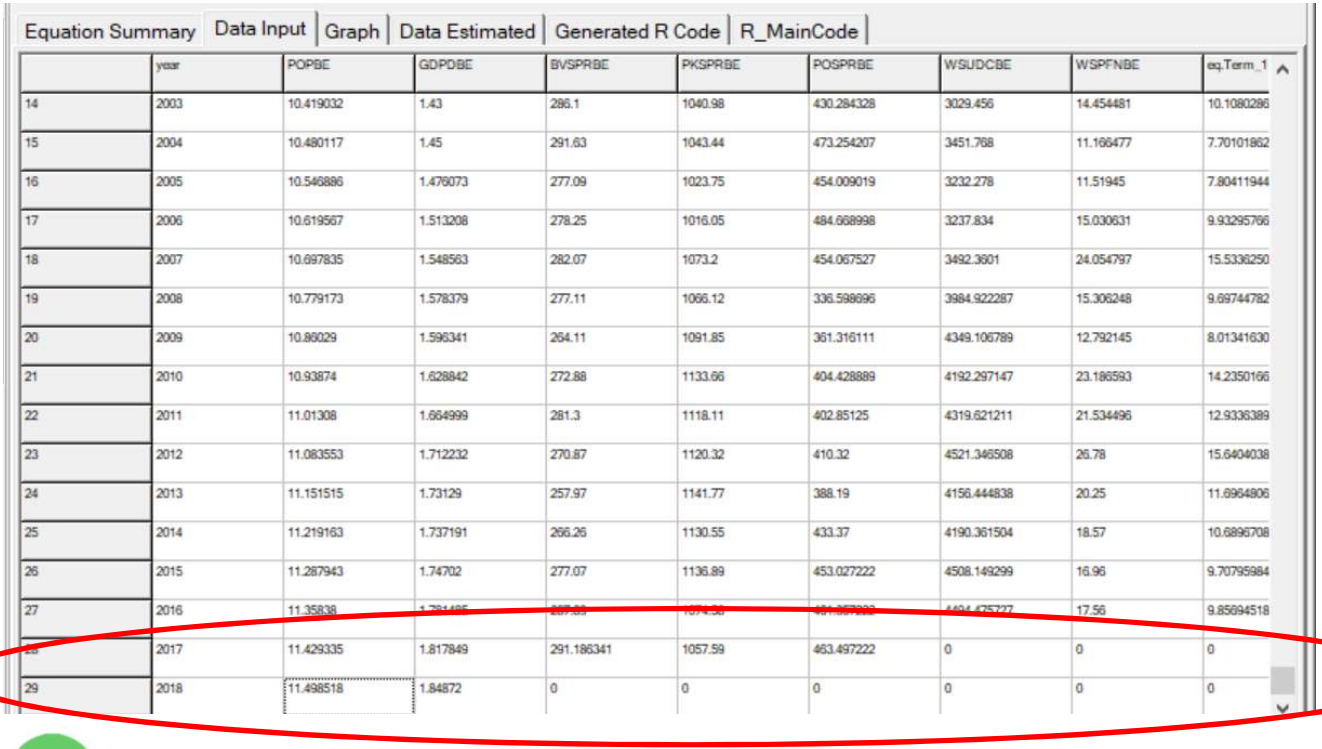
Equation update: estimation

- When your estimation is done always take a look at:
  - Equation summary tab



Equation update: estimation

- When your estimation is done always take a look at:
  - Equation summary tab
  - Data Input tab -> avoid zeros here

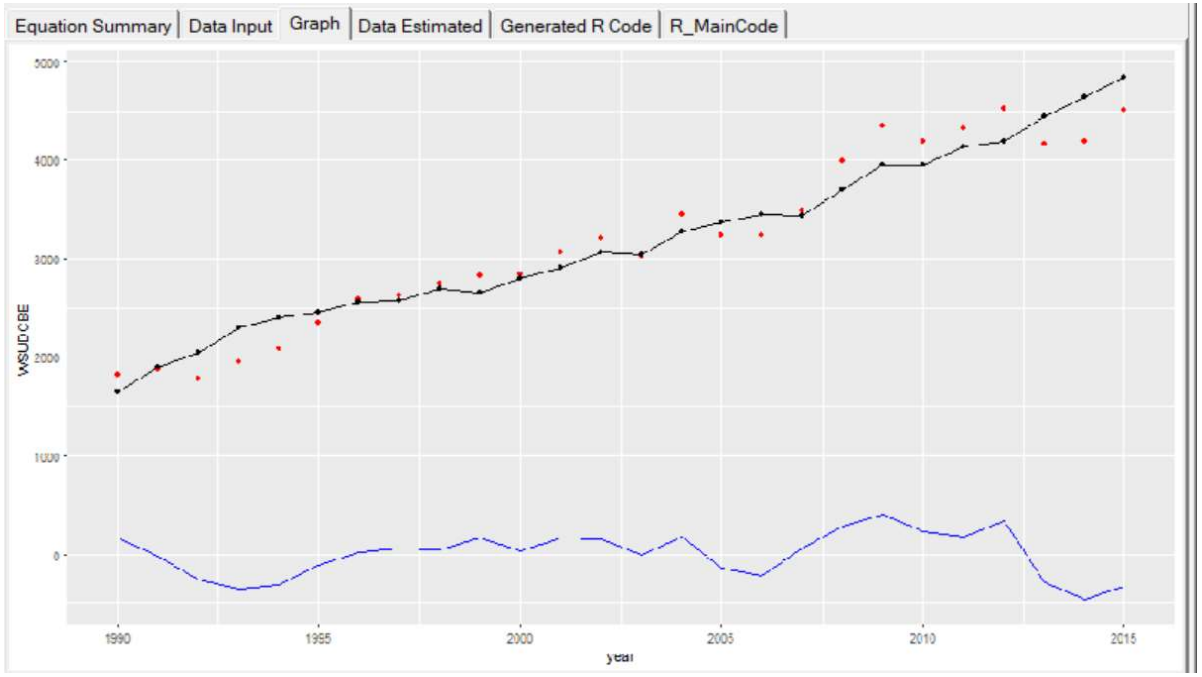


Equation Summary | Data Input | Graph | Data Estimated | Generated R Code | R_MainCode

	year	POPBE	GDPDBE	BVSPRBE	PKSPRBE	POSPRBE	WSUDCBE	WSPFNBE	eq.Term_1
14	2003	10.419032	1.43	286.1	1040.98	430.284328	3029.456	14.454481	10.1080286
15	2004	10.480117	1.45	291.63	1043.44	473.254207	3451.768	11.166477	7.70101862
16	2005	10.546886	1.476073	277.09	1023.75	454.009019	3232.278	11.51945	7.80411944
17	2006	10.619567	1.513208	278.25	1016.05	484.668998	3237.834	15.030631	9.93295766
18	2007	10.697835	1.548563	282.07	1073.2	454.067527	3492.3601	24.054797	15.5336250
19	2008	10.779173	1.578379	277.11	1066.12	336.598696	3984.922287	15.306248	9.69744782
20	2009	10.86029	1.596341	264.11	1091.85	361.316111	4349.106789	12.792145	8.01341630
21	2010	10.93874	1.628842	272.88	1133.66	404.428889	4192.297147	23.186593	14.2350166
22	2011	11.01308	1.664999	281.3	1118.11	402.85125	4319.621211	21.534496	12.9336389
23	2012	11.083553	1.712232	270.87	1120.32	410.32	4521.346508	26.78	15.6404038
24	2013	11.151515	1.73129	257.97	1141.77	388.19	4156.444838	20.25	11.6964806
25	2014	11.219163	1.737191	266.26	1130.55	433.37	4190.361504	18.57	10.6896708
26	2015	11.287943	1.74702	277.07	1136.89	453.027222	4508.149299	16.96	9.70795984
27	2016	11.35838	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17.56	9.85694518
[illegible]	2017	11.429335	1.817849	291.186341	1057.59	463.497222	0	0	0
29	2018	11.498518	1.84872	0	0	0	0	0	0

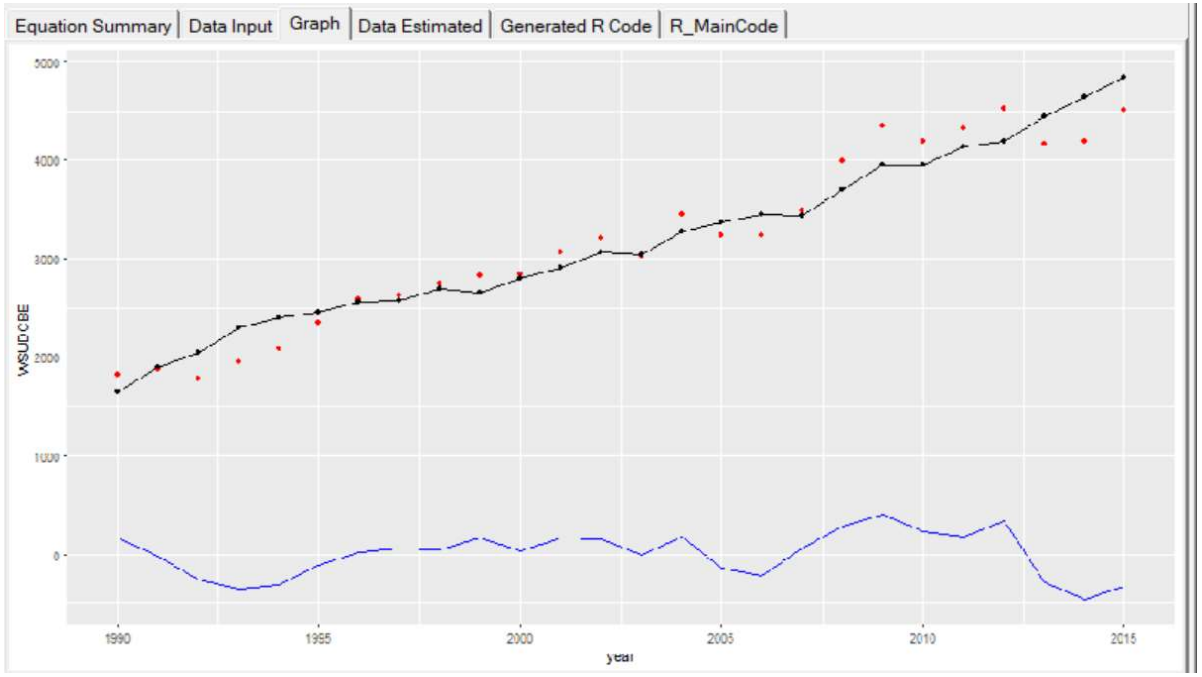
Equation update: estimation

- When your estimation is done always take a look at:
  - Equation summary tab
  - Data Input tab -> avoid zeros here
  - Graph tab



Equation update: estimation

- When your estimation is done always take a look at:
  - Equation summary tab
  - Data Input tab -> avoid zeros here
  - Graph tab

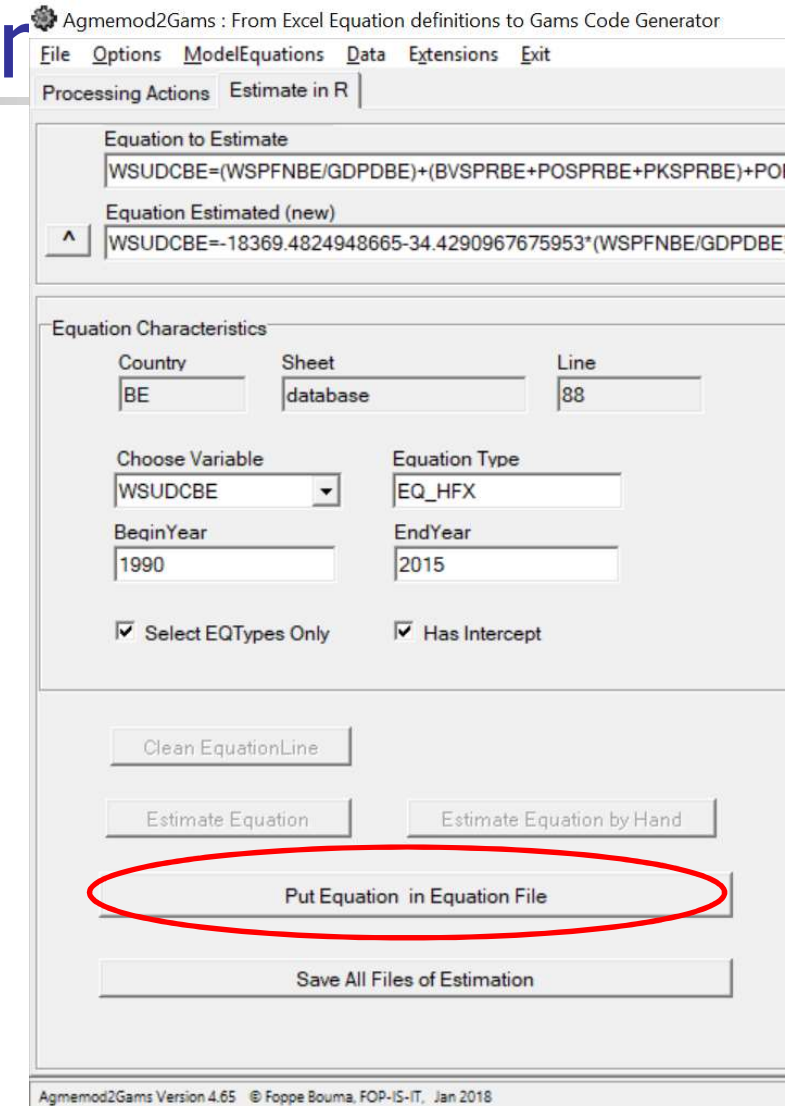


Equation update: estir

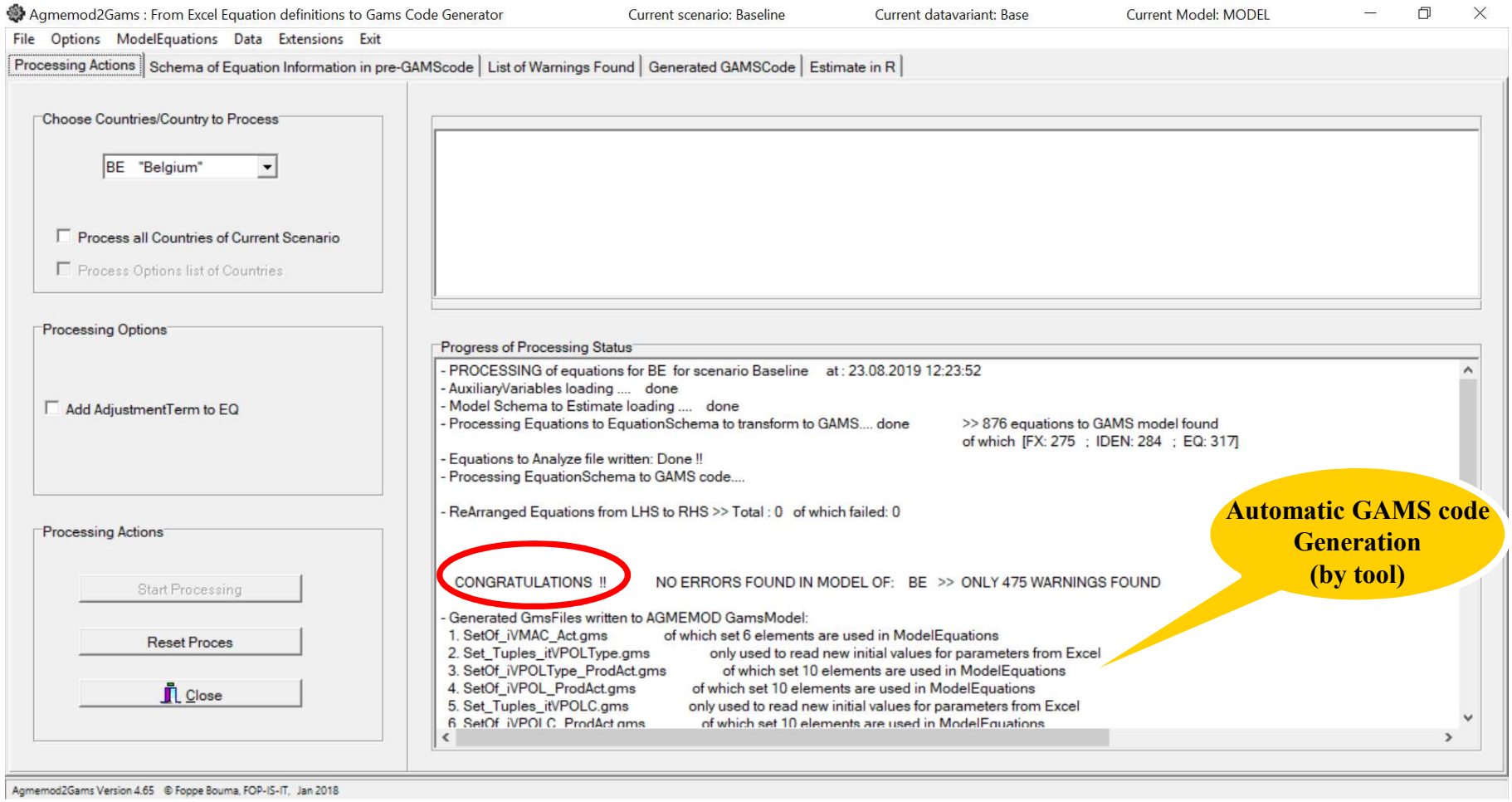
- When you are done with estimating:
  - Put the re-estimated equation to the CC_ModelEquations_scenario.xlsm excel file:

1. **by hand**

2. **by the A2G** tool (don´t keep the old equation file when youre asked)



Processing of new equation file



Processing of new equation file

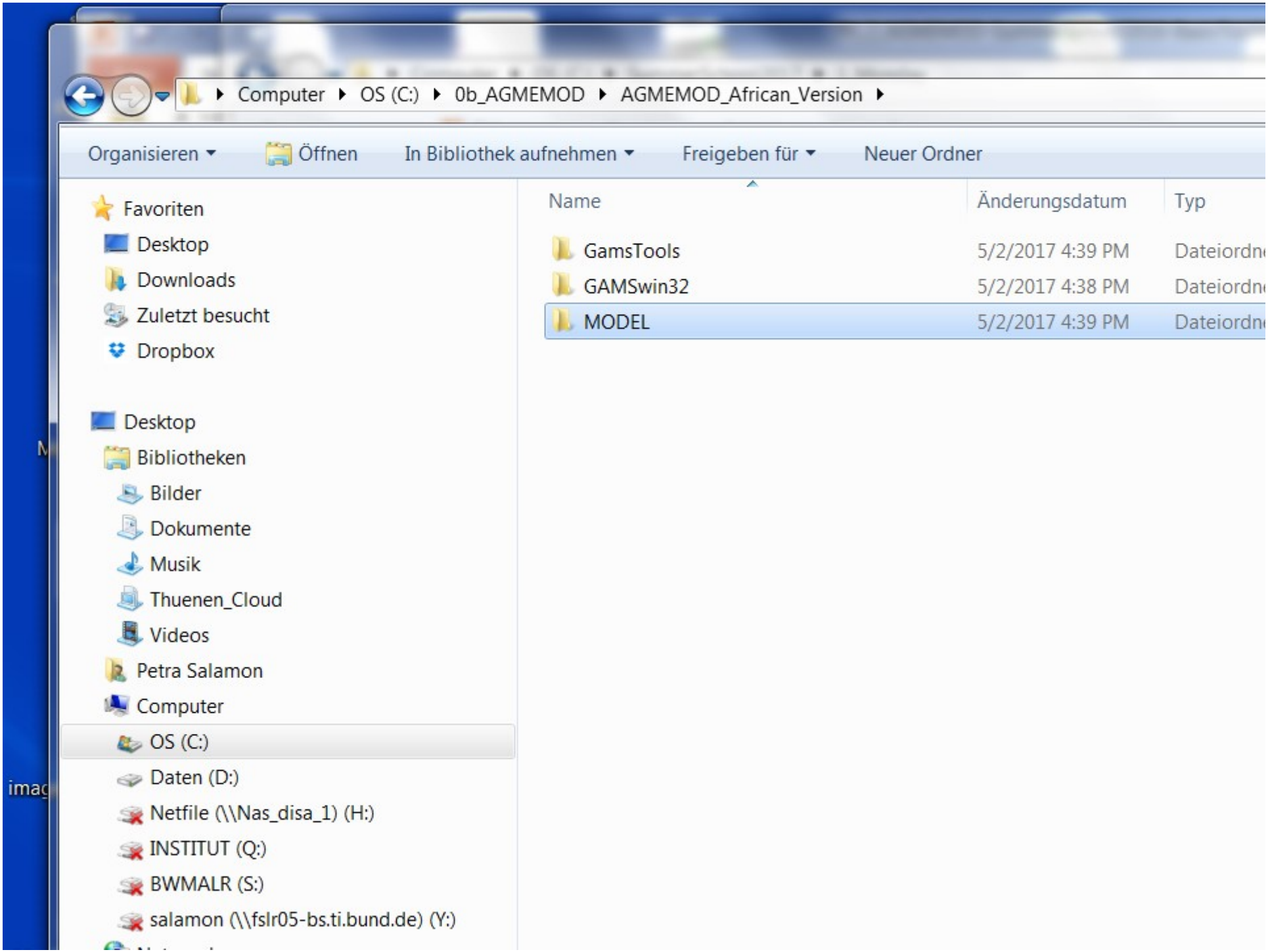
- **No GAMS coding necessary -> A2G tool**
- **In the end always again run the model and check for improvements!!**

Questions so far?

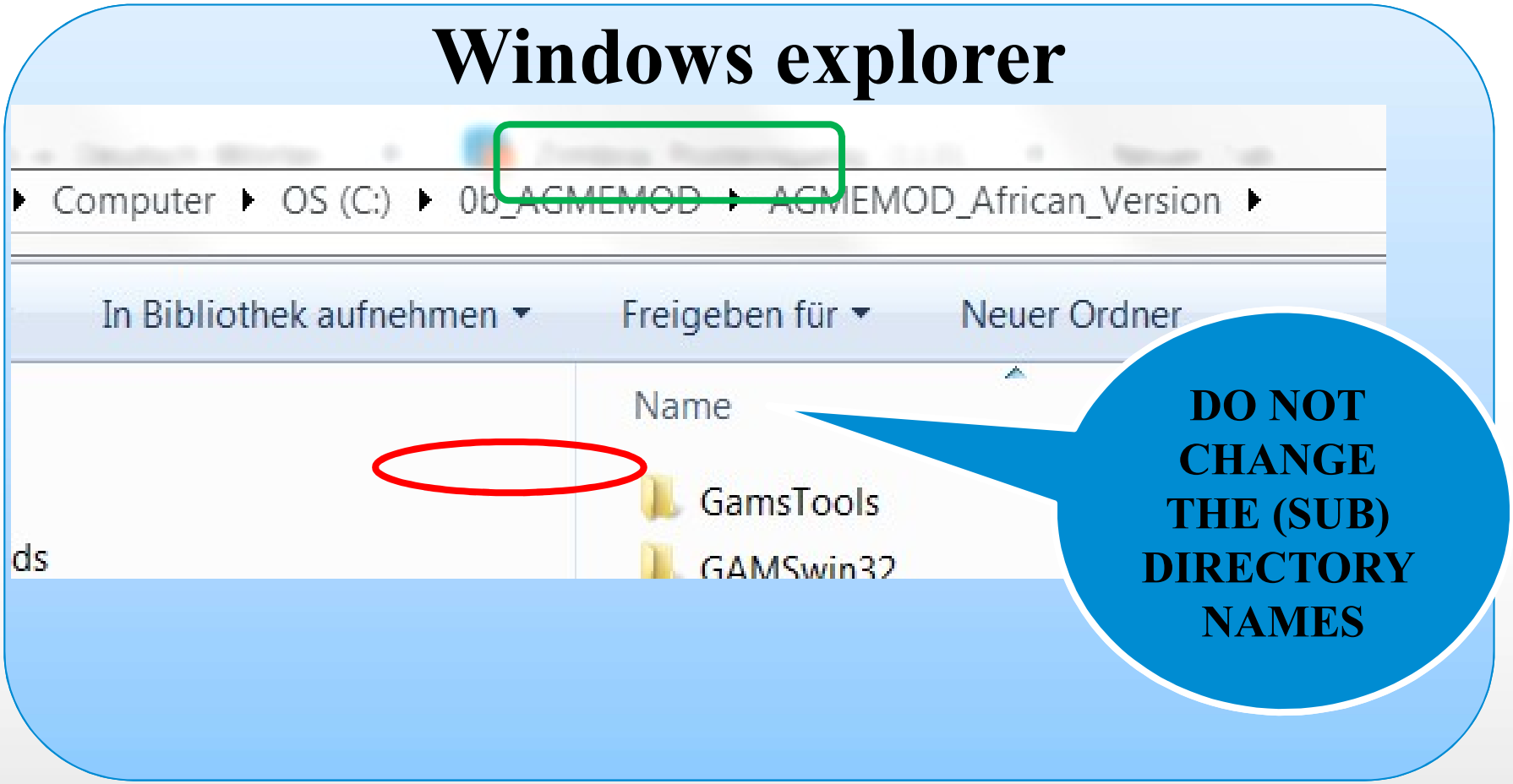
AGMEMOD – Hands-on exercises; special topics - Wrap up of training - Follow up

Petra Salamon, Max Zirngibl (TI)

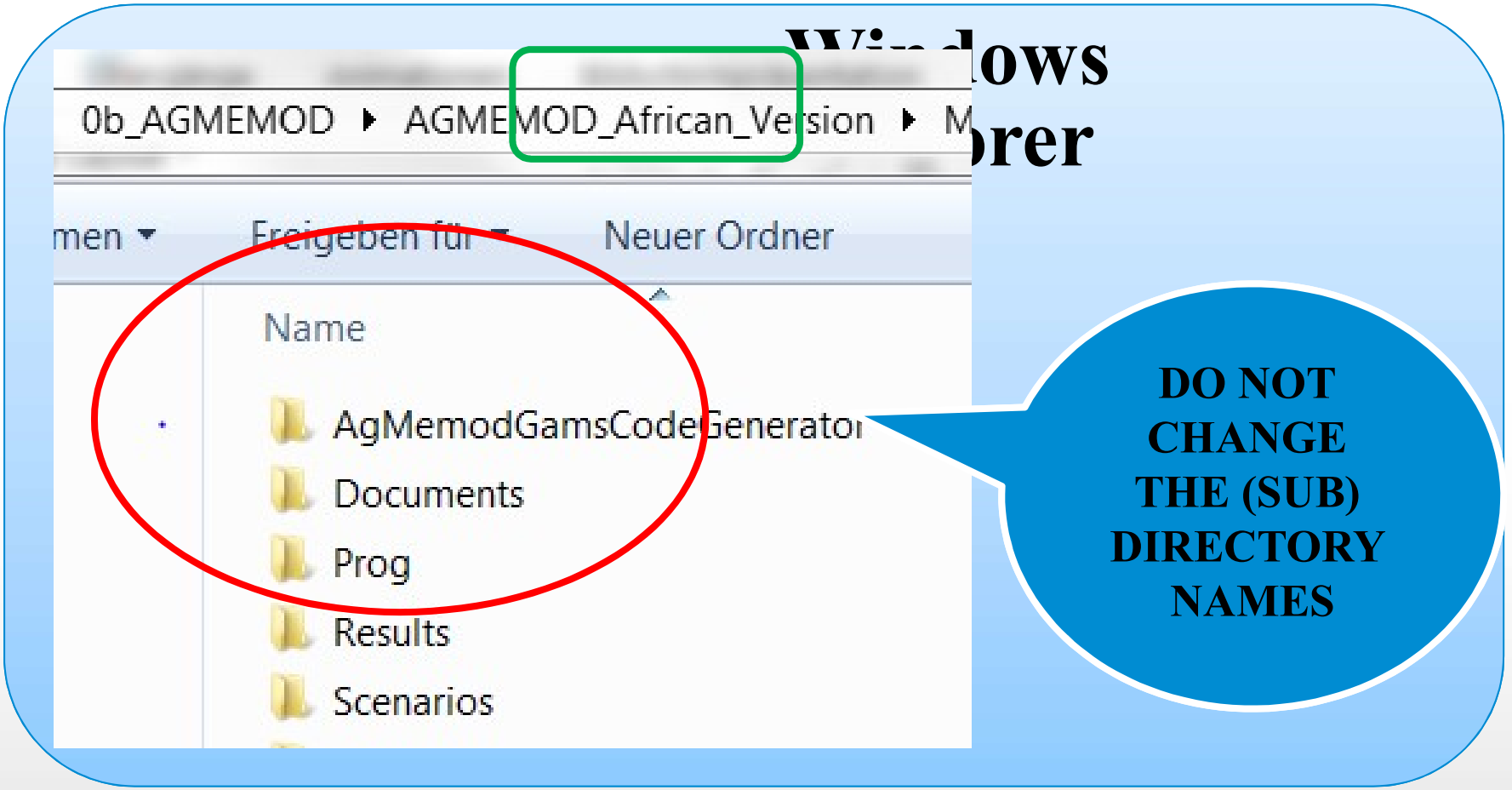
The Hague, 27-29 August 2019


Computer ▸ OS (C:) ▸ 0b_AGMEMOD ▸ AGMEMOD_African_Version ▸
Organisieren
Öffnen
In Bibliothek aufnehmen
Freigeben für
Neuer Ordner
Favoriten
Desktop
Downloads
Zuletzt besucht
Dropbox
Desktop
Bibliotheken
Bilder
Dokumente
Musik
Thuenen_Cloud
Videos
Petra Salamon
Computer
OS (C:)
Daten (D:)
Netfile (\\Nas_disa_1) (H:)
INSTITUT (Q:)
BWMALR (S:)
salamon (\\fslr05-bs.ti.bund.de) (Y:)
Name
Änderungsdatum
Typ
GamsTools
5/2/2017 4:39 PM
GAMSwin32
5/2/2017 4:38 PM
MODEL
5/2/2017 4:39 PM

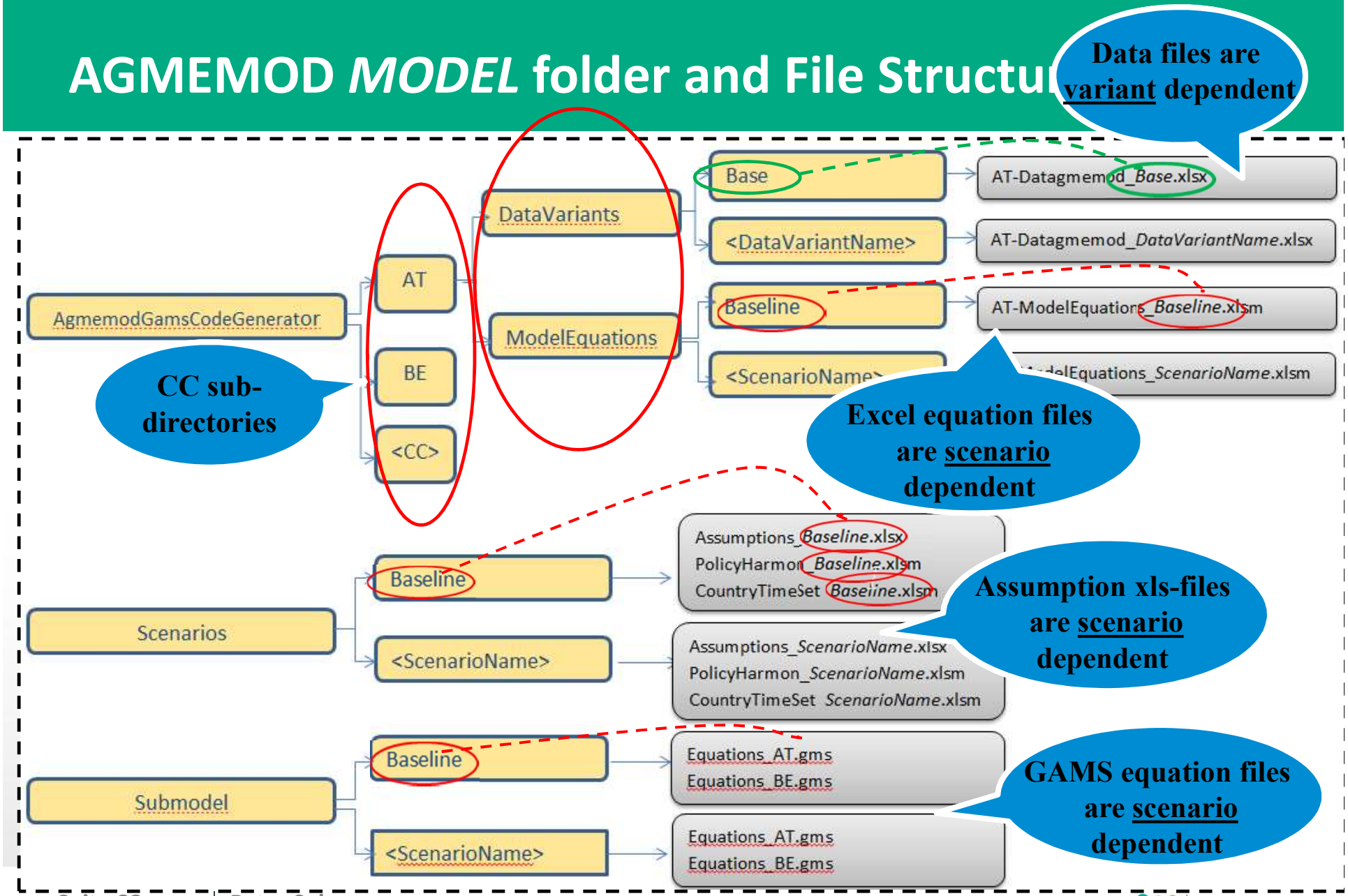
AGMEMOD folder structure



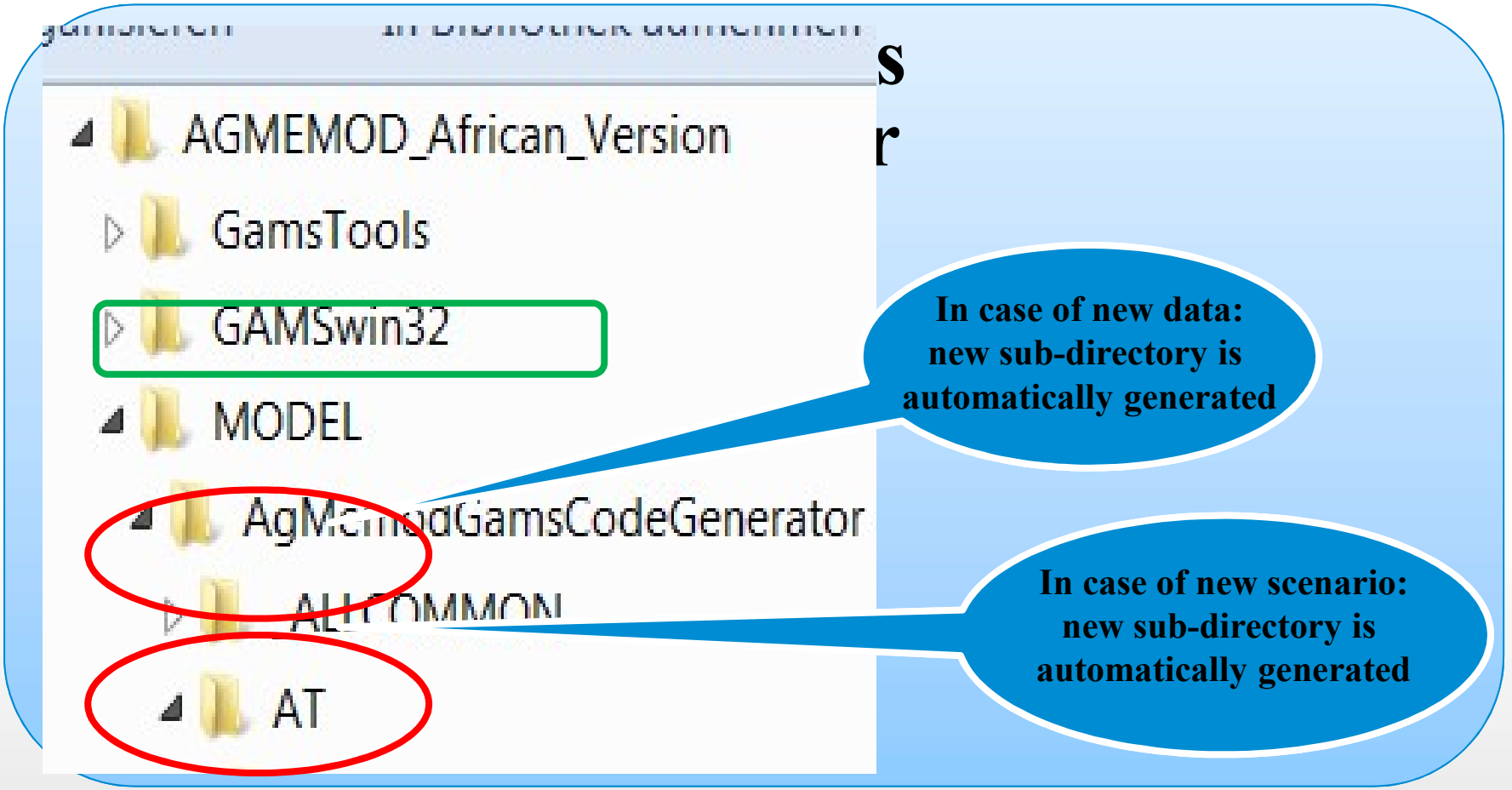
MODEL folder structure



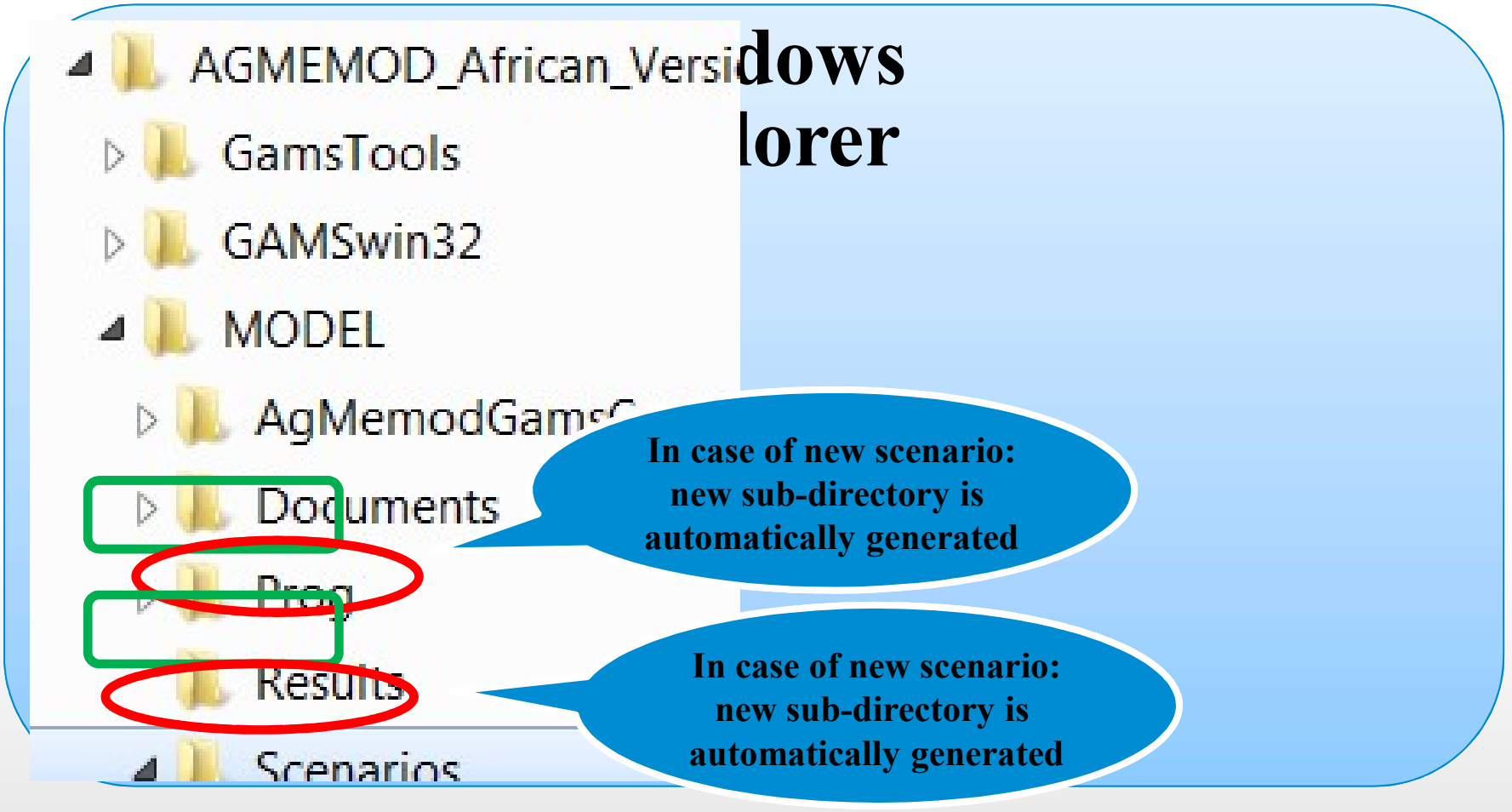
AGMEMOD *MODEL* folder and File Structu



AgmemodGamsCodeGenerator folder structure



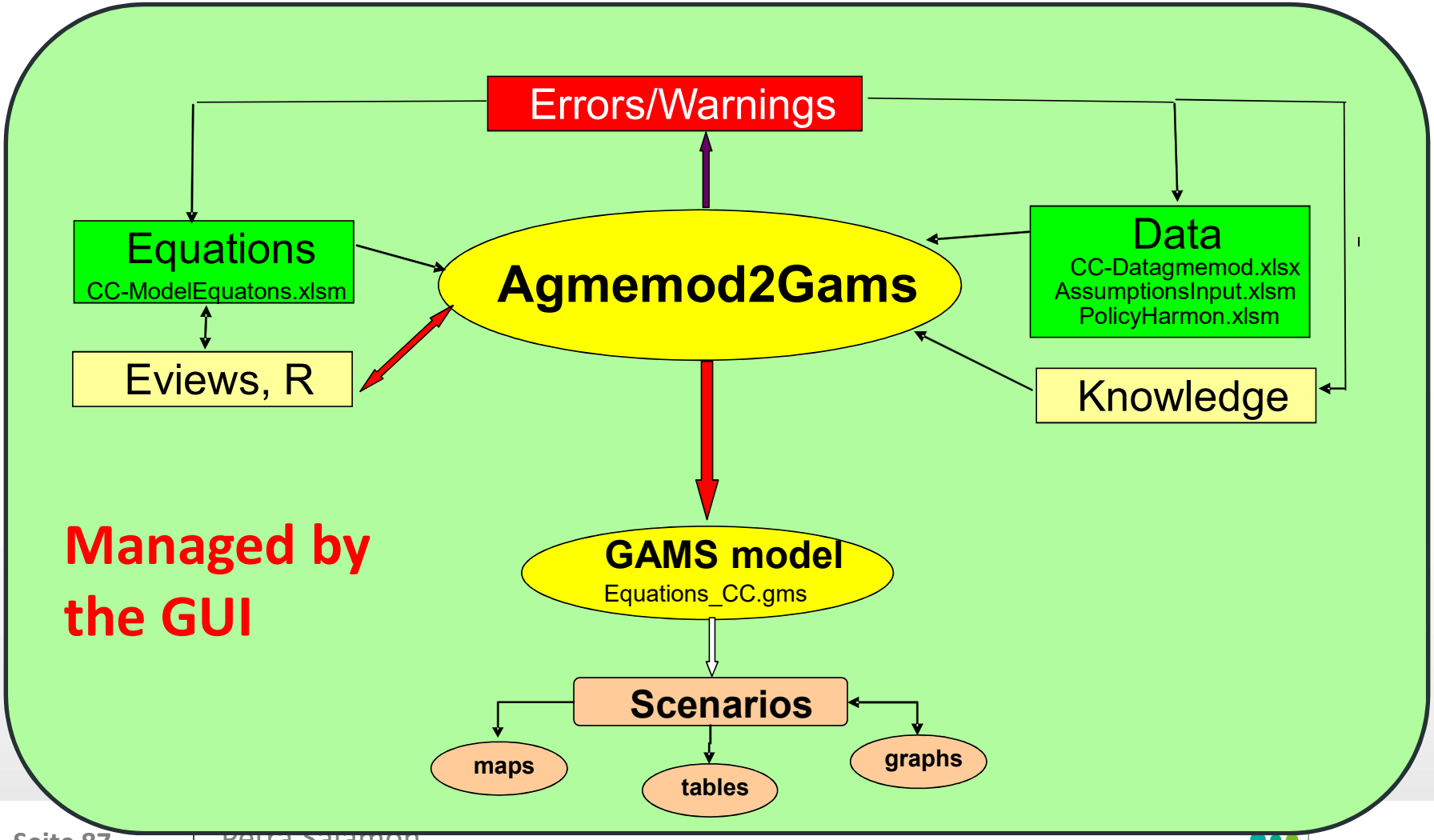
Scenario and *Submodel* folder structures



Useful Basic Toolkit I

- ***AGMEMOD Graphical User Interface (GUI)***
  - Management of input (data, equations, scenarios, output)
  - Easy to apply changes
- ***Agmemod2Gams* tool**
  - Migration of model equations into Gams
  - Checks

Technical set-up



Motivation Toolkit - Partnership's perspective

From Partnership's perspective:

- improving *efficiency*: less errors save time and budget:
  - updating of data and model is time consuming (*database* → *estimation* → *GAMS* → *analyse results*); it easily leads to 'errors' (e.g. between data, GAMS code, modelling)
- improving *traceability* of results and analysing options:
  - lists with warnings (potential errors), errors
  - output depicted in tables, graphs, maps
- improving *transferability* to new/changing teams
- improving *flexibility* in respect with adjusting models, add new commodities, add new countries

Motivation Toolkit - Client's perspective

From client's perspective:

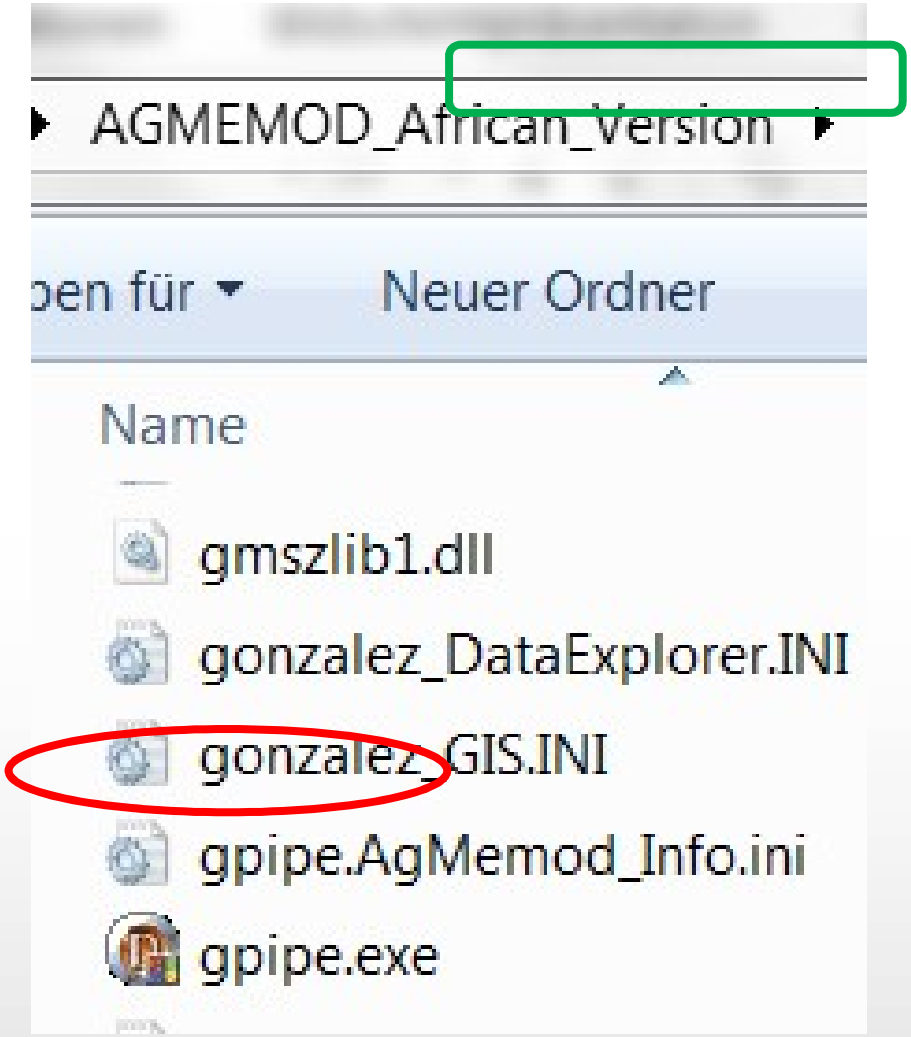
- improving *transparency* of the framework
- keeping *maintenance* process under control
  - data updating
  - modelling updating in response to country market knowledge
- better guarantee of *reproducibility* of study results

AGMEMOD graphical user interface

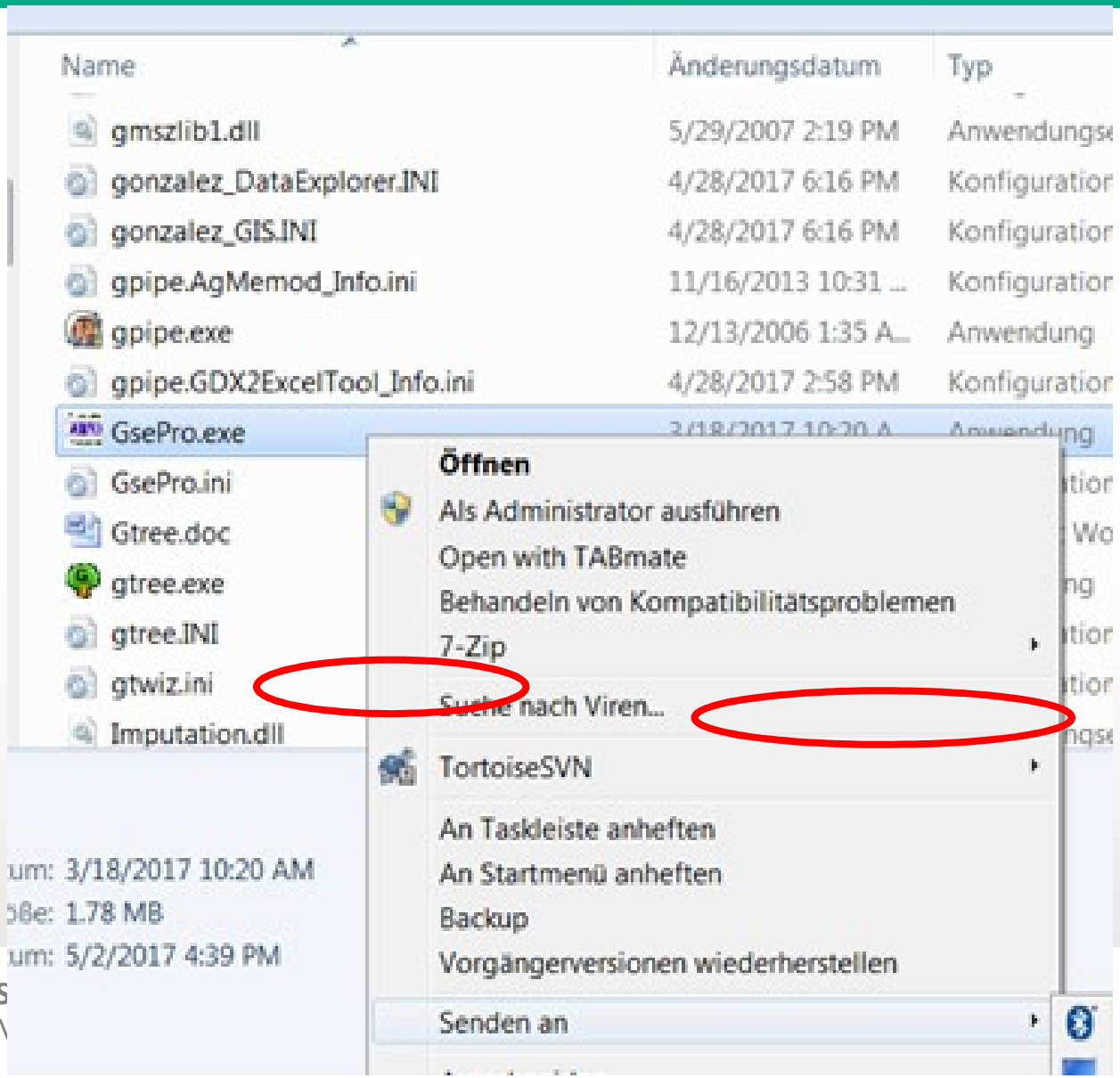
- interface with menu options (GsePro software)
- captures the process from data base building, scenarios defining and model running to output analysis
- to support the model builder, scenario analyst and customer

we will use in exercises

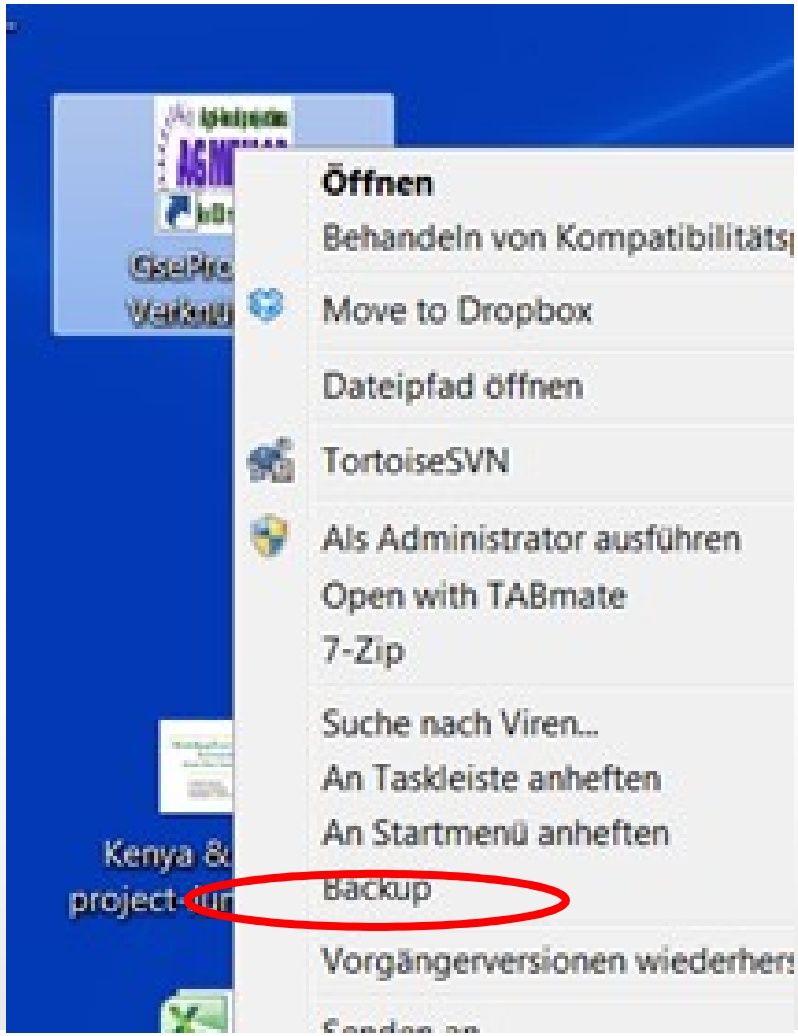
AGMEMOD – Graphical User Interface



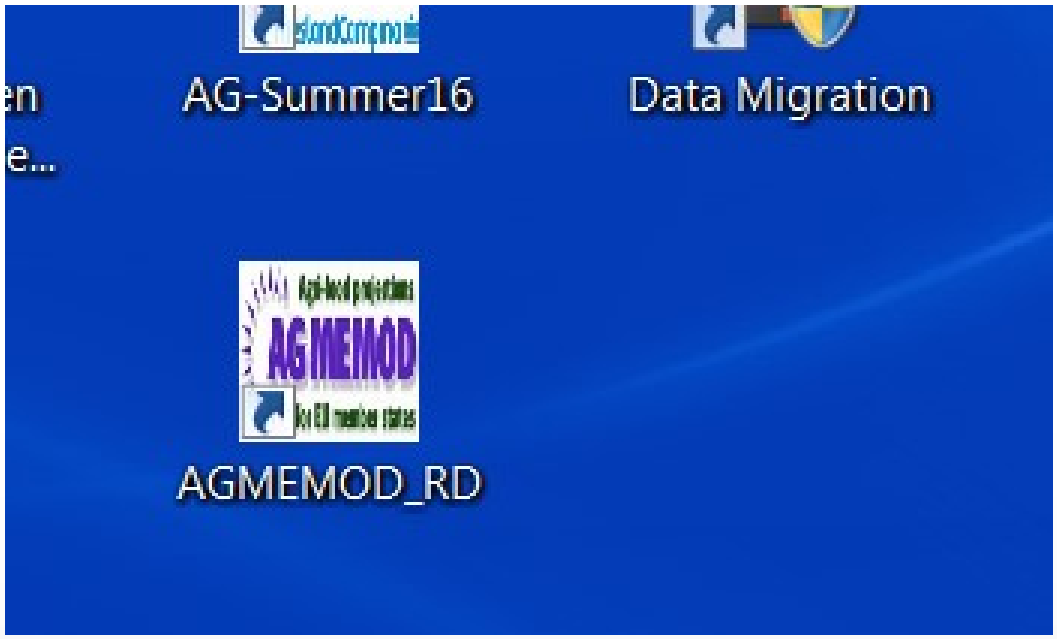
AGMEMOD – Graphical User Interface



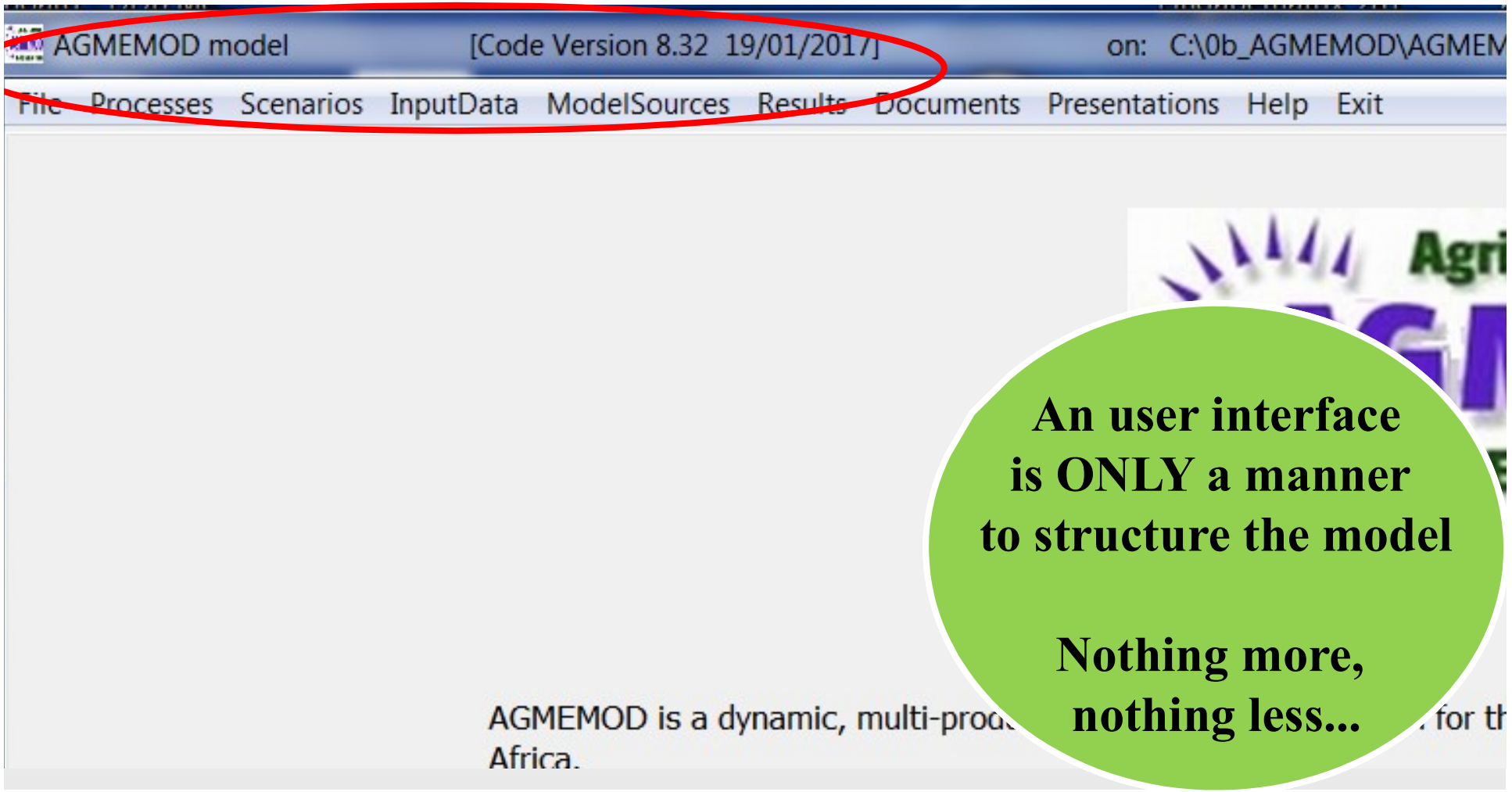
AGMEMOD – Graphical User Interface



AGMEMOD – Graphical User Interface



AGMEMOD Graphical User Interface

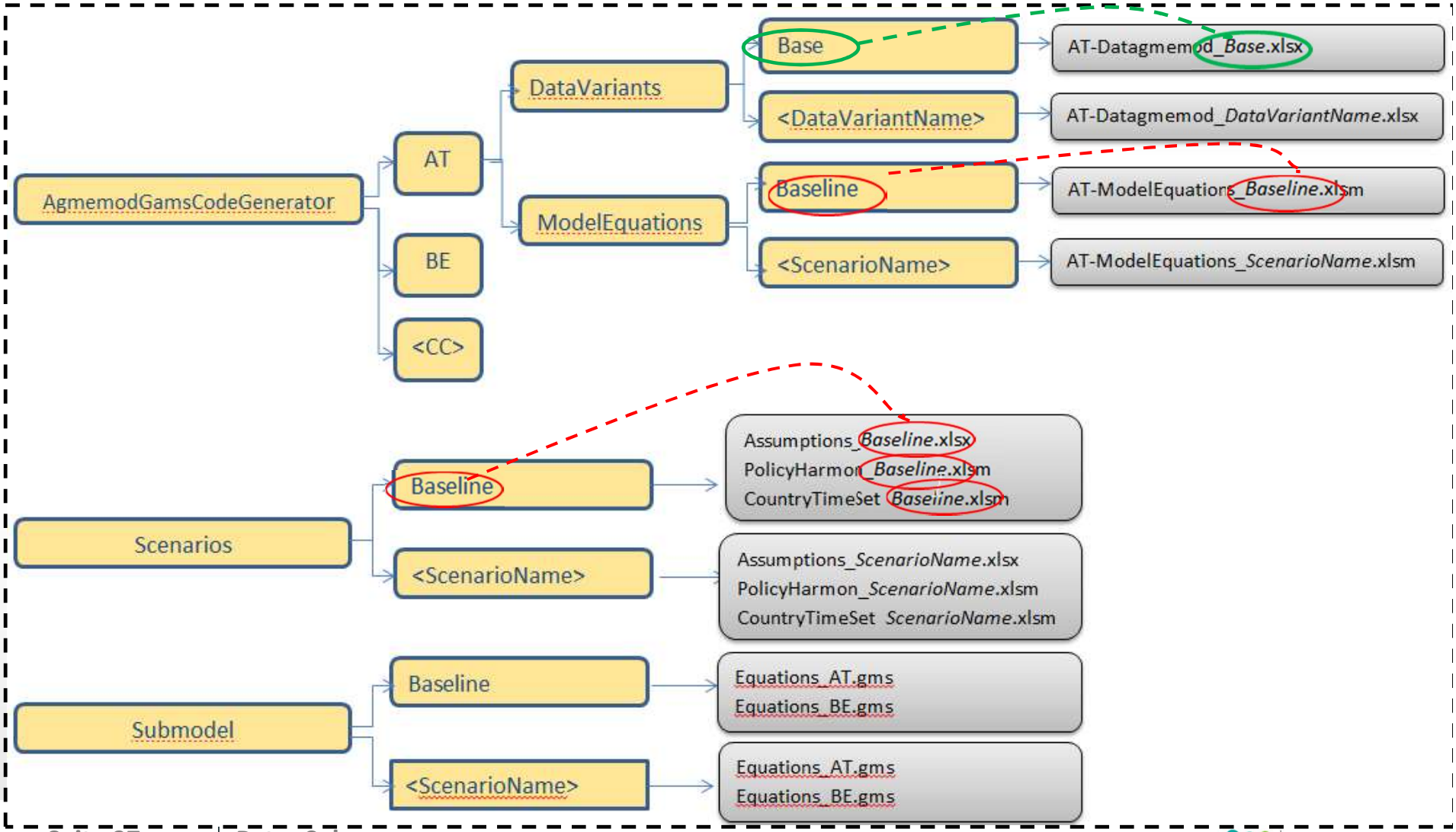


Details of *AGMEMOD Graphical User Interface*

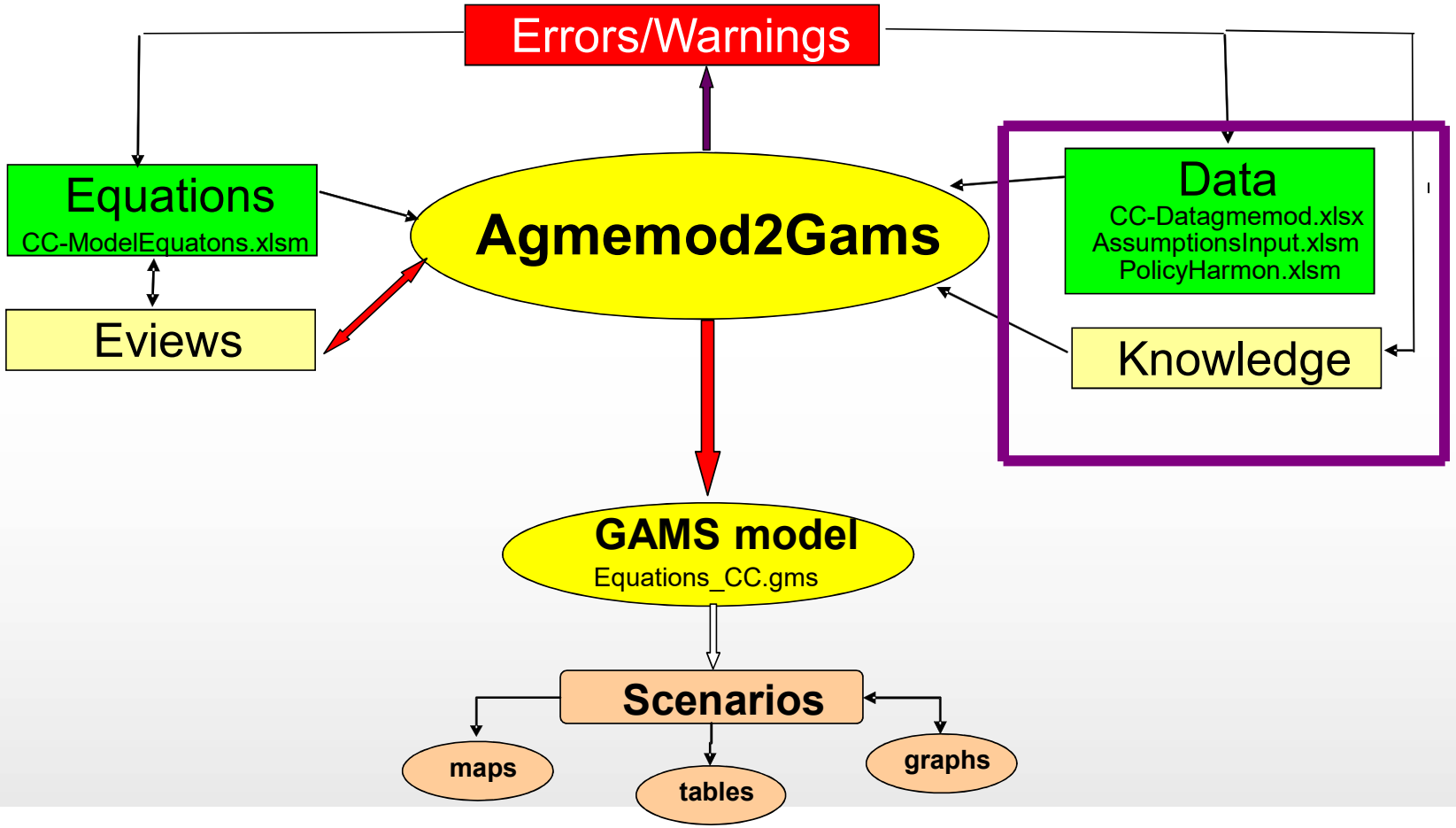
Menu driven user interface with the following items: ***[show]***

- [Processes]: *Read data and model, run scenarios, write output*
- [Scenarios]: *Defining scenario narratives*
- [InputData]: *Inspecting/changing data inputs*
- [ModelSources]: *Source GAMS code, other code*
- [Results]: *Scenario outcomes (maps, graphs)*
- [Documents]: *Storage of relevant documents*
- [Presentations]: *Storage of relevant presentations*

AGMEMOD-MODEL Directory and File Structure



From Data handling to output analysis: Data



Four key MS-Excel data files

CC-Datagmemod_*[datavariant]*.xlsx:

- country (CC) files with commodity balance variables (*data variant dependent*)

CountryTimeSet_*[Scen]*.xlsm:

- info on time periods by CC (*scenario dependent*)

AssumptionsInput_*[Scen]*.xlsm:

- exogenous variables (*scenario dependent*)

PolicyHarmon_*[Scen]*.xlsm:

- exogenous policy variables (*scenario dependent*)

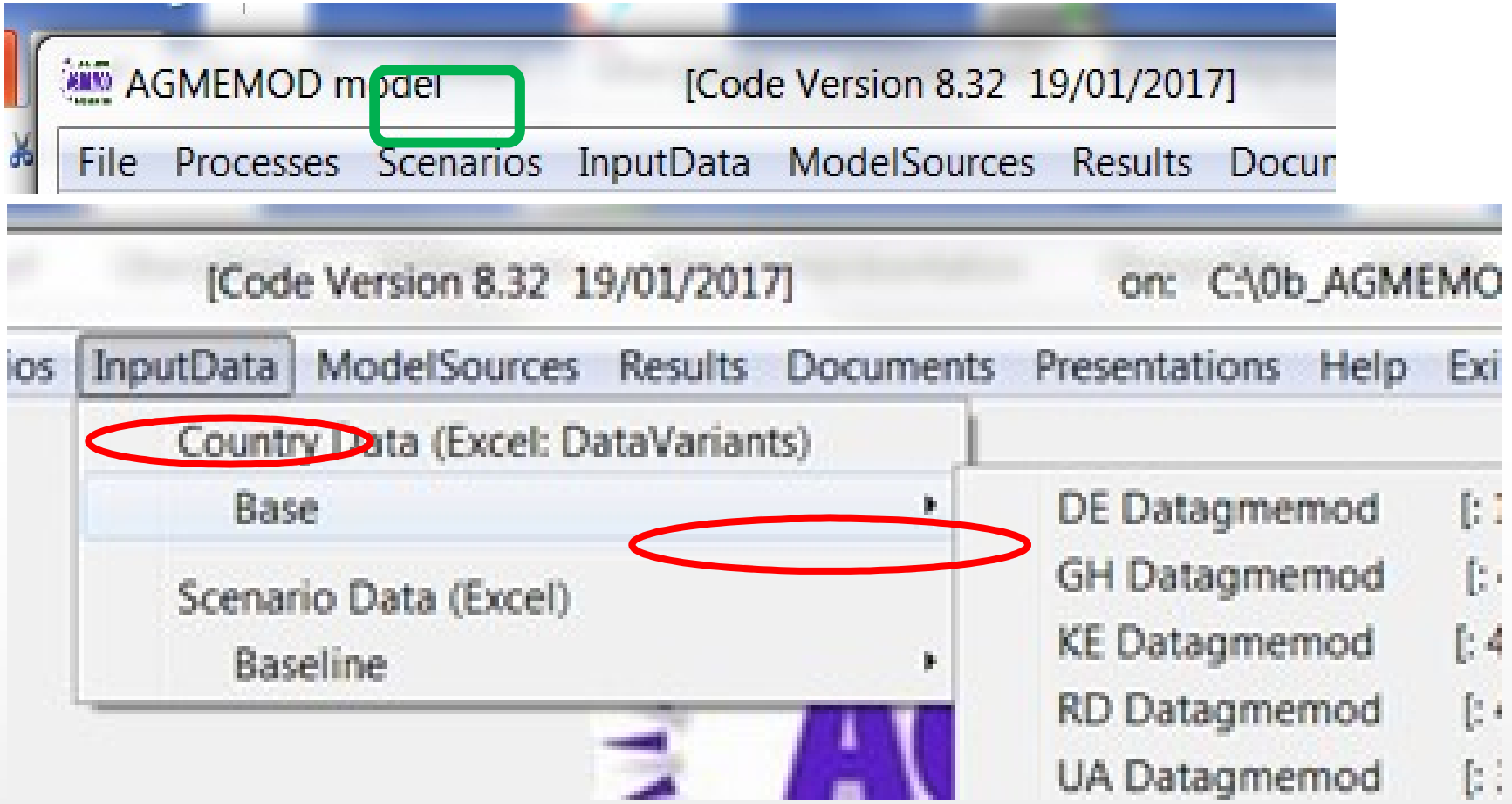
Country based endogenous data

CC-Datagmemod.xlsx file:

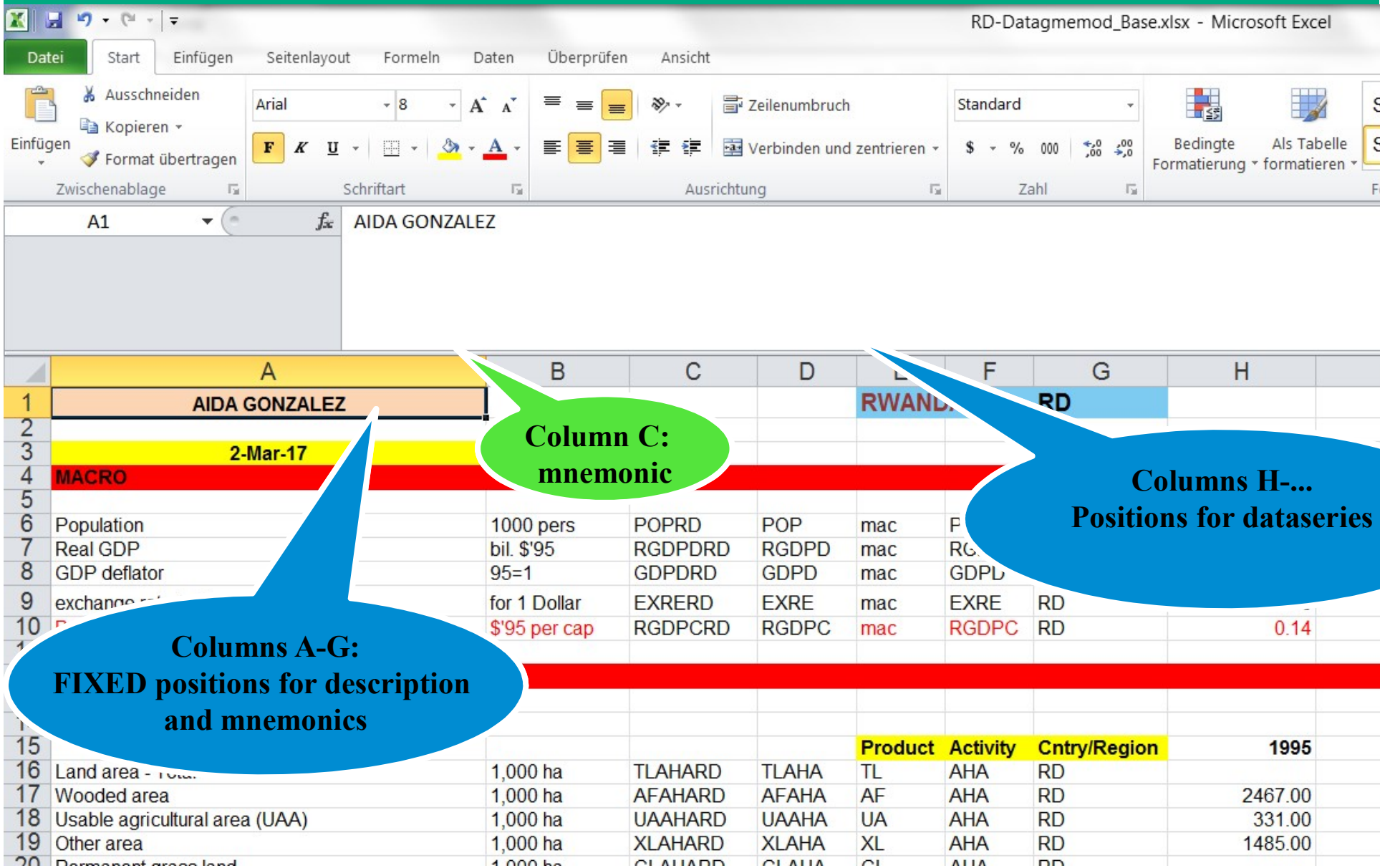
- *CC*-sheets with observed historical data on commodity balances, domestic prices, including a *CC*-sheet with Country data
- based on agreed mnemonics convention
- **V2**-parameter type (endogenous)

Update of national data is partners' responsibility

GUI: endogenous country data



RD_Datagmemod_base



Exogenous data

AssumptionsInput.xlsm file:

- One file per scenario
- Data observed 1973 to 2014/2015/2016 (fix across scenarios)
- Projected data 2014/2015/2016 – 2025 (scenario dependent)

Exogenous data

AssumptionsInput.xlsm file:

- *world* sheet: world market prices (FAPRI, 2010) up to 2025

  VWP-parameter type (exogenous)

- *macro* sheet: macroeconomic variables (national sources) up to 2025, inclusive e.g. Rwanda data:

  VMAC-parameter type (exogenous)

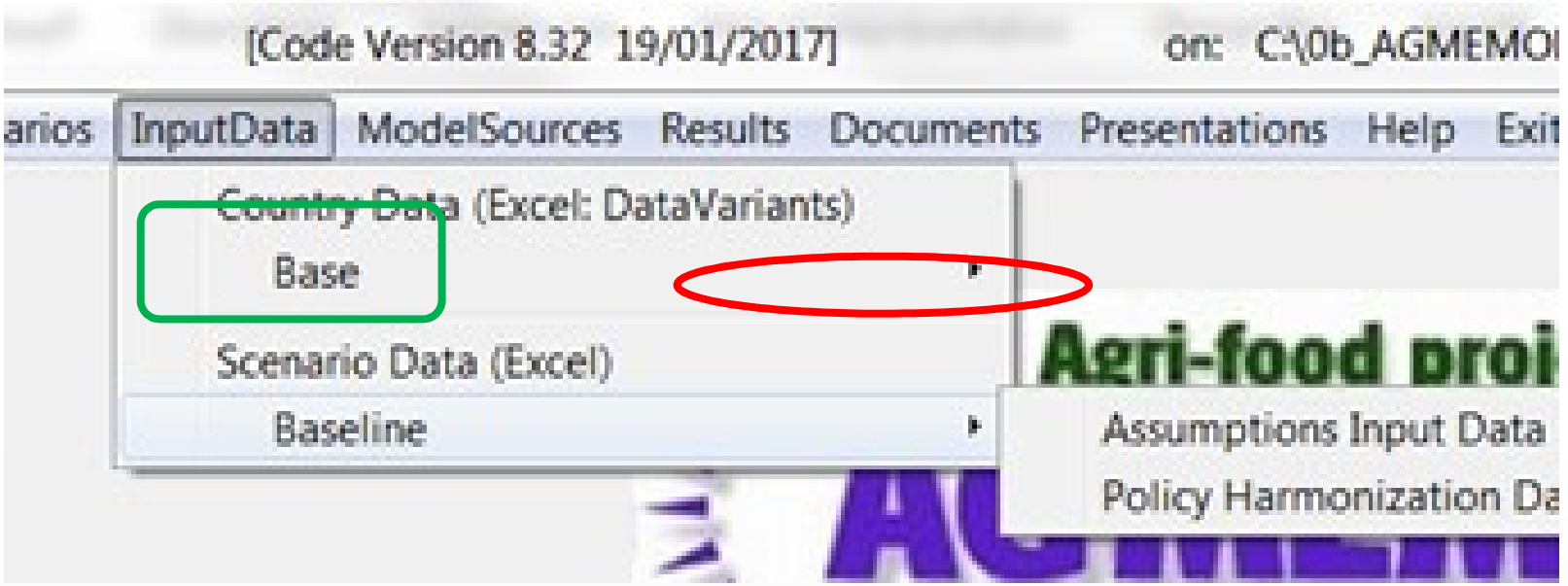
- *EU-policy* sheet: EU specific policy measures (EC) up to 2025:

  VPOL-parameter type (exogenous)

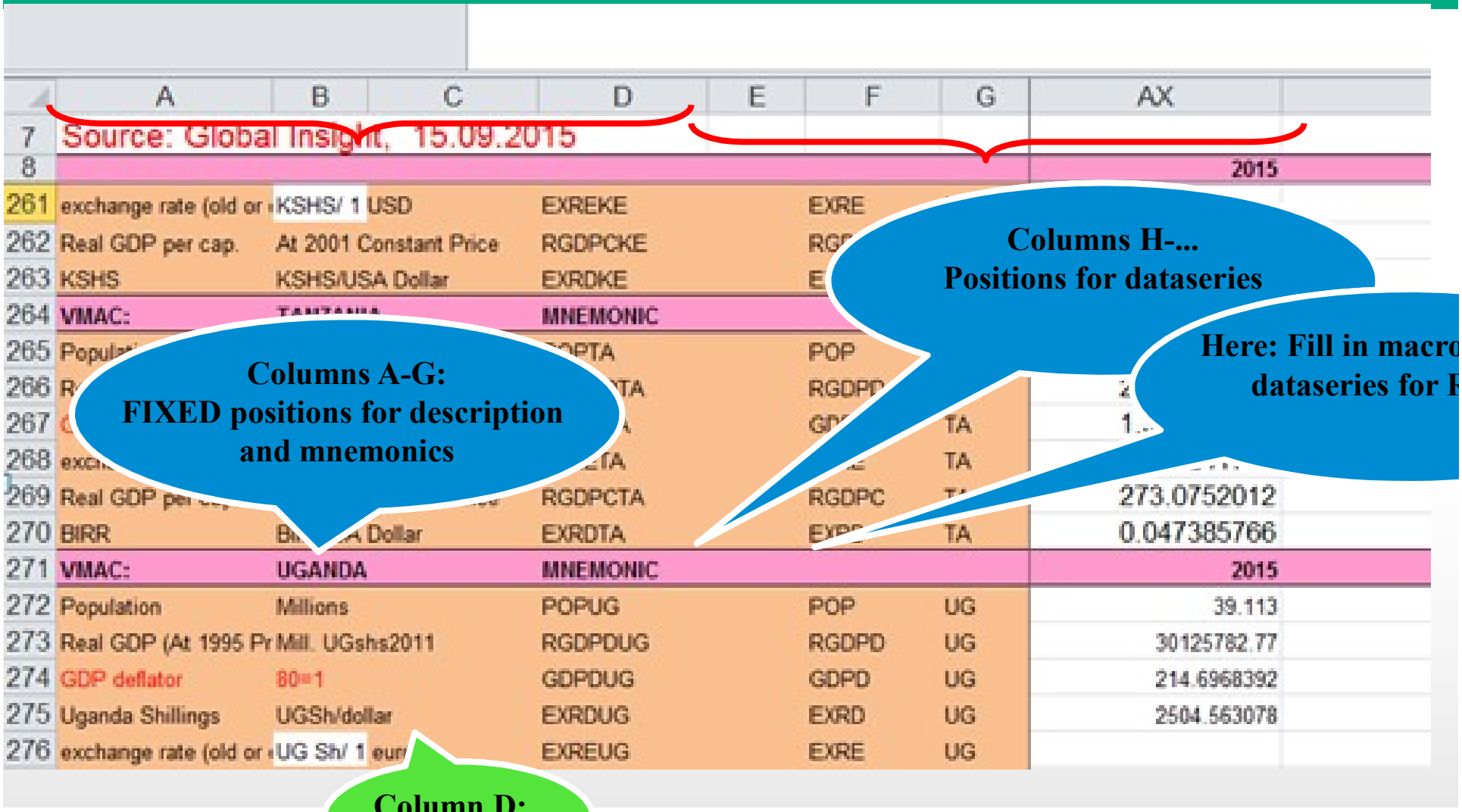
- *CC-policy* sheet: country specific policy measures (national sources) to 2025, inclusive e.g. Rwanda policy instruments:

  VPOLC-parameter type (exogenous)

GUI: exogenous data



E.g. *macro data* in AssumptionsInput_ baseline.xlsm



	A	B	C	D	E	F	G	AX
7	Source: Global Insight, 15.09.2015							
8								2015
261	exchange rate (old or	KSHS/ 1	USD	EXREKE		EXRE		
262	Real GDP per cap.	At 2001 Constant Price		RGDPCKE		RGD		
263	KSHS	KSHS/USA Dollar		EXRDKE		E		
264	VMAC:			MNEMONIC				
265	Popul			PTA		POP		
266	R			TA		RGDPD		2
267						GD	TA	1...
268	exc			TA			TA	
269	Real GDP per			RGDPCTA		RGDPC		273.0752012
270	BIRR	B	A Dollar	EXRDTA		EXR	TA	0.047385766
271	VMAC:	UGANDA		MNEMONIC				2015
272	Population	Millions		POPUG		POP	UG	39.113
273	Real GDP (At 1995 Pr	Mill. UGshs2011		RGDPDUG		RGDPD	UG	30125782.77
274	GDP deflator	80=1		GDPDUG		GDPD	UG	214.6968392
275	Uganda Shillings	UGSh/dollar		EXRDUG		EXRD	UG	2504.563078
276	exchange rate (old or	UG Sh/ 1	eur	EXREUG		EXRE	UG	

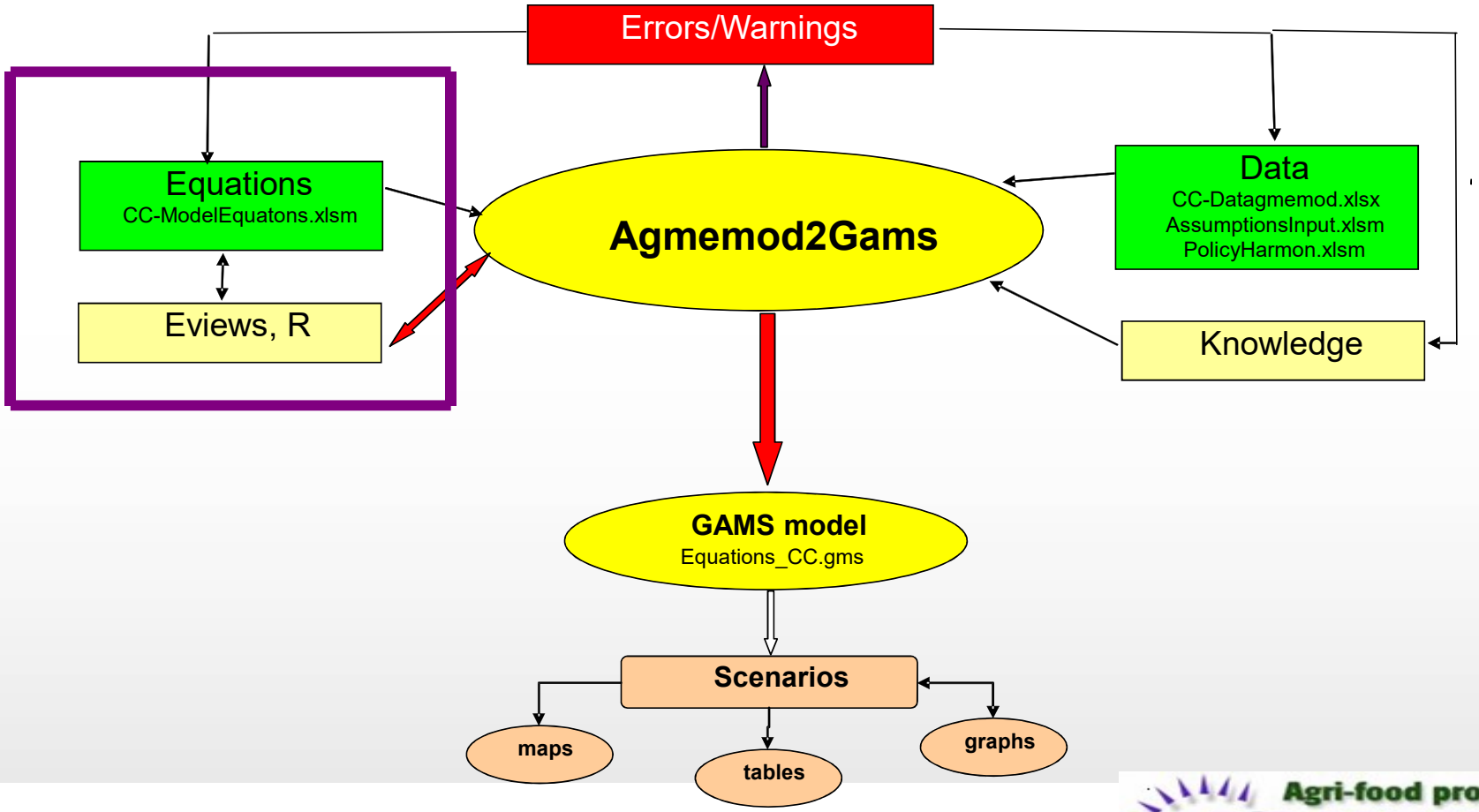
Columns A-G:
FIXED positions for description and mnemonics

Columns H-...
Positions for dataseries

Here: Fill in macro dataseries for F

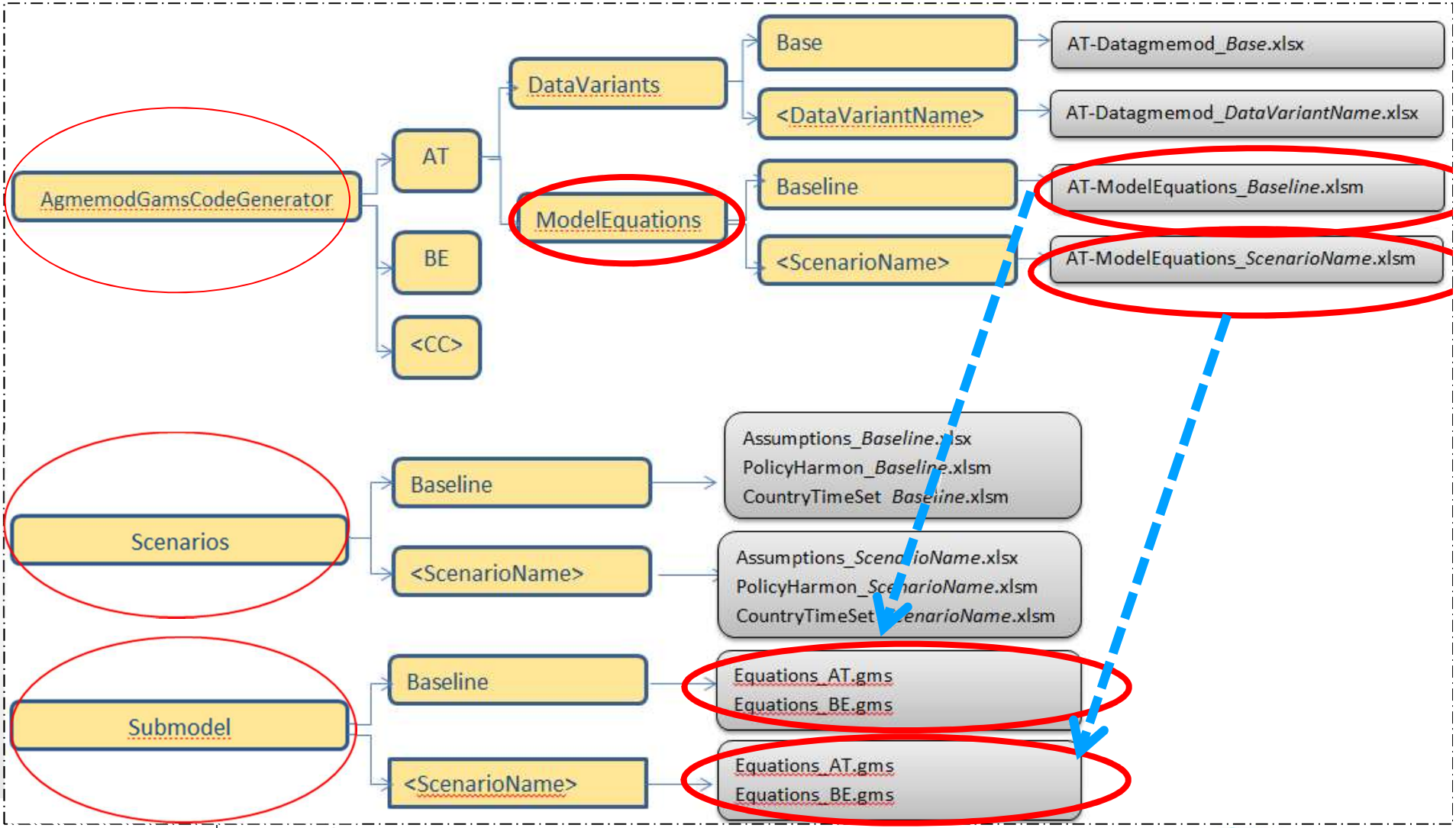
Column D:
mnemonic

From Data handling to output analysis: Equations

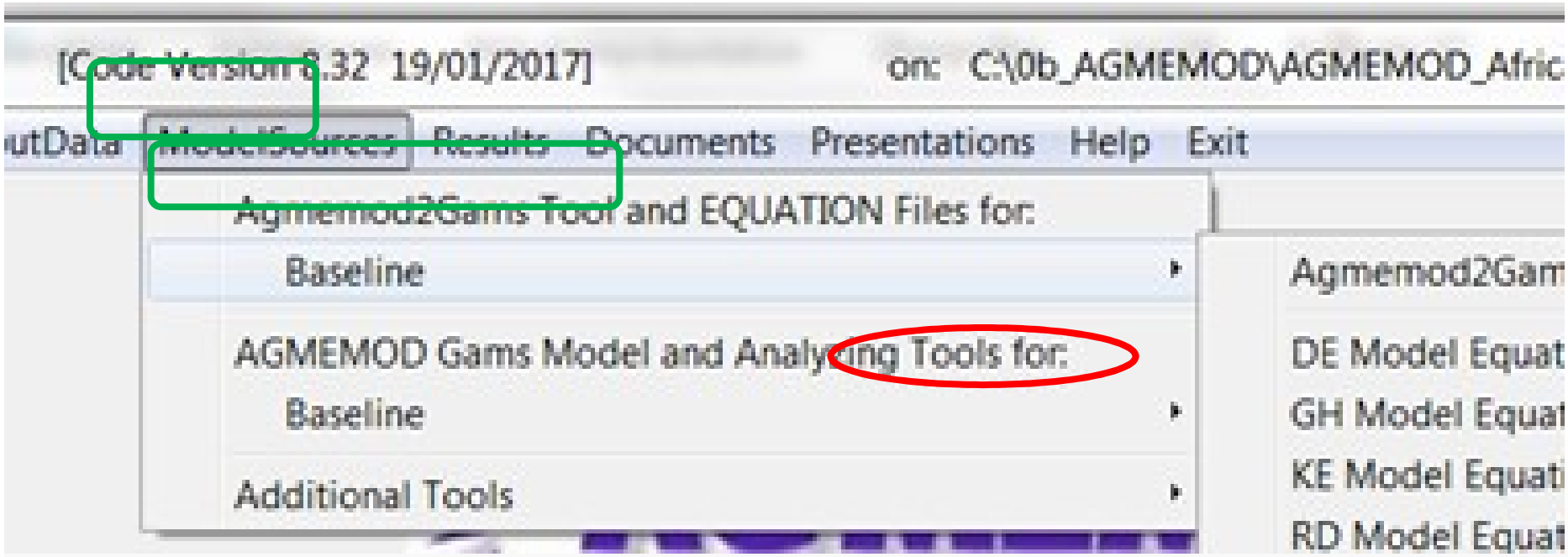


Agri-food projections AGMEMOD for EU member states

AGMEMOD-MODEL Directory and File Structure



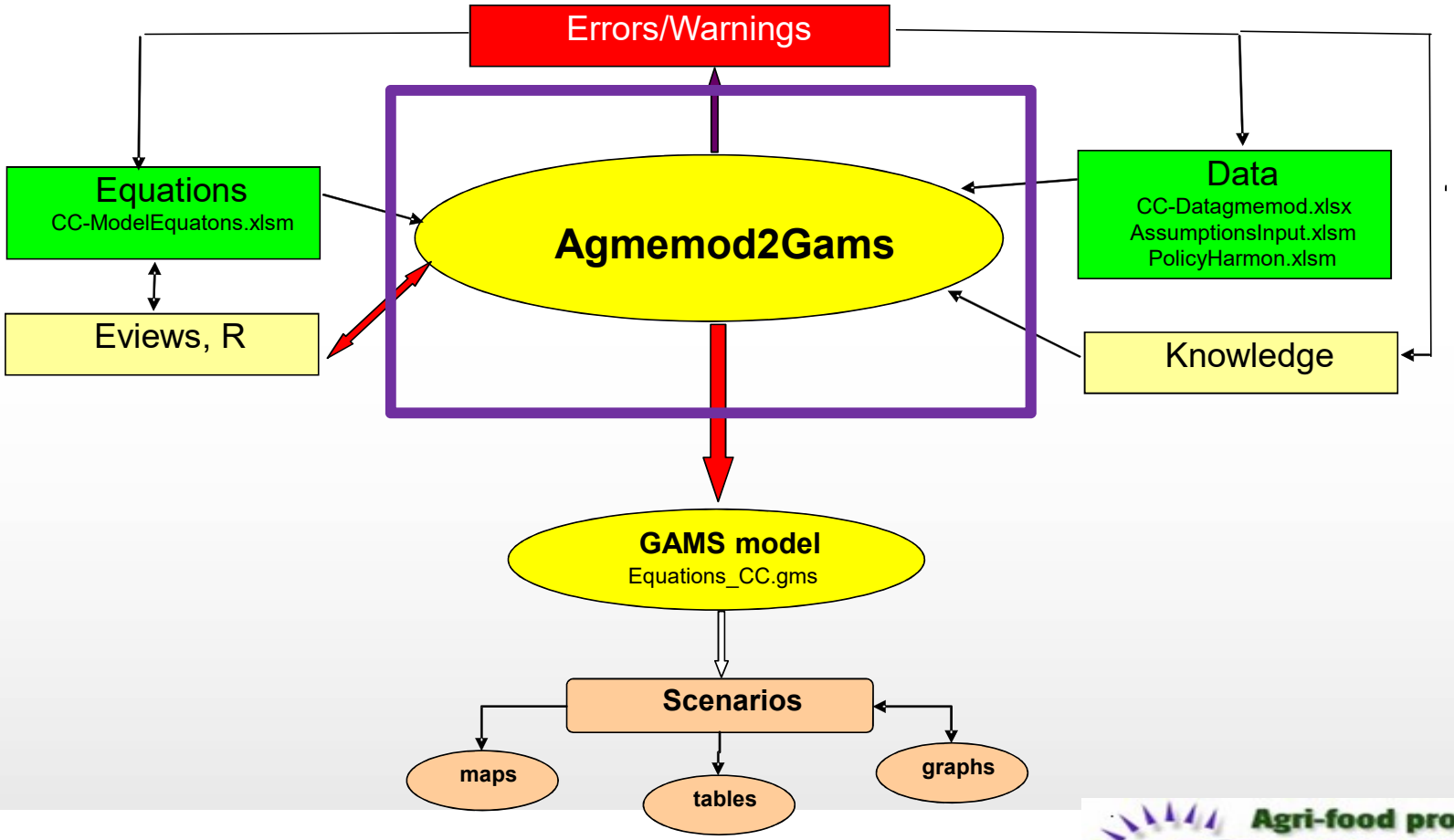
GUI: Equations



RD_ModelEquations_Baseline

	A	B	C	D	E	F	G	H	
	Database equations of		**Rwanda**				**RD**		
	LAND	**DIMENSION**	**MNEMONIC**				**REGION/Cou**	**TYPE**	**SPECIFICA**
	CROP SECTOR								
	GRAINS AND OILSEEDS	**DIMENSION**	**MNEMONIC**						
	PRICES								
	Soft wheat price	€/100kg	WSPFNRD	WSPFN	WS	PFN	RD	EQ	WSPFNRD
	Sorghum price	€/100kg	SGPFNRD	SGPFN	SG	PFN	RD	EQ	SGPFNRD
	Maize price	€/100kg	COPFNRD	COPFN	CO	PFN	RD	EQ	COPFNRD
	Rice price	€/100kg	REPFNRD	REPFN	RE	PFN	RD	EQ	REPFNRD
	Soya price	€/100kg	SBPFNRD	SBPFN	SB	PFN	RD	EQ	SBPFNRD
	beans price	RwFr/100kg	BEPFNRD	BEPFN	BE	PFN	RD	EQ	BEPFNRD
	SUPPLY AND USE								
	Soft wheat area harvested	1,000 ha	WSAHARD	WSAHA	WS	AHA	RD	EQ	WSAHARD
	Soft wheat yield	tonne/ha	WSYHARD	WSYHA	WS	YHA	RD	EQ_HFX	WSYHARD
	Soft wheat production	1,000 tonne	WSSPRRD	WSSPR	WS	SPR	RD	EQ_HFX	WSSPRRD

From Data handling to output analysis: Agmemod2Gams



Agri-food projections AGMEMOD for EU member states

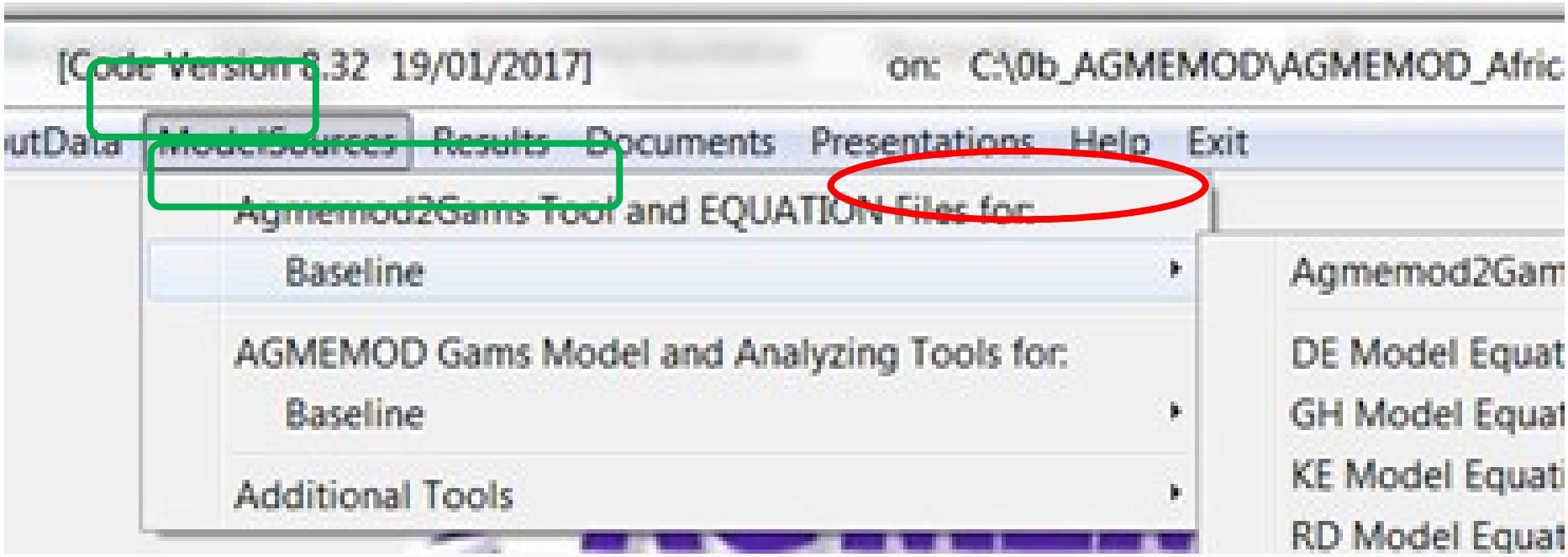
Agmemod2GamsCode Generator

Agmemod2Gams tool

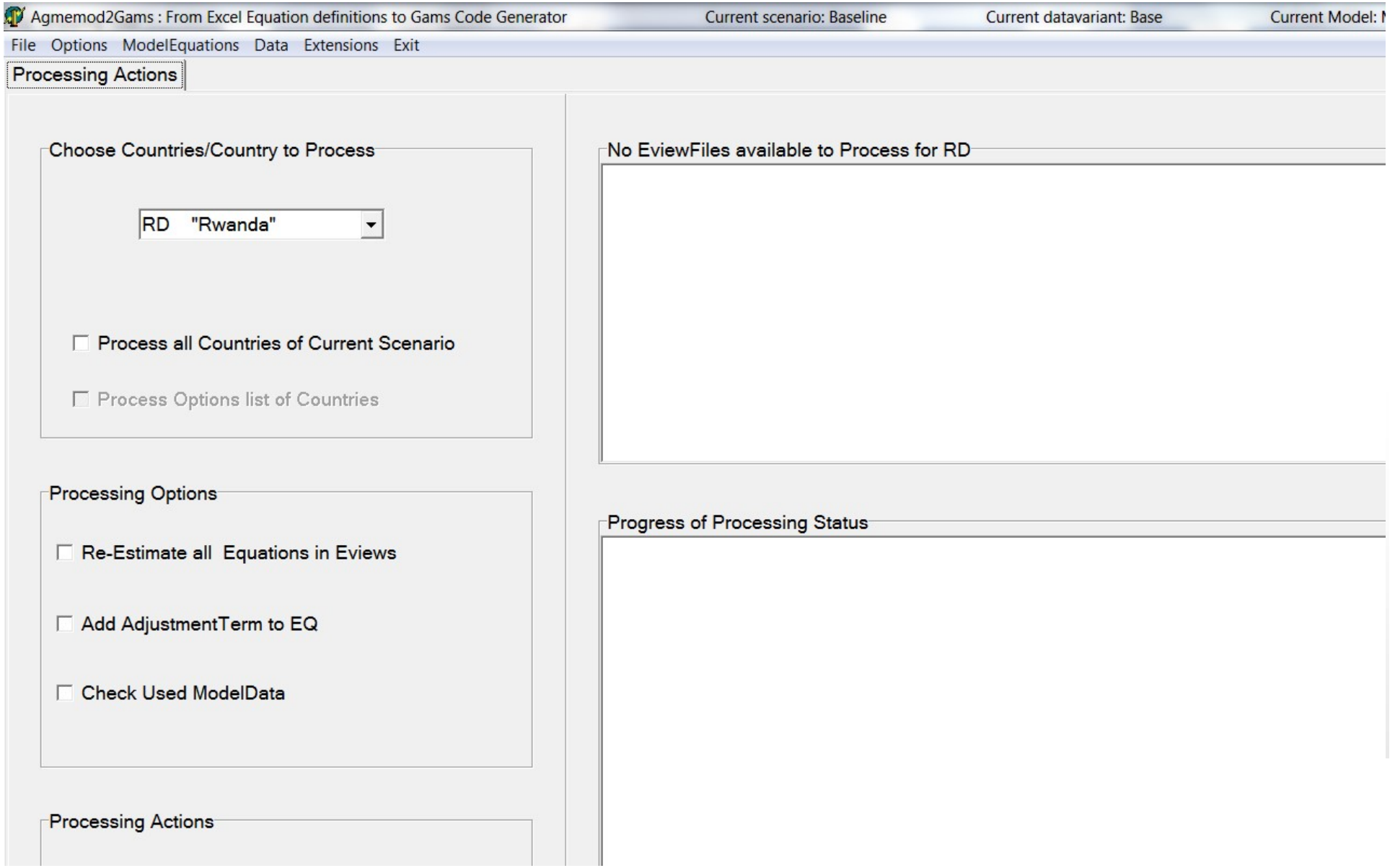
- integrated in AGMEMOD user tool (Delphi software)
- to support the model builder with data and model equations checking, GAMS model building
- to avoid use of ‘difficulty’ applicable software (GAMS)
- focus on the use of ‘easily’ applicable software (Excel)

we will use in exercises

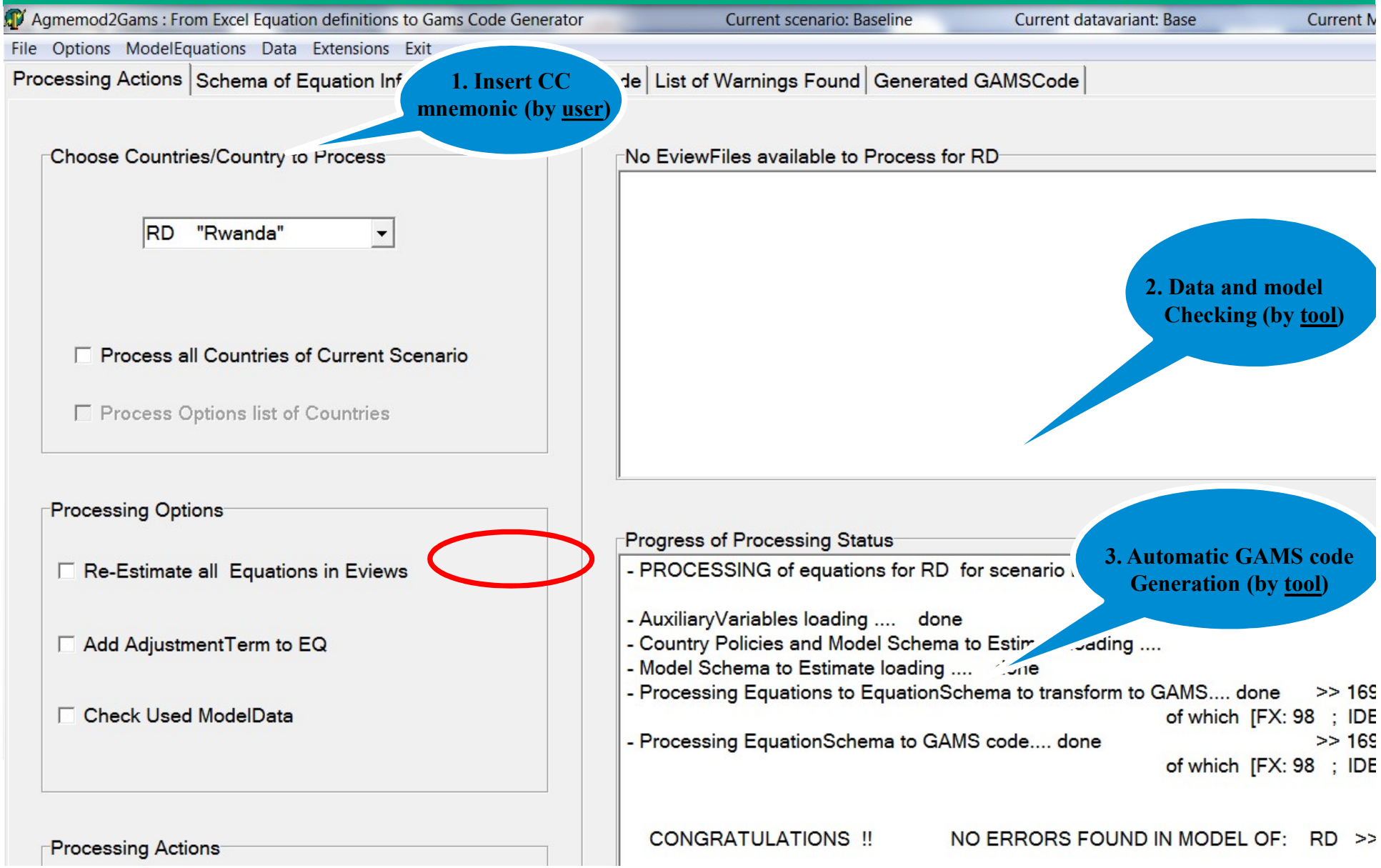
GUI: Equations



GUI: Agmemod2Gams Code Generator -> RD



GUI: Agmemod2Gams Code Generator -> RD



Details of *Agmemod2Gams* tool *[show]*

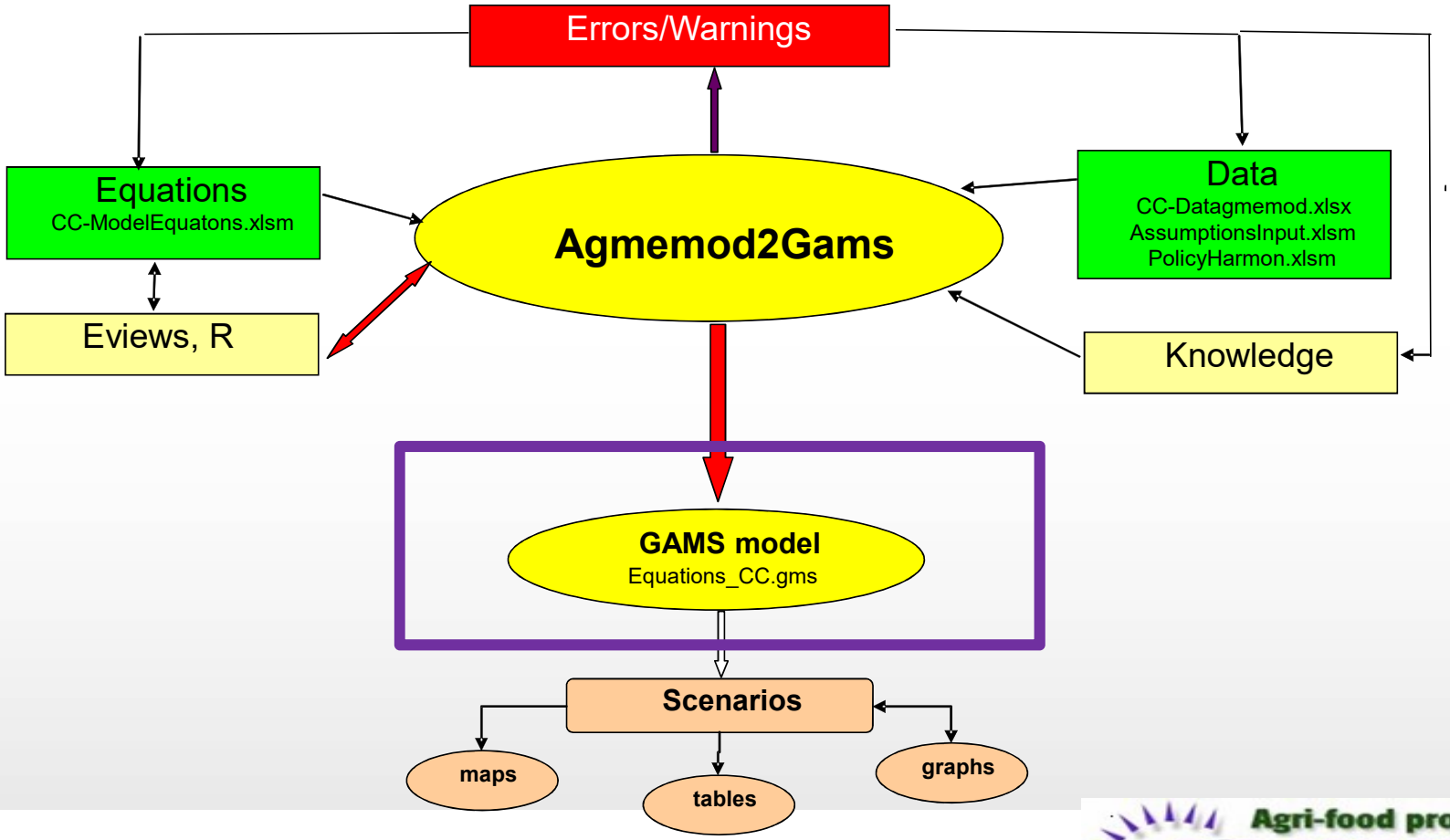
Model builders maintain Excel spreadsheets with assignments on data and equations used in own country model

Based on these spreadsheets (and – if available – Eviews files), the *Agmemod2Gams* tool

- checks the use of data, mnemonics, specification (with warnings and errors)
- for Eviews users: re-estimates all equations
- automatically generates GAMS codes that fit within the AGMEMOD framework

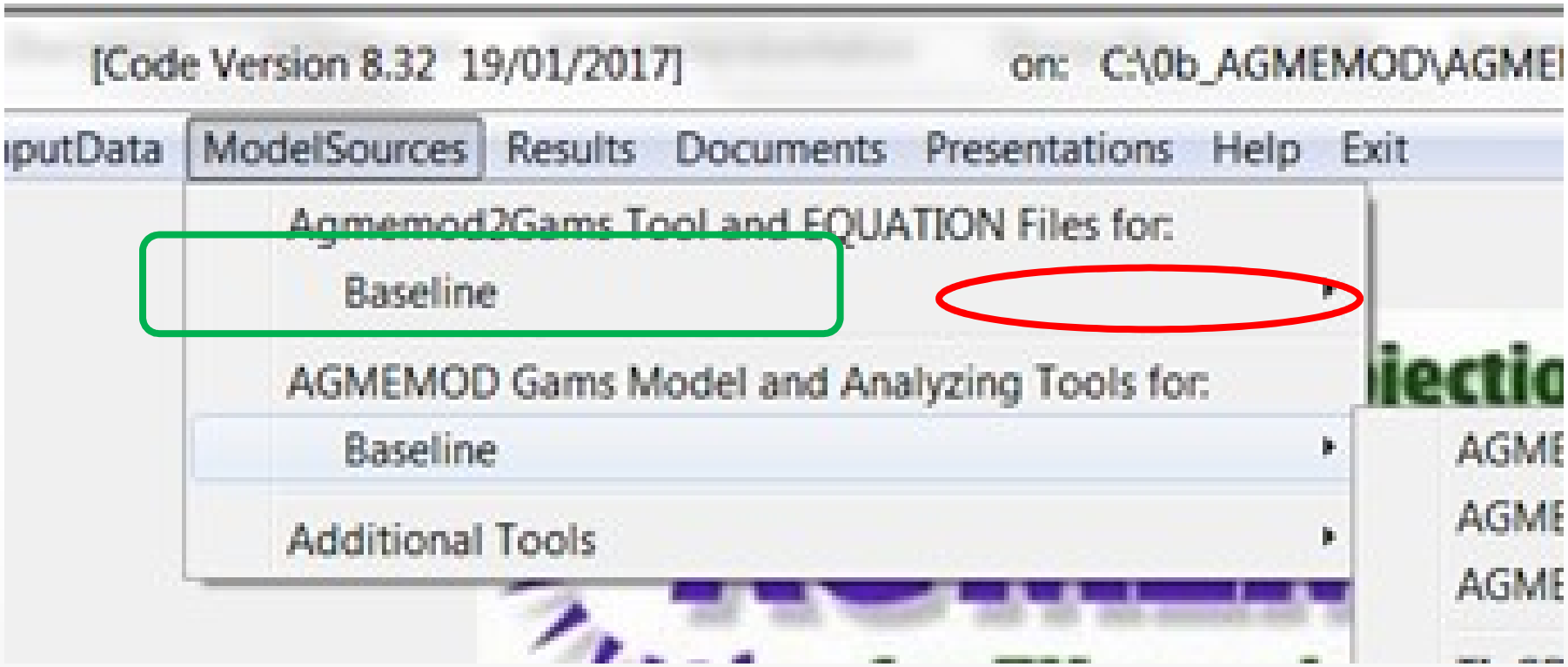
Mnemonics can be easily changed or added

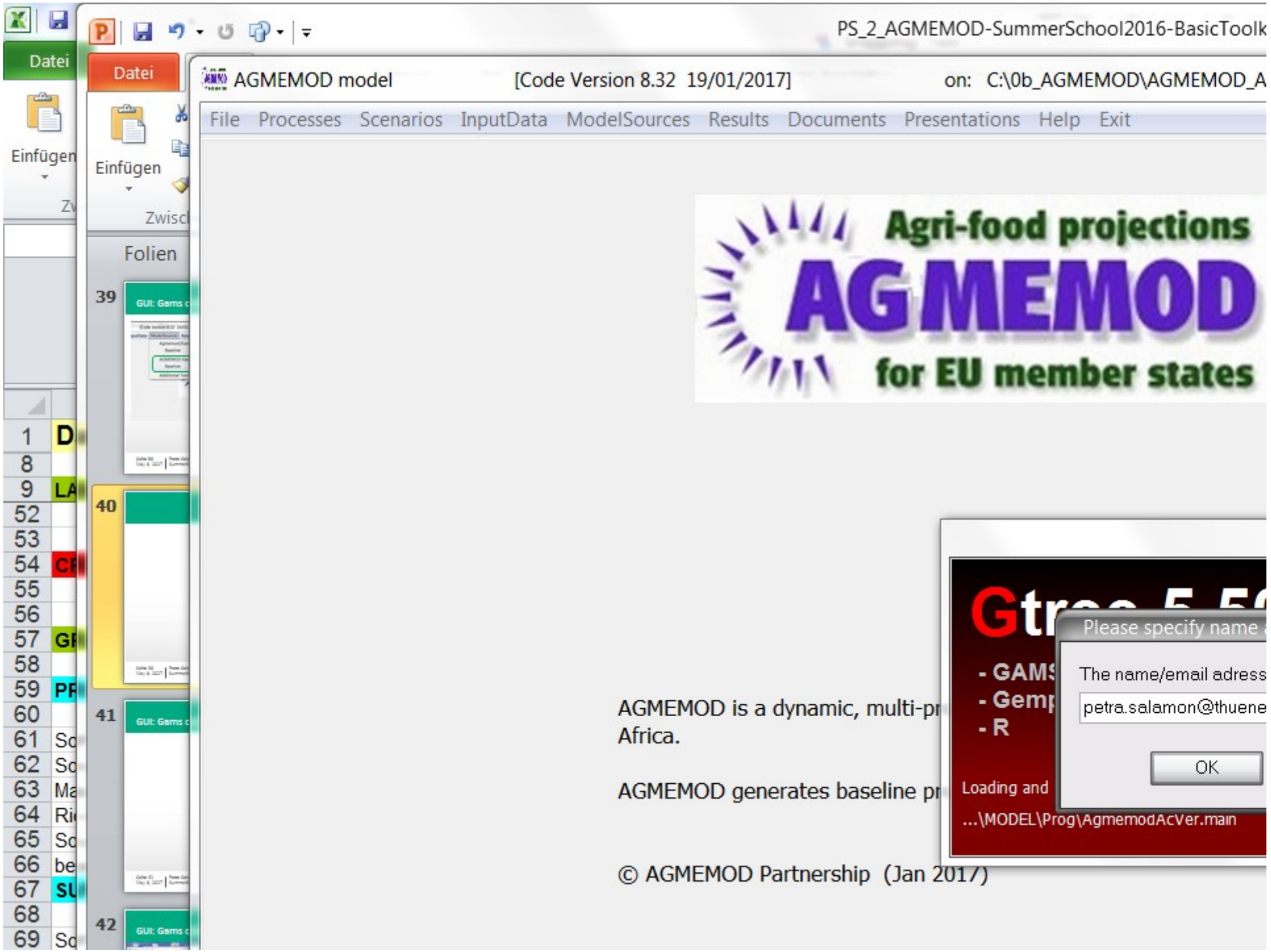
From Data handling to output analysis: Gams



Agri-food projections
AGMEMOD
for EU member states

GUI: Gams code




PS_2_AGMEMOD-SummerSchool2016-BasicToolk
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AGMEMOD model
[Code Version 8.32 19/01/2017]
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Agri-food projections
AGMEMOD
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AGMEMOD is a dynamic, multi-pr
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AGMEMOD generates baseline pr
© AGMEMOD Partnership (Jan 2017)
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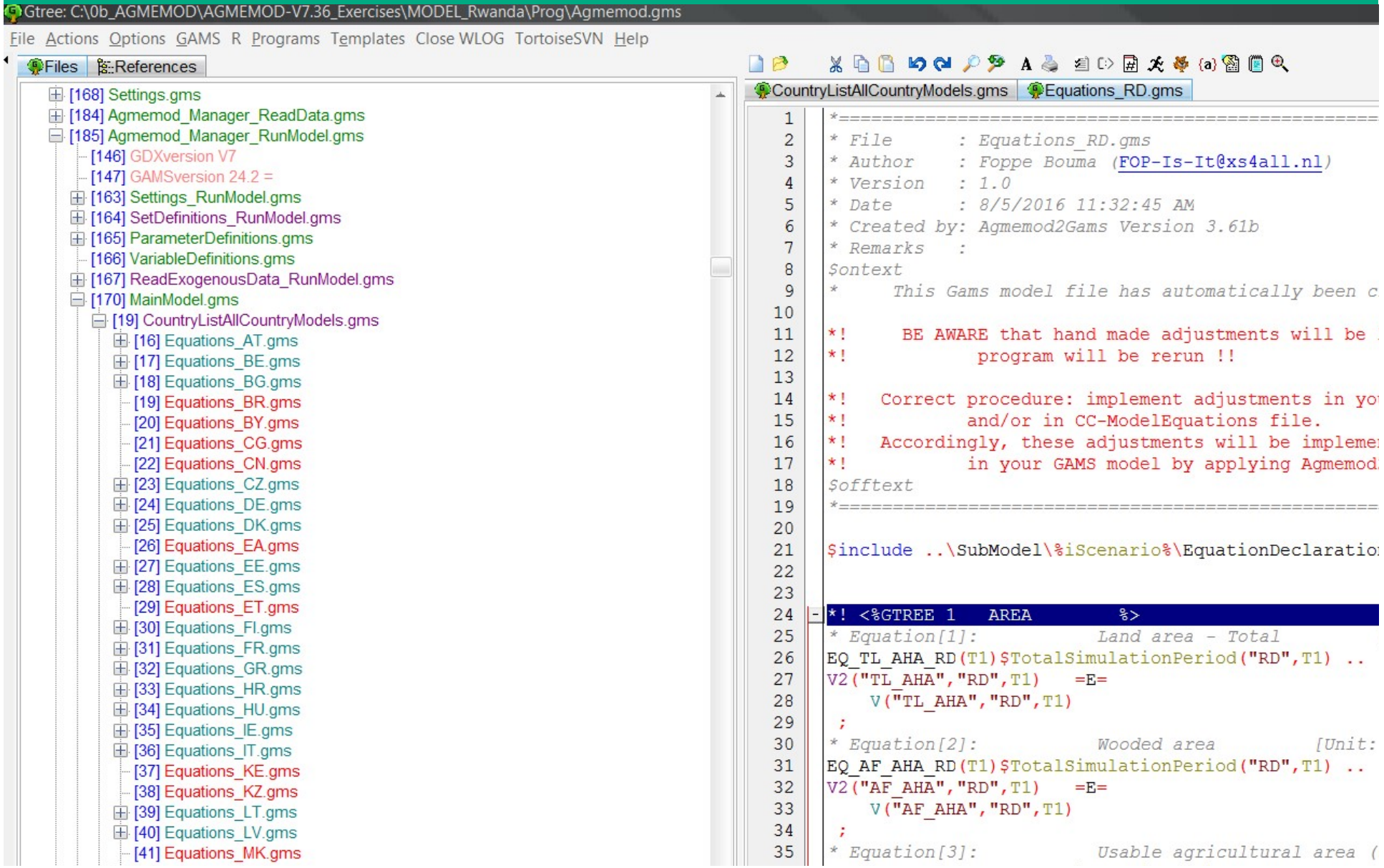
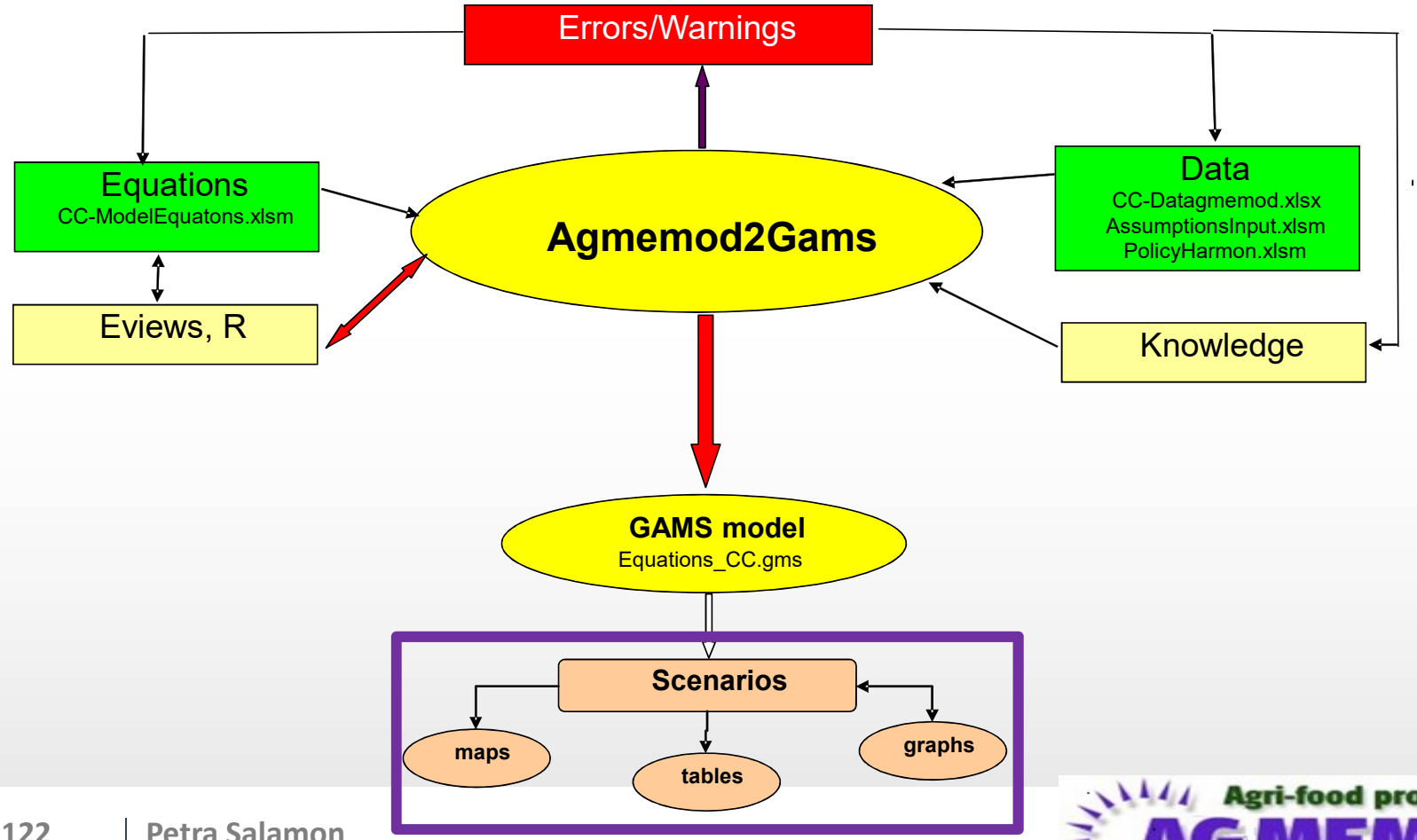
Please specify name
The name/email adress
petra.salamon@thuene
OK

GUI: Gams code

GUI: Gams code



From Data handling to output analysis: Scenarios



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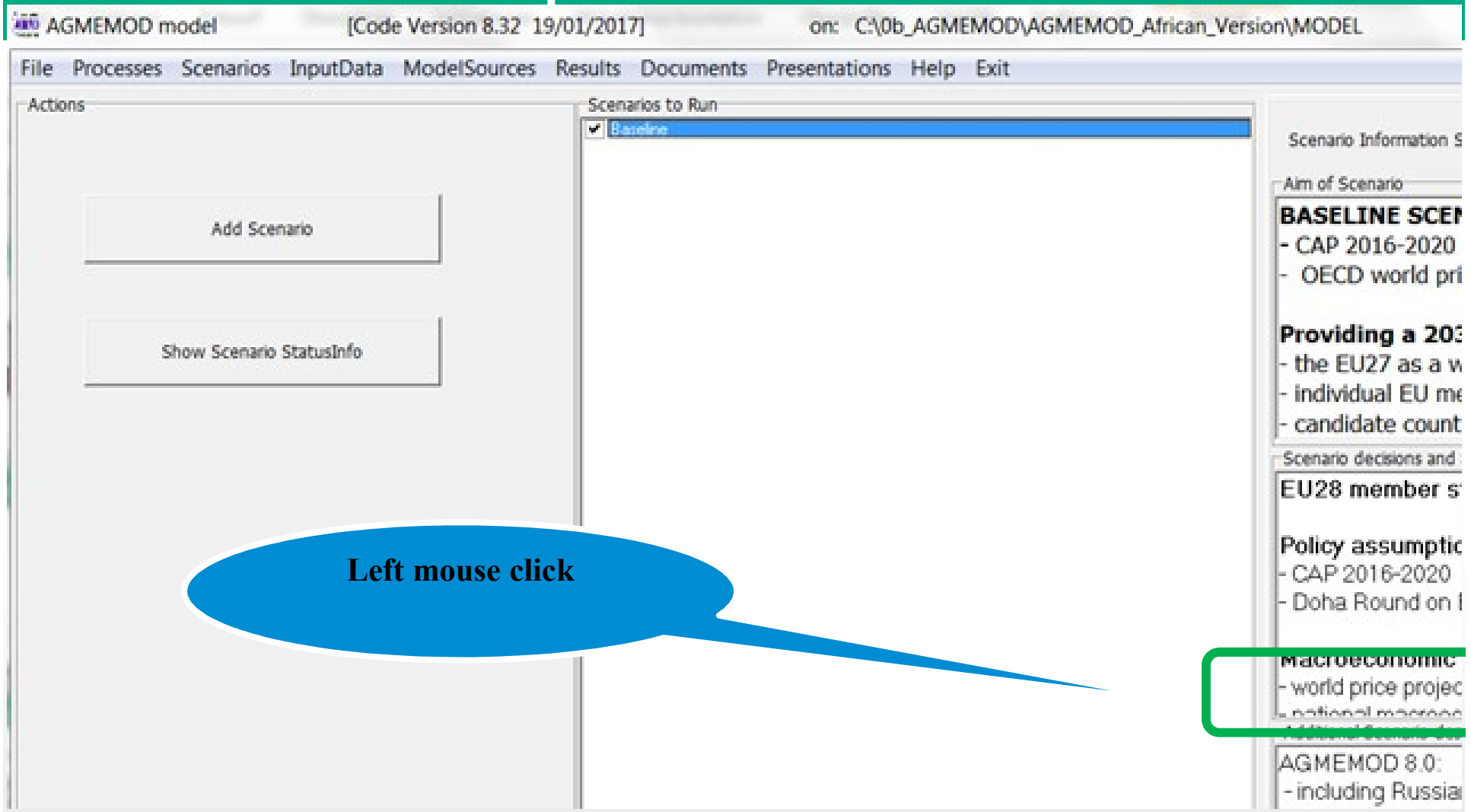
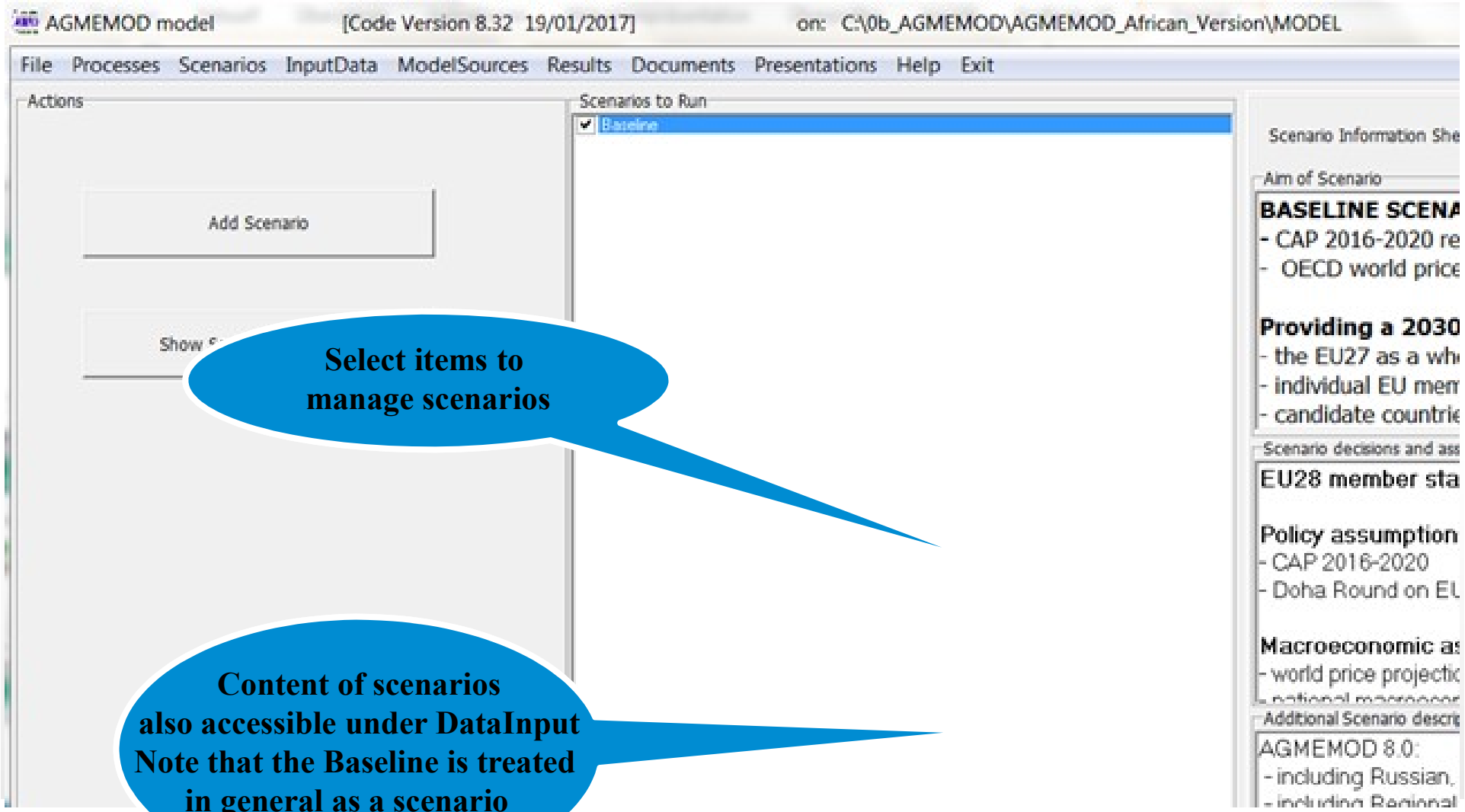
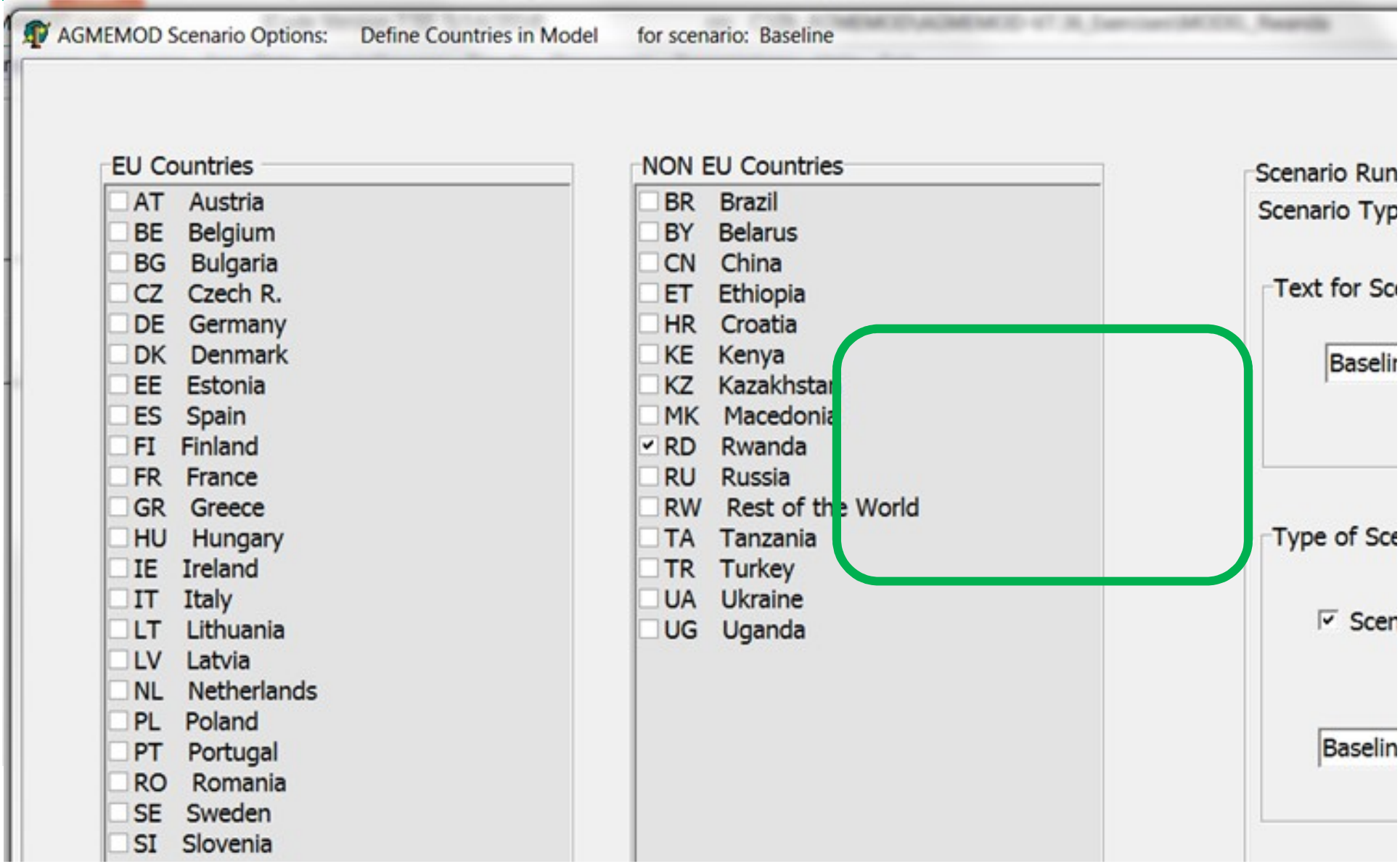
GUI: Scenario set-up



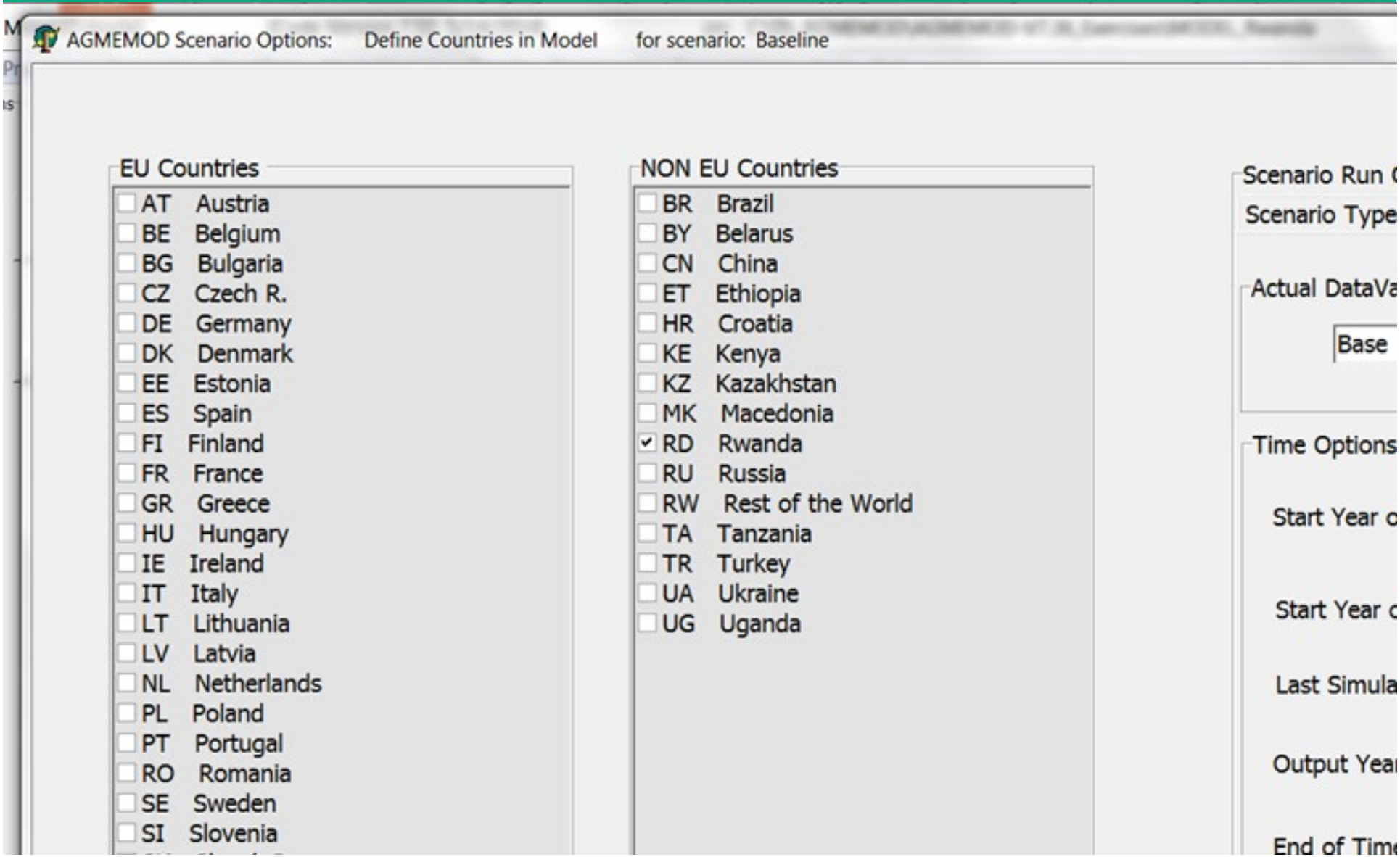
GUI: Scenario set-up



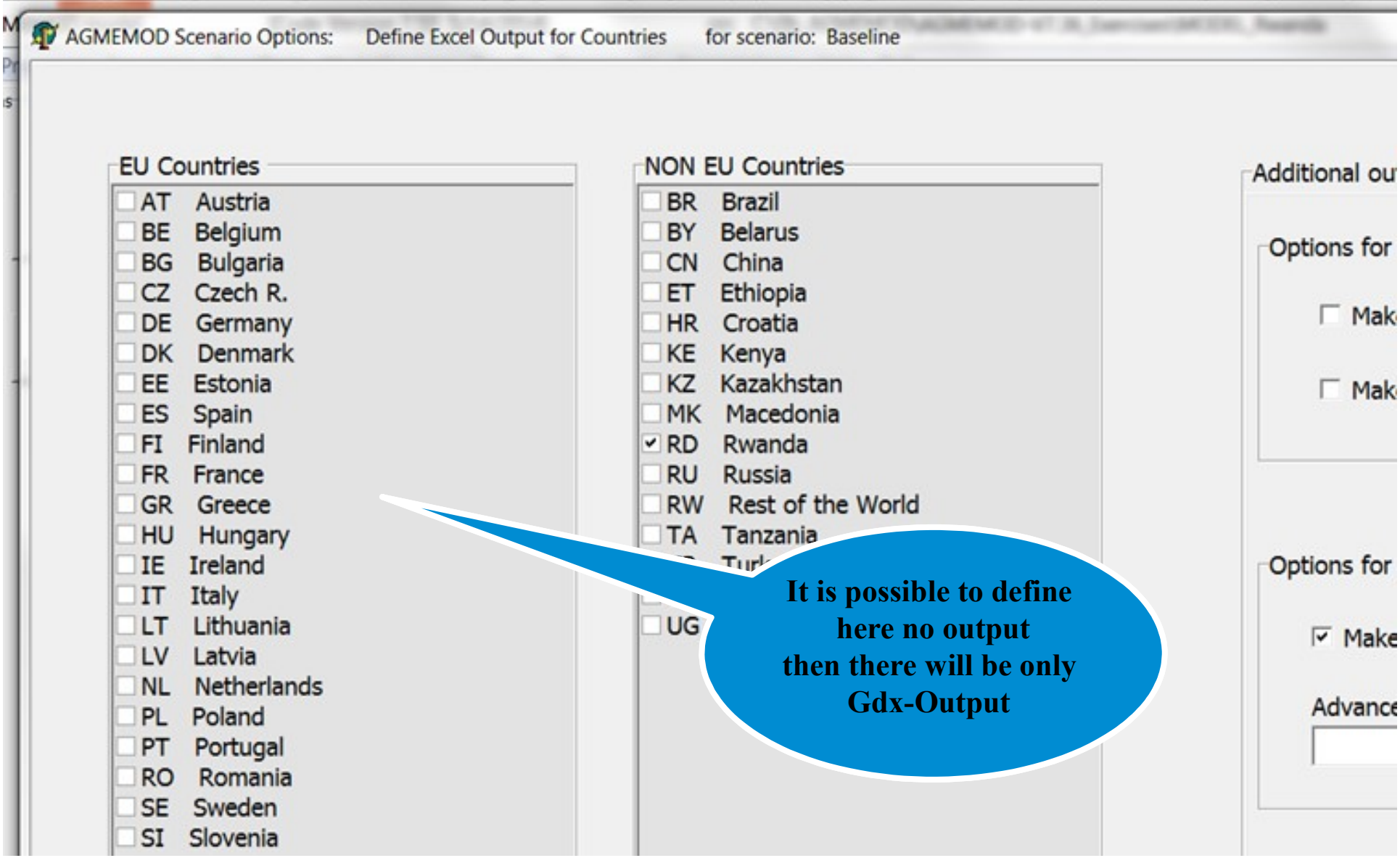
GUI: Define countries in model



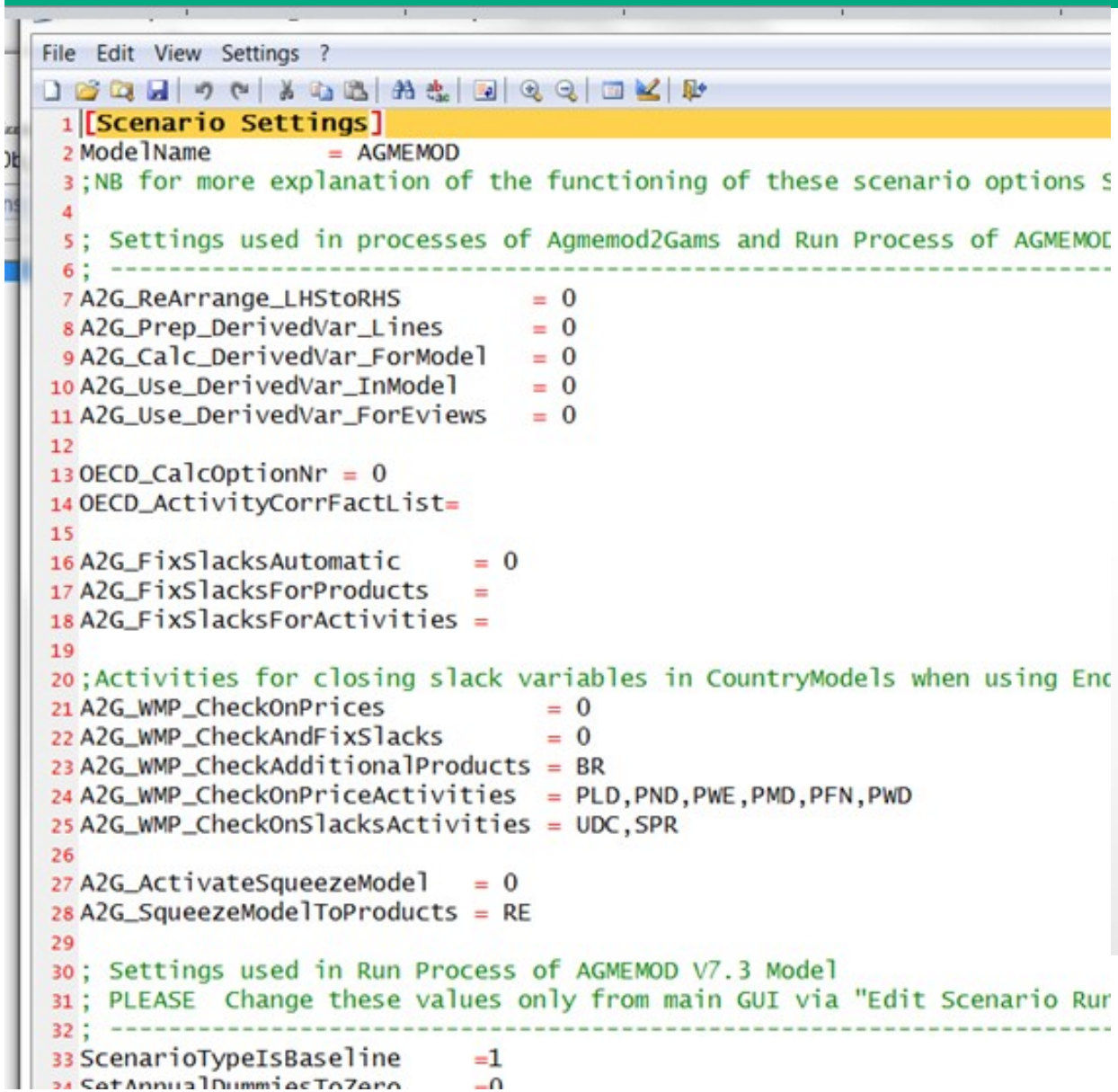
Define DataVariant / TimeOptions



GUI: Define Excel output

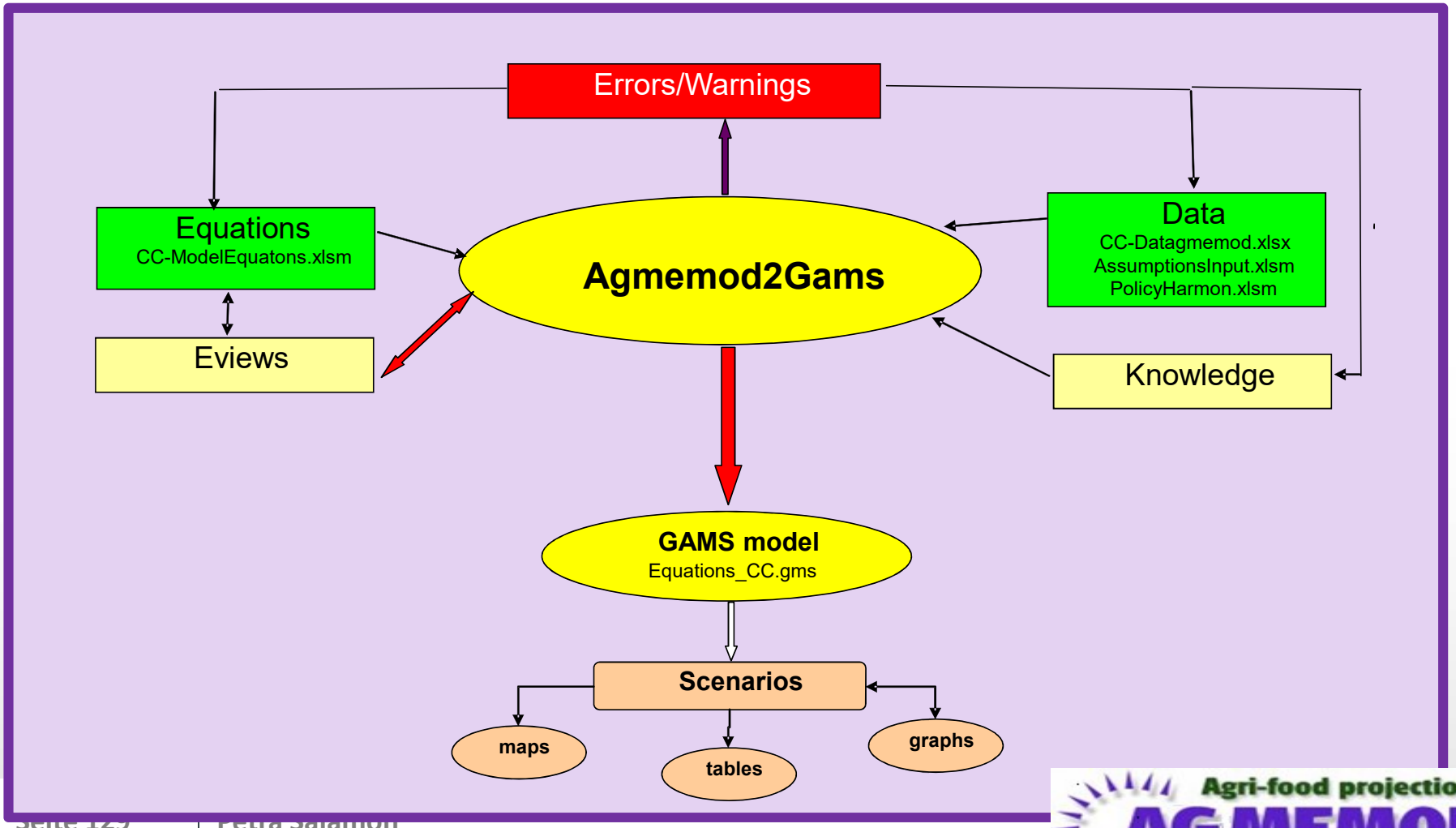


GUI: Define Agmemd2Gams



THÜNEN

From Data handling to output analysis: Processing



Agri-food projections
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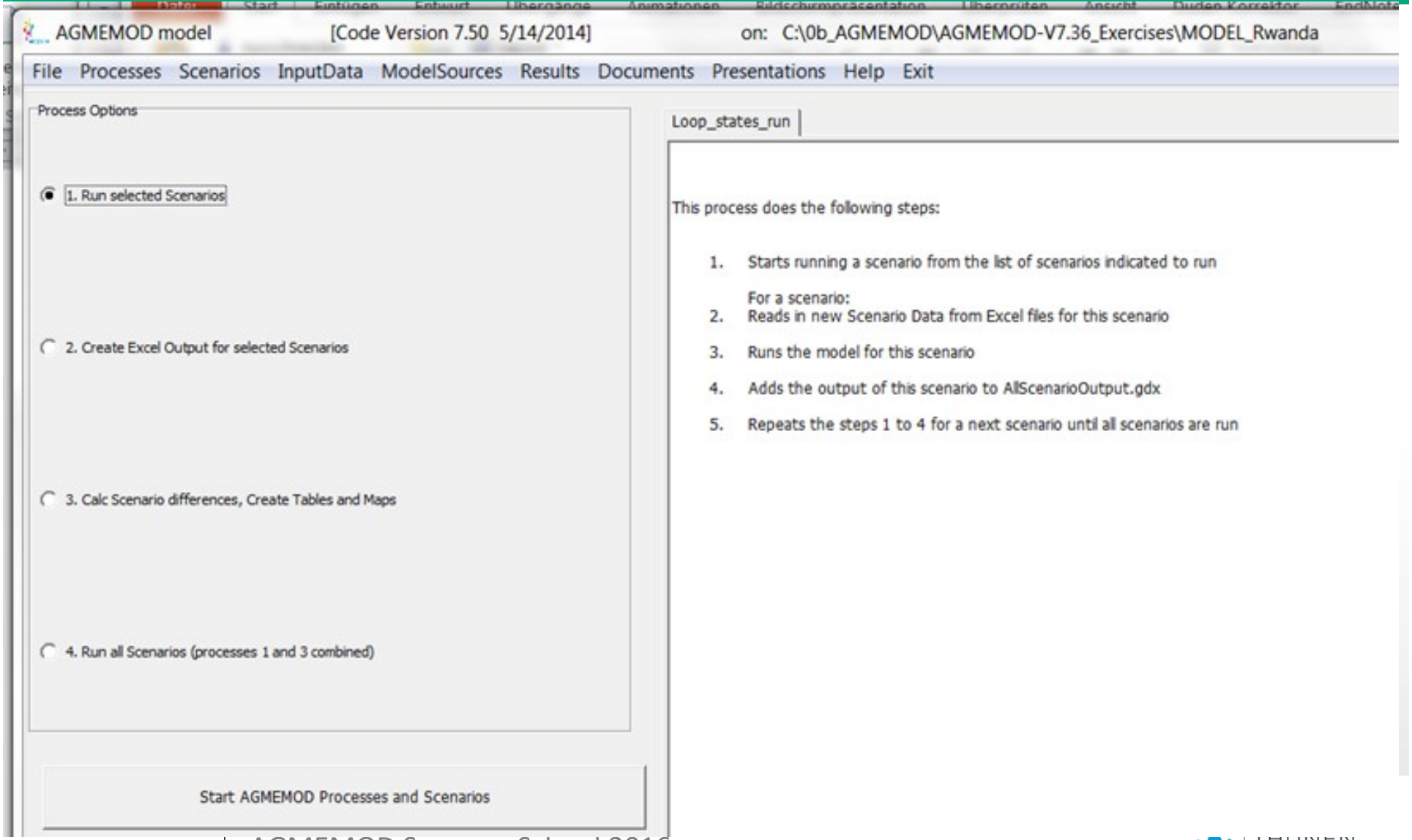
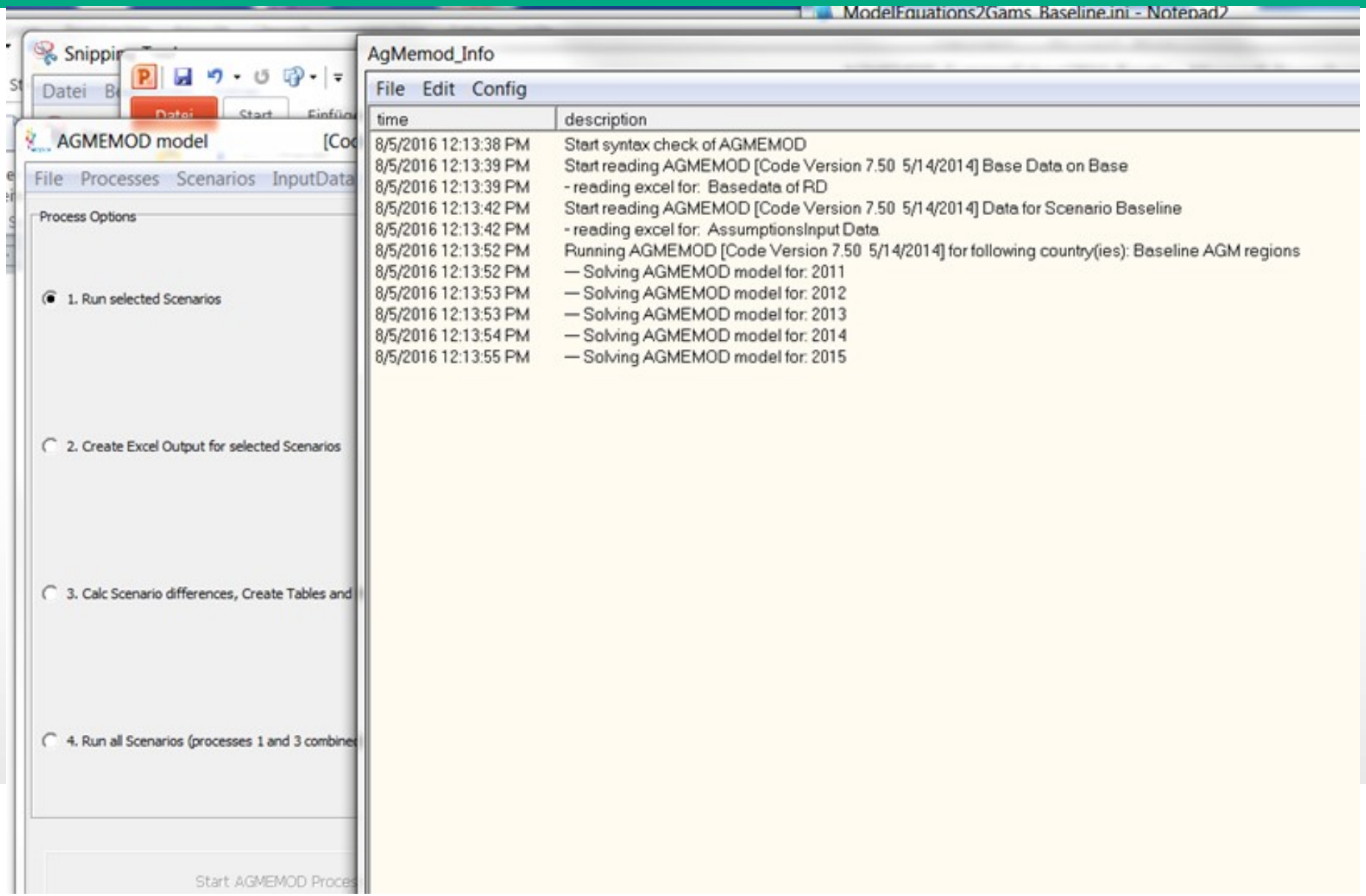
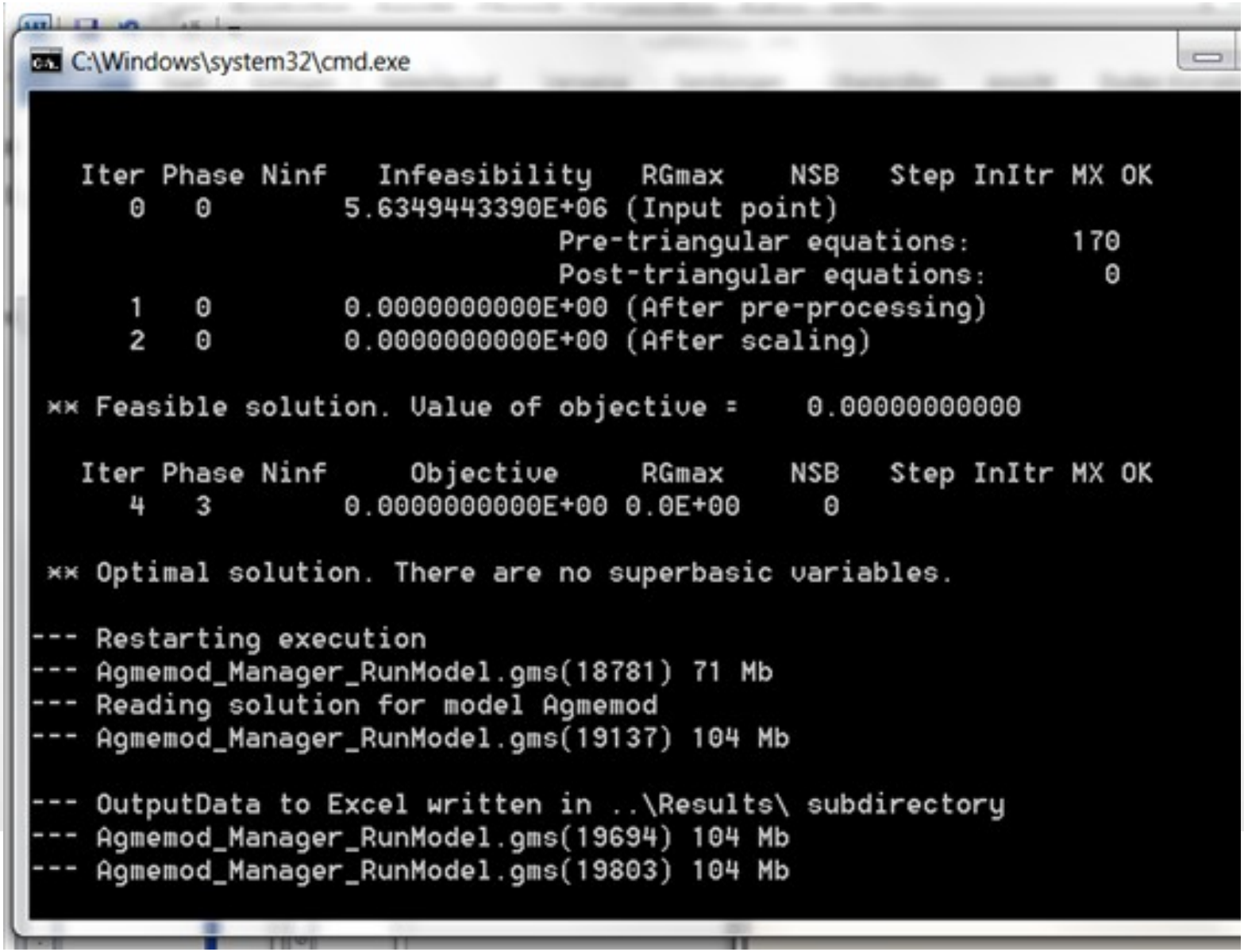
GUI: Processing



GUI: Processing

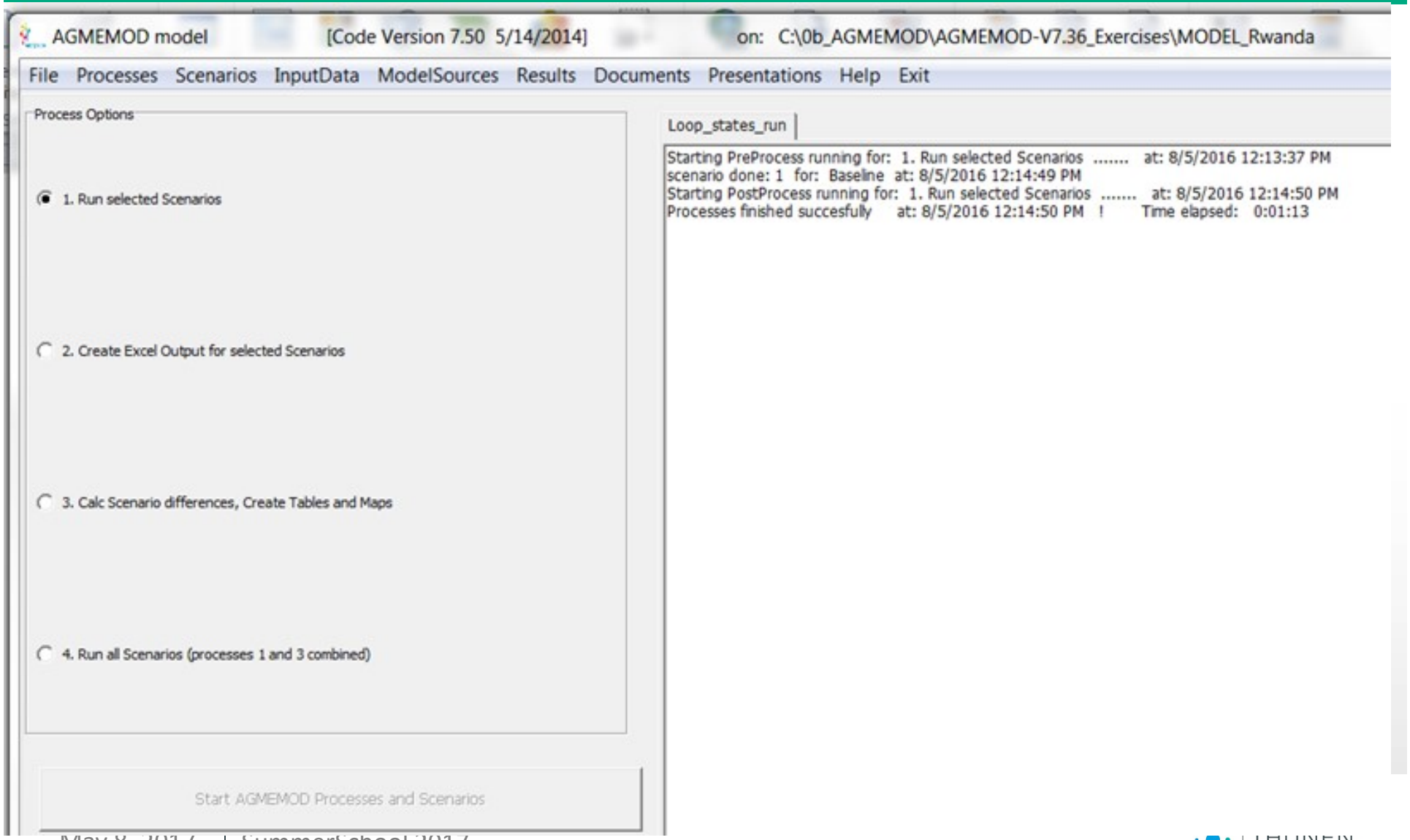


GUI: Processing

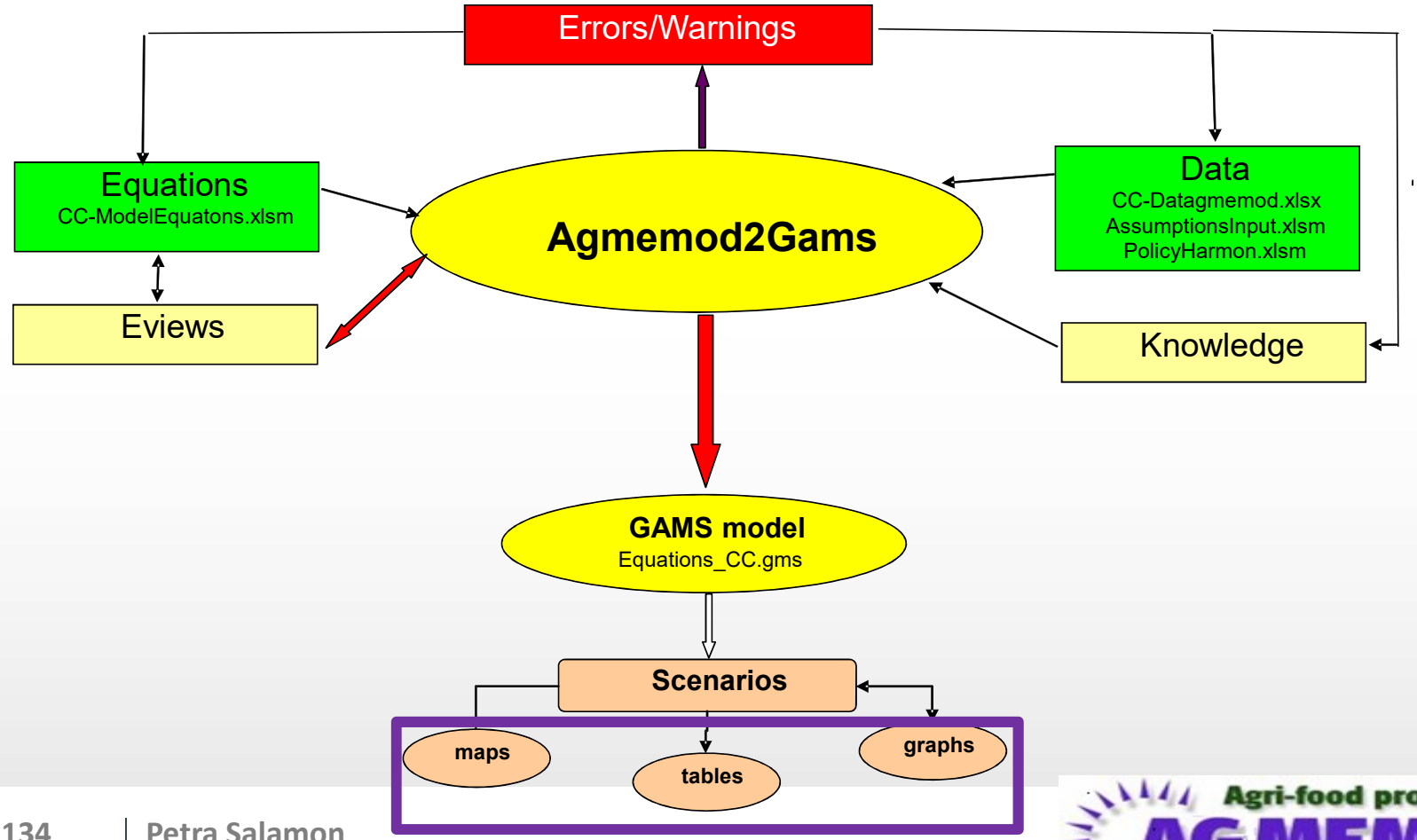


THÜNEN

GUI: Processing

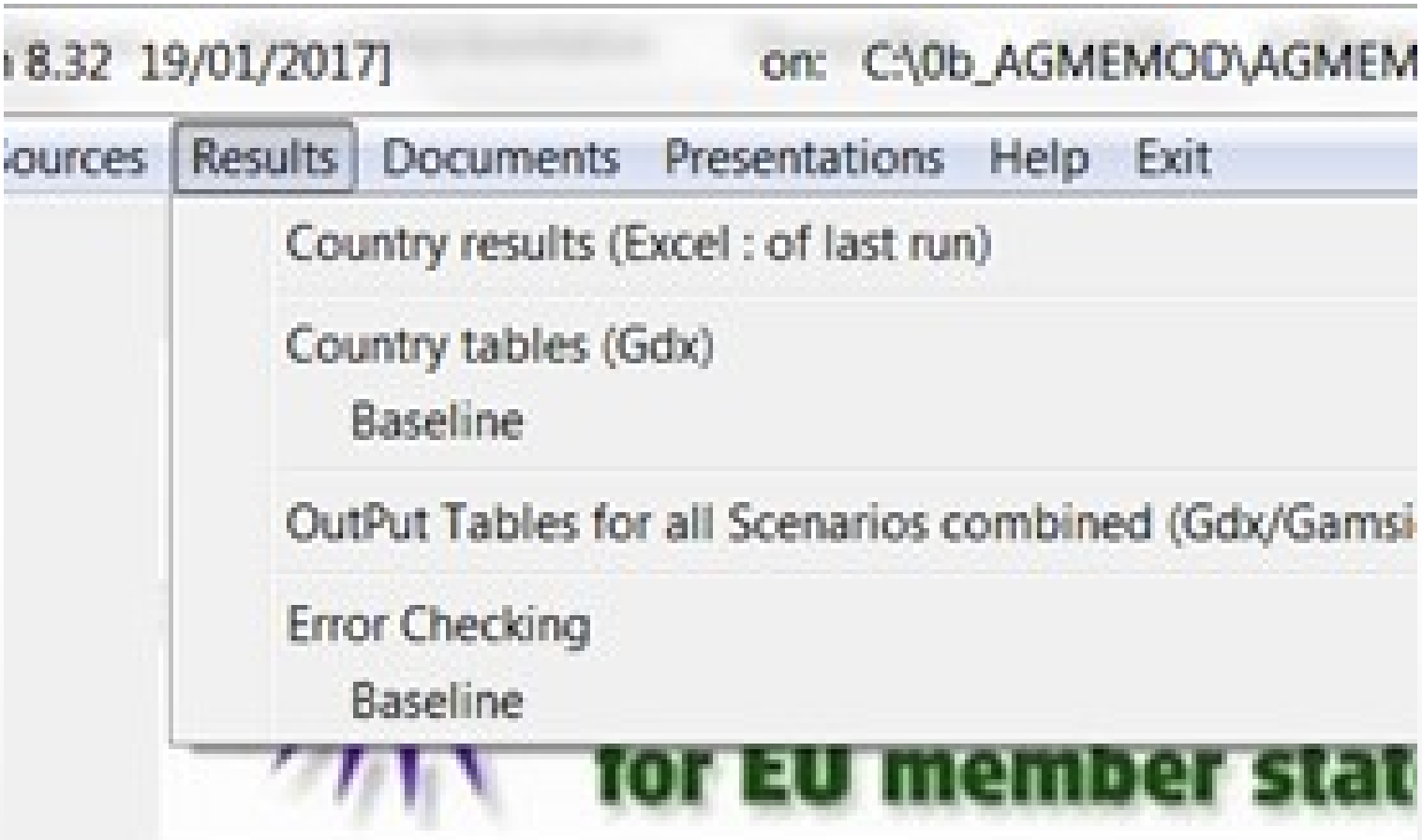


From Data handling to output analysis: Output



Agri-food projections AGMEMOD for EU member states

GUI: Results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Country tables (Gdx)
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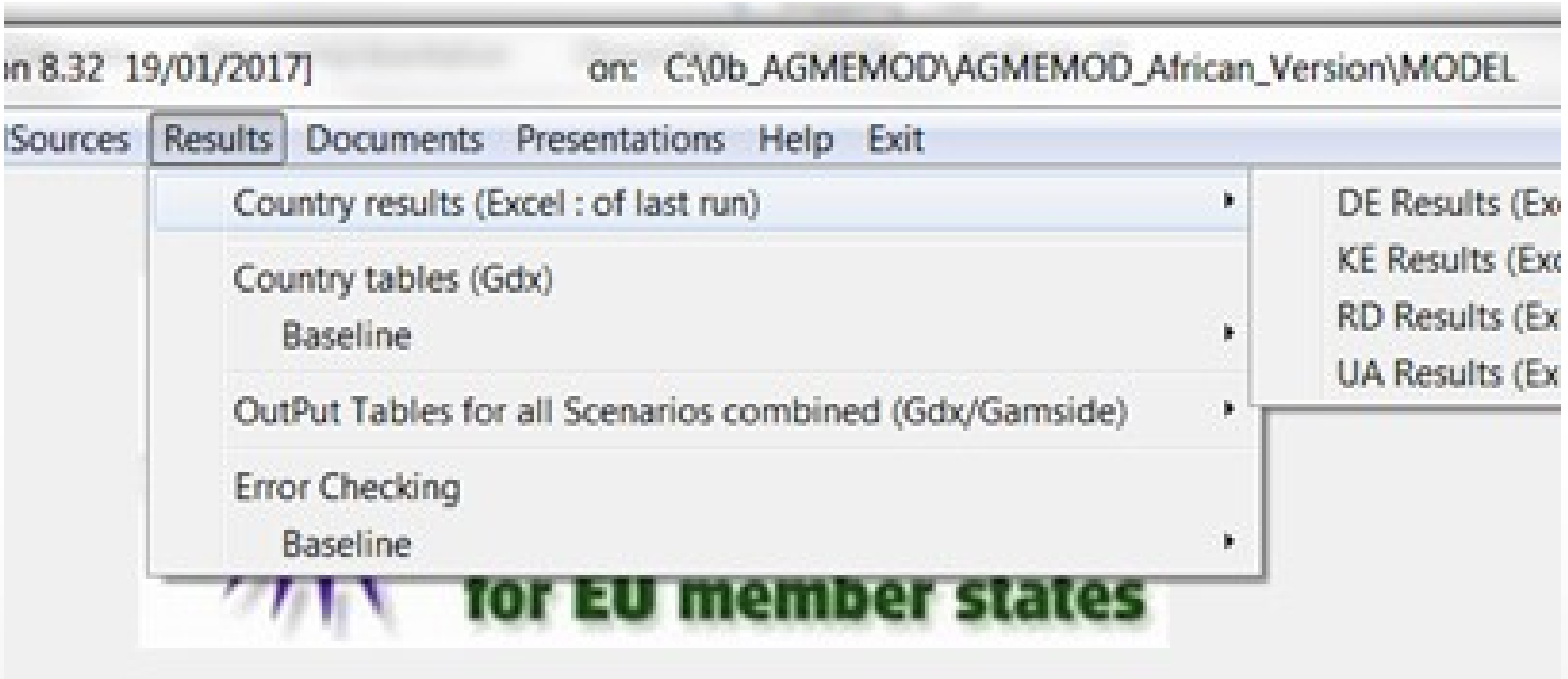
Baseline
for EU member stat

GUI: Results


n 8.32 19/01/2017]
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RD Results (Ex
UA Results (Ex
for EU member states

GUI: Results


19/01/2017]
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Error Checking
Baseline
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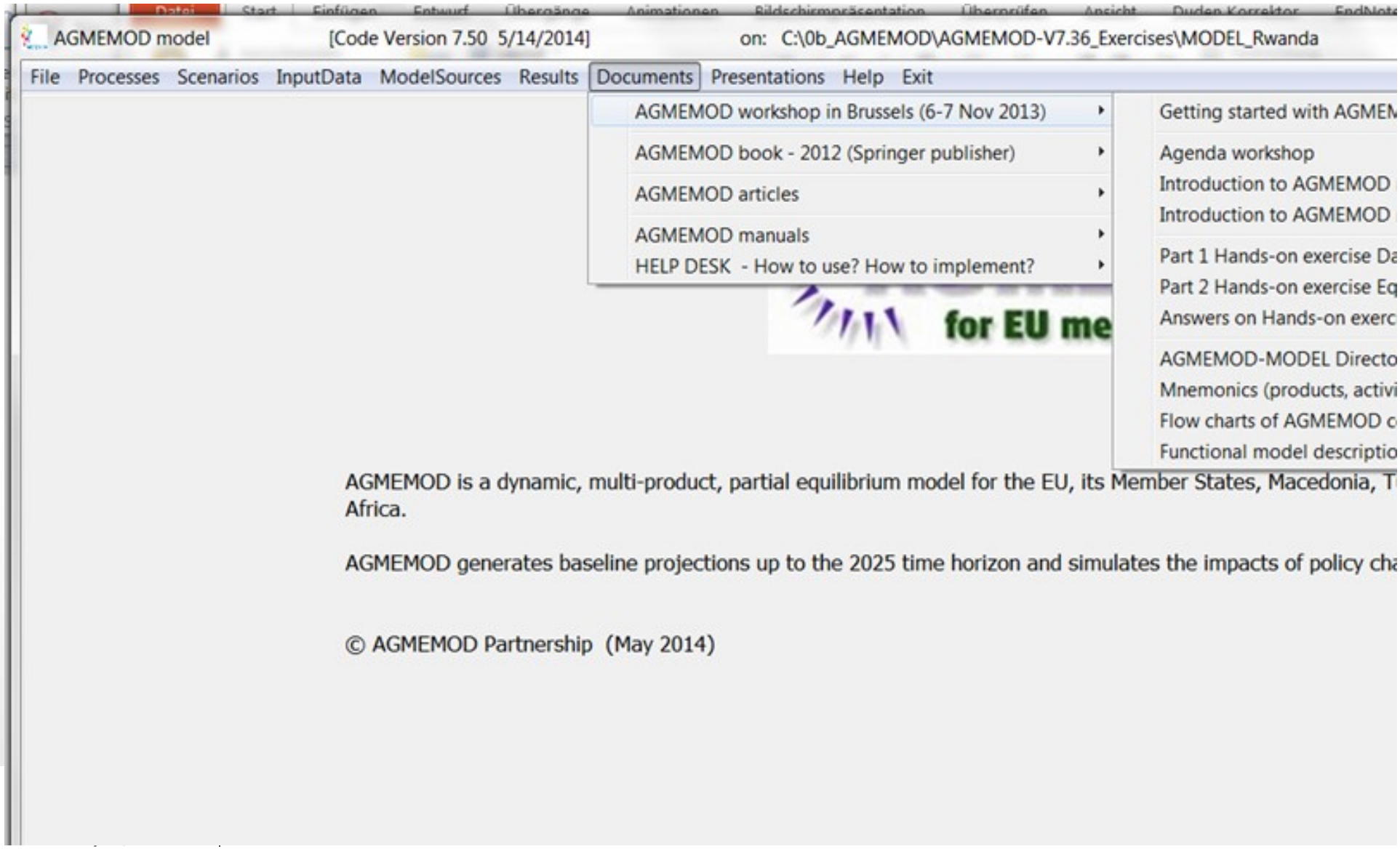
KE Output (Gdx)
RD Output (Gdx)
UA Output (Gdx)
for EU member states

GUI: Documents



GUI: Presentations