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A SOFTWARE APPLICATION FOR TIMES-SAM LINKAGE

A VBA program to connect energy and macroeconomic models

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A SOFTWARE APPLICATION FOR TIMES-SAM LINKAGE

A VBA program to connect energy and macroeconomic models

MARCO RAO, UMBERTO CIORBA, MARIA CRISTINA TOMMASINO, MARIA GAETA

Riassunto
Questo lavoro descrive struttura e funzionamento di un programma che implementa il collegamento tra il modello energetico-economico TIMES-Italia sviluppato dall'Unità Studi dell'ENEA e il modello macroeconomico costituito dalla Matrice di Contabilità Sociale (SAM) sviluppato dall'Università di Roma "Tor Vergata", utilizzando un riferimento metodologico di letteratura. Il collegamento è realizzato mediante un software sviluppato in Visual Basic for Applications (VBA) che utilizza dati di input relativi a scenari energetico - economici prodotti dal modello TIMES per effettuare valutazioni di impatto macroeconomico mediante la SAM.

Parole chiave: TIMES, SAM, soft-linkage, VBA

Summary
This work describes the structure and operation of a program that implements the linkage between the energy-economic model Times-Italy, developed by ENEA Studies and Strategies Unit and the Social Accounting Matrix (SAM) developed by the University of Rome "Tor Vergata", following reference studies about the methodological approach. The connection is made using a software developed in Visual Basic for Applications (VBA) that uses input data related to energy-economic scenarios produced by the TIMES model for the assessments of macroeconomic impact by SAM.

Keywords: *TIMES, SAM, soft-linkage, VBA*

Index

Introduction

This documents presents the VBA[1] software developed in order to implement a soft-linkage between the TIMES[2]-Italy model (**Gaeta & Baldissara, 2011**) and a Social Accounting Matrix[3] for Italy (**Scandizzo & Ferrarese, 2015**). This software was implemented in the framework of a project developed by Italian Ministry of Economic Development and ENEA[4].

The rest of this document is organized as follows.
First, a schematic description of the algorithm structure is provided in Chapter 1, in order to show how the program is built and how it works.
The application content and its main operative characteristics are presented in detail in Chapter 2.
Appendix A reports the source code of the program, while Appendix B provides some information about the code characteristics.

This report does not discuss the theoretical aspects[5] of the link: such a matter will be covered in a forthcoming publication.

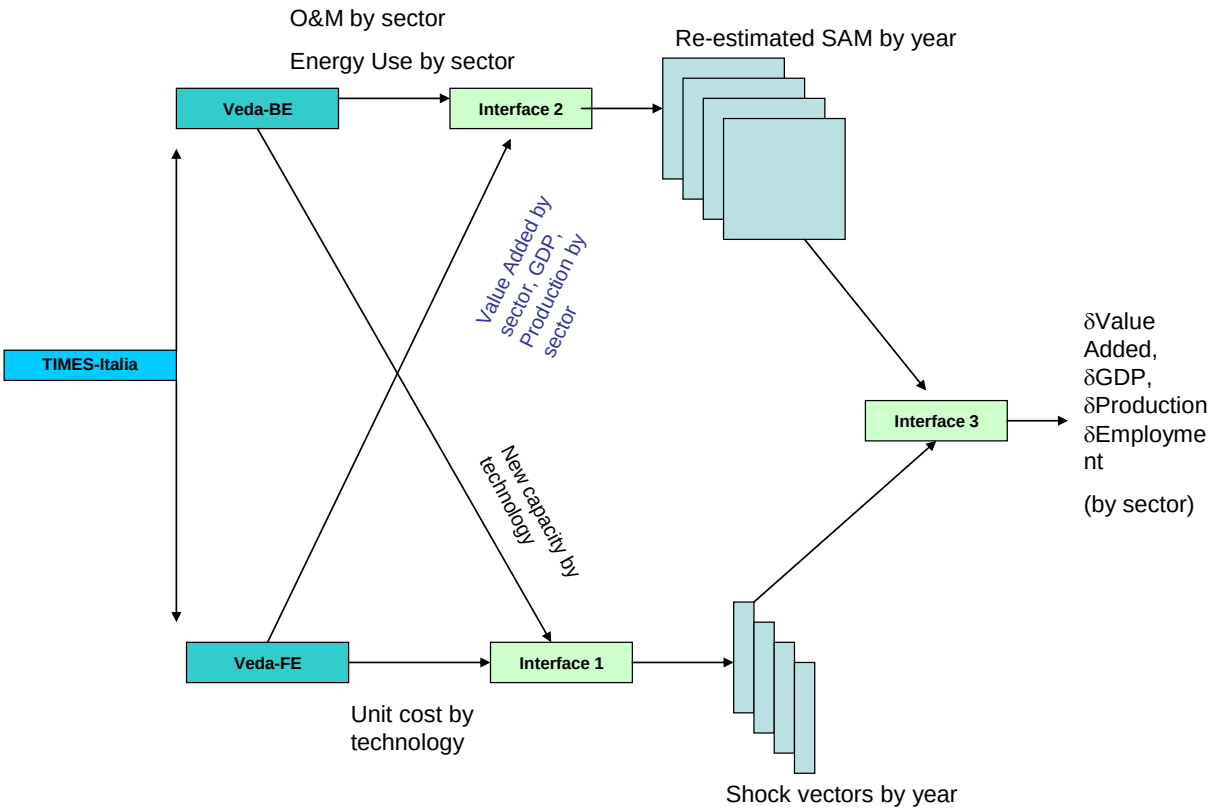
[1] Visual Basic for Applications is an implementation of Microsoft's event-driven programming language, Visual Basic 6, and its associated integrated development environment (IDE).
[2] The TIMES (The Integrated MARKAL-EFOM System) model generator was developed as part of the IEA-ETSAP (Energy Technology Systems Analysis Program), an international community which uses long term energy scenarios to conduct in-depth energy and environmental analyses (**Loulou, Goldstein, & Noble, 2004**) (**Loulou, Remne, Kanudia, Lehtila, & Goldstein, 2005**)
[3] A Social Accounting Matrix (SAM) represents flows of all economic transactions that take place within an economy (regional or national) and represents a standard model for the national accounts methodologies (**U.N., A System of National Accounts, 1968**) (**U.N., System of National Accounts 2008**). It is at the core, a matrix representation of the National Accounts for a given country, but can be extended to include non-national accounting flows, and created for whole regions or area. For an exhaustive tractation see (**Miller & Blair, 2009**).
[4] Convenzione tra il Ministero dello Sviluppo Economico – Dipartimento per l'impresa e l'internalizzazione "Direzione Generale per la politica industriale e la competitività" (MiSE – DGPIC) l'Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Economico Sostenibile(ENEA) per la realizzazione delle attività di ricerca, studio e analisi finalizzate a supportare sul piano tecnico scientifico le azioni di competenza del Ministero per lo: " Sviluppo di metodologie innovative per l'analisi quantitativa dell'impatto sul sistema produttivo nazionale delle misure di riduzione delle emissioni di CO2".
[5] For an introduction on the methodological aspects see (**Klaassen, et al., 1999**).

1. The algorithm

This section deals with the TIMES-SAM linkage algorithm, that evaluates the impact of the development of the energy system (described by a Times Scenario) on the whole economic system.

The principle of the linkage is presented in the following figure.

Figure 1 - Basic scheme of TIMES-SAM soft-linkage algorithm



The linkage is implemented by interface programs, namely VBA routines that perform the required operations, as described in the following section.

The linkage starts with a TIMES-Run. The results of this run consist of information on, among others, new installed capacity, cost and energy use for each TIMES Technology.

The information on new installed capacity is passed on to interface 1. This interface transforms the Times results, together with information on cost per unit of capacity, into information that contributes to the construction of the "shock" vectors of the Social Accounting Matrix.

The information on O&M costs and energy use is passed on to interface 2 and used to change the structure of the SAM for scenario years.

Finally, the two interfaces provide "shock" vectors and a characteristic SAM for each scenario year. They are used by Interface 3 that evaluates the impact in each scenario year using the methodology outlined in chapter 3.

1.1 Transformation of TIMES data (interface 1)

TIMES provides data on new installed capacity and related unit costs for every technology of the model. The interface transforms the input data performing the following operations:

1. Divides new installed capacity by sector of origin. If the new capacity is installed by the residential sector (End use devices, cars, etc.) it is attributed to the Household sector. If the new capacity is installed by any of the productive sector (new plant for pulp production, new industrial electric motor etc.) or by the energy sector (new power plants, refineries, pipelines etc.) it is attributed to the Capital Formation sector.
2. Multiplies new installed capacity by costs per unit of capacity. The operation is repeated for every technology and for every scenario year. By doing so the interface calculates the monetary value of investment in each technology.
3. Investment flows are allocated along the construction period which, for some group of technologies, can be multiannual. The length of the construction period is predefined and characteristic for groups of homogeneous technologies.
4. The annual investment costs are assigned to productive sectors by means of allocation factors. The allocation factors represent the share of the input sector in the total expenditure. The values of the factors are exogenously set and differentiated for groups of homogeneous technologies. The expenditure that activates each productive sector is retrieved by multiplying the cost of a new installed capacity with its allocation factors.
5. The amount of actual investment realized in each scenario year is the result of an overlap of investment decisions taken at different years and completed in different years (depending on the length of the construction period). Annual total vectors of investment for Households and for Capital Formation are calculated by aggregation of input demand by sector.

1.2 Transformation of SAM data (interface 2)

This interface builds a new SAM for each scenario year using the structure of the base year SAM and some inputs from TIMES model. This task was performed based on methodological work developed by the authors and implemented in subsequent versions and modifications of their original software **(Rao & Tommasino, 2014**) (**Rao & Tommasino, 2015**).[6]

The first operation homogenizes the data that are a common input for both SAM and TIMES. In practice, the interface takes the growth rates for GDP and Value Added by sector (which

[66] Among the main references see: (**Lahr & De Mesnard, 2004**), (**Gilchrist & St Louis, 1999**), (**Szyrmer, 1989**).

are input data in the TIMES framework) and constrains the GDP and Value Added by sector in the SAM to evolve year after year according to these growth rates.

The second operation selects among Times results the data on costs for Operation and Maintenance (O&M) by technology, regroups the technologies by sector of final use and evaluates the rate of growth of O&M for each sector of final use. Finally, the interface constrains the inputs provided by the sector "Commercio, servizi di manutenzione e riparazione…" and registered in the SAM, to follow the growth path derived from Times results.

Similarly, the third operation evaluates from Times results the data on energy purchases by technology, regroups the technologies by sector of final use and evaluates the rate of growth of energy expenditures for each sector of final use. Finally, the interface constrains the inputs provided by sectors "Elettricità, Gas, Vapore", "Coke e prodotti della raffinazione del petrolio" and registered in the SAM, to follow the growth path defined by the Times results.

The last step is to perform for each new SAM a calibration procedure using a routine based on the "RAS with constrains" method.

The interface builds a new SAM for each year of the scenario and makes it homogeneous with data generated by the Times model. It implicitly reports the changes in the structure of the economy assuming that most of the structural change is started by the energy sector.

1.3 Evaluation of the impact (interface 3)

The interface evaluates the impact of a technological scenario by performing the following operations:

- for each year of the chosen scenario collects the SAM produced by Interface 2;
- makes the sector "Formation of Capital" exogenous and evaluates the corresponding multipliers' matrices;
- for each year, multiplies the related "shock" vector of Investment (calculated by Interface 1) by the multiplier's matrix;
- stores the data on job creation, change of GDP, change of value-added by sector in the Database of results.
- makes the sector "household" exogenous and evaluates the corresponding multipliers' matrices;
- for each year, multiplies the related "shock" vector of household expenditure calculated by Interface 1 by the multiplier's matrix;
- stores the data on job creation, change of GDP, change of value added by sector in the Database of results.

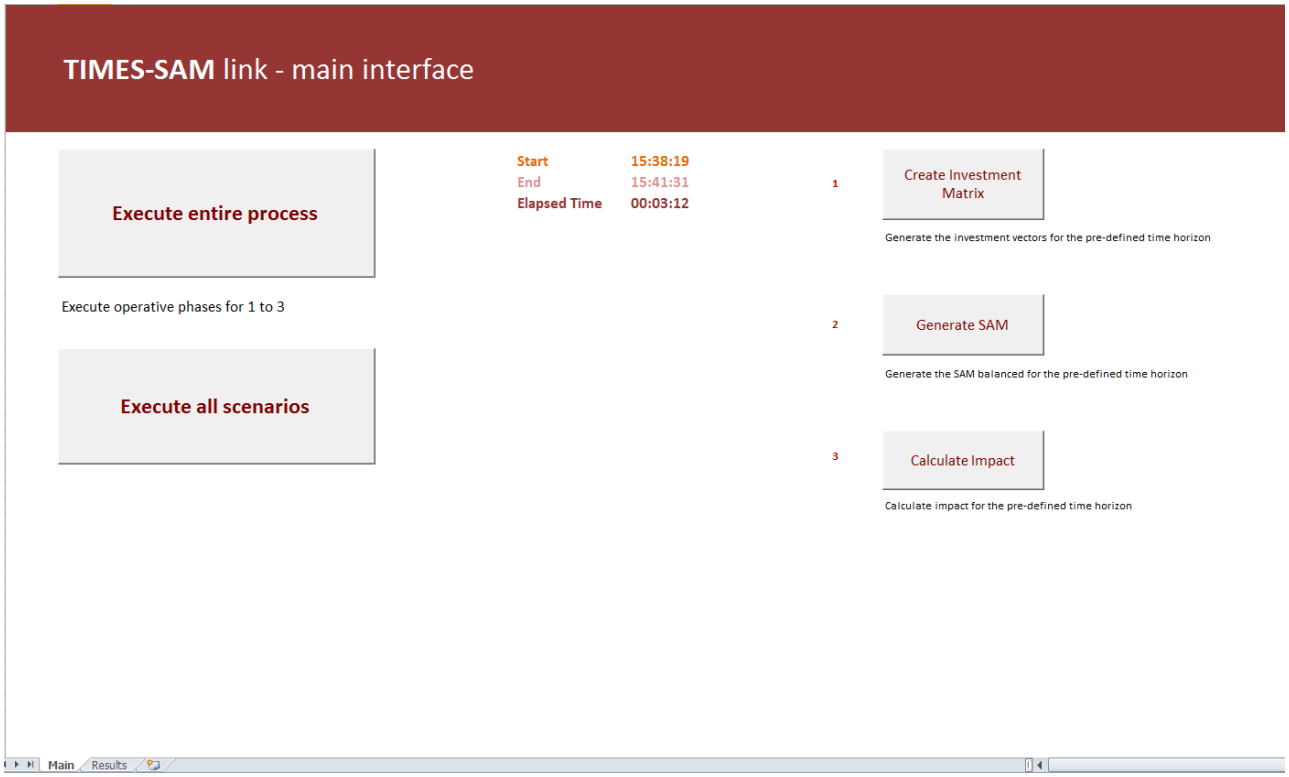
2 The application

The program is structured in three interfaces, three separate routines that implement the algorithm described in the previous section. A main interface controls all tthree routines, by executing the entire work flow or the three phases one by one. In the following paragraphs a detailed description of the structure and operation of the main interface and of the three routines is presented.

Main Interface

This routine is hosted in an .xlsm file, containing 2 sheet: the first is a control console, the second contains some graph of the final results of the entire work flow.
Figure 1 shows the control console of the interface, that reports the key operations performed by the program.

Figure 2 - Main interface command console



Reading from left to right, and from up to down the console reports:

Execute entire process: execute the macroeconomic impact evaluation using a certain TIMES scenario

Execute all scenarios: execute the work above described about a pre-determined set of scenarios

Create Investment Matrix: run the Interface 1, that creates the investment matrix for the fixed time-horizon

Generate SAM: run the Interface 2, that creates the balanced Matrices for the fixed time-horizon

Calculate Impact: run the Interface 3, that produces the final output of the macro-economic evaluation impact

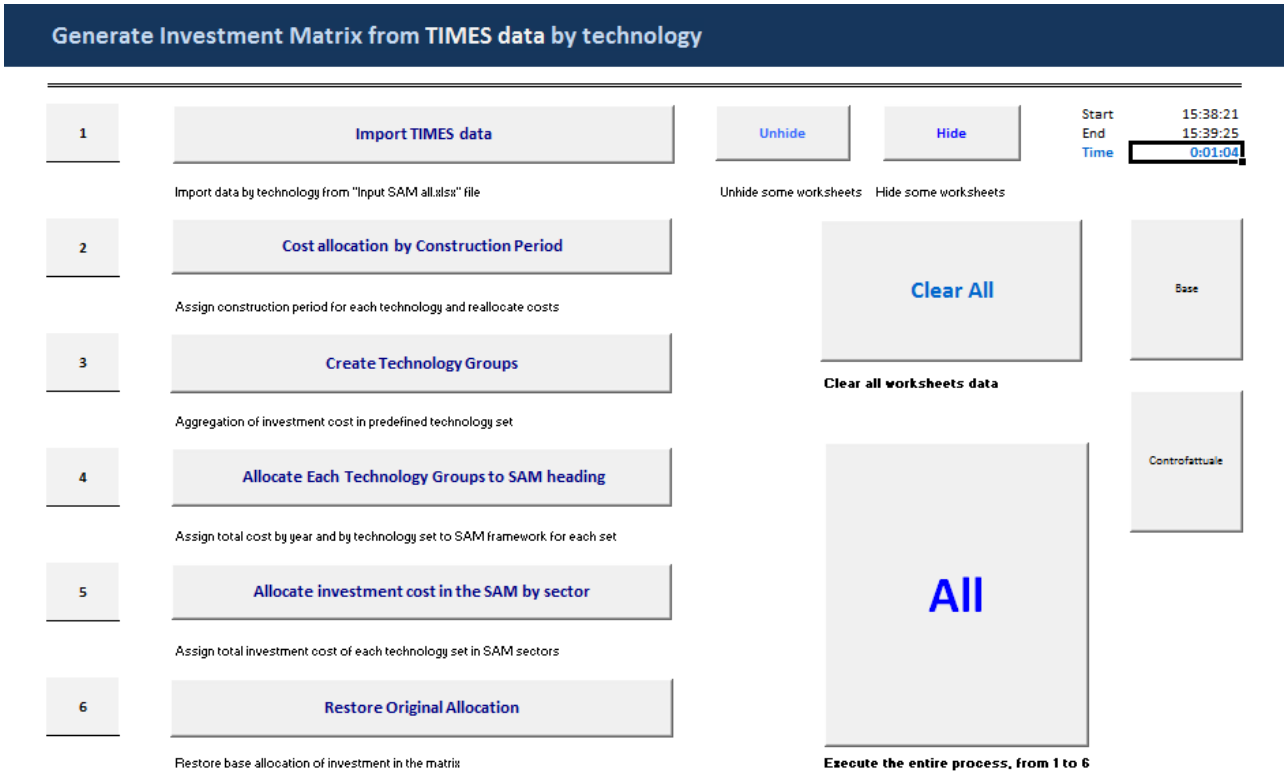
Between the above mentioned buttons, an indication of the Start/End/Elapsed Time is reported.

Interface 1

This routine is hosted in an .xlsm file, that contain 20 sheets, described below.

1. **Main** contains the console that controls the entire Interface 1 workflow

Figure 3 – Interface 1 command console



Reading from left to right, and from up to down the console reports:

1 Import TIMES data from dedicated folder
2 Allocate costs by construction time
3 Create technology groups
4 Import technology groups costs in the SAM scheme
5 Allocate technology groups costs in the SAM
6 Restore original allocation

Unhide	Show the sheets
Hide	Hide the sheets
Clear All	Erase each result produced by Interface 1
All	Execute entire Interface 1 workflow
Base	Prepare the Base scenario procedure
Counterfactual	Prepare the Counterfactual scenario procedure

2. **INVCOST** contains data on unit investment costs by technology and by year from TIMES scenarios

3. **Cap Inst** contains data on installed capacity by year and by technology

4. **Result** contains data on investment costs by year and by technology obtained by multiplying unit investment costs and installed capacity: this operation is performed by importing TIMES data from the dedicated directory. After the import, Interface 1 allocates the investment costs in a more accurate way by proportional assignment in the time horizon, using an appropriate construction time associated to each technology. In this sheet there are three buttons that perform the following operations:

Import Data	import TIMES file in the sheet
Assign Construction	associate a construction time to each technology
Assign Cost	associate each investment cost to appropriate year

5. **ItaliaOld** contains the SAM at the base year (2010)

6. **SET TIMES** contains data about the technology set that Interface 1 uses in the allocation of the investment costs in the SAM. This sheet contains a table that reports the investment costs by technology sets and by year.

7. **Italia** contains a set of SAM that have to be multiplied by investment costs reported in SET TIMES sheet. Each SAM is associated to an identical, "proportion matrix" that reports the percentages of the investment costs for each sector: such a percentages are used in the investment costs allocation procedure. Finally, the sum of the above mentioned matrices, produces a matrix that contains the set of the "shock vectors" that will be used in the impact evaluation performed by Interface 3. This results are related to the Base scenario.

8. **ItaliaCFatt** contains the same results of the sheet "Italia" for the Counterfactual scenario.

9. **Technology Sets** contains a duplicate of the table contained in "SET TIMES" sheet, used in secondary subroutine of the Interface 1

10. **FinalFCAP** contains a replica of the final shock vectors matrix for the base scenario prepared assuming FORMAZIONE DI CAPITALE as exogenous sector

11. **FinalFCAPBaseeC** contains the same matrix of "FinalFCAP" sheet for both the Base scenario and the Counterfactual scenario

12. **Settori CEIS** contains the definitions for the sector activated by investment in the SAM basing on Università Di Roma 2 recommendations

13. **% CEIS** contains the percentage of activation for the sectors of the previous sheet

14. **TavRacOrig** contains a reconciliation table between "Settori CEIS" table and the SAM

15. **TavRac** contains a reconciliation table between "% CEIS" table and the SAM

16. **NOMI TIMES** contains TIMES technology's nomenclature

17. **NOMI SAM** contains SAM sector's nomenclature

18. **OldItalia** contains the SAM at the base year

19. **Temp** temporary sheet used in some routines for support in the data elaboration

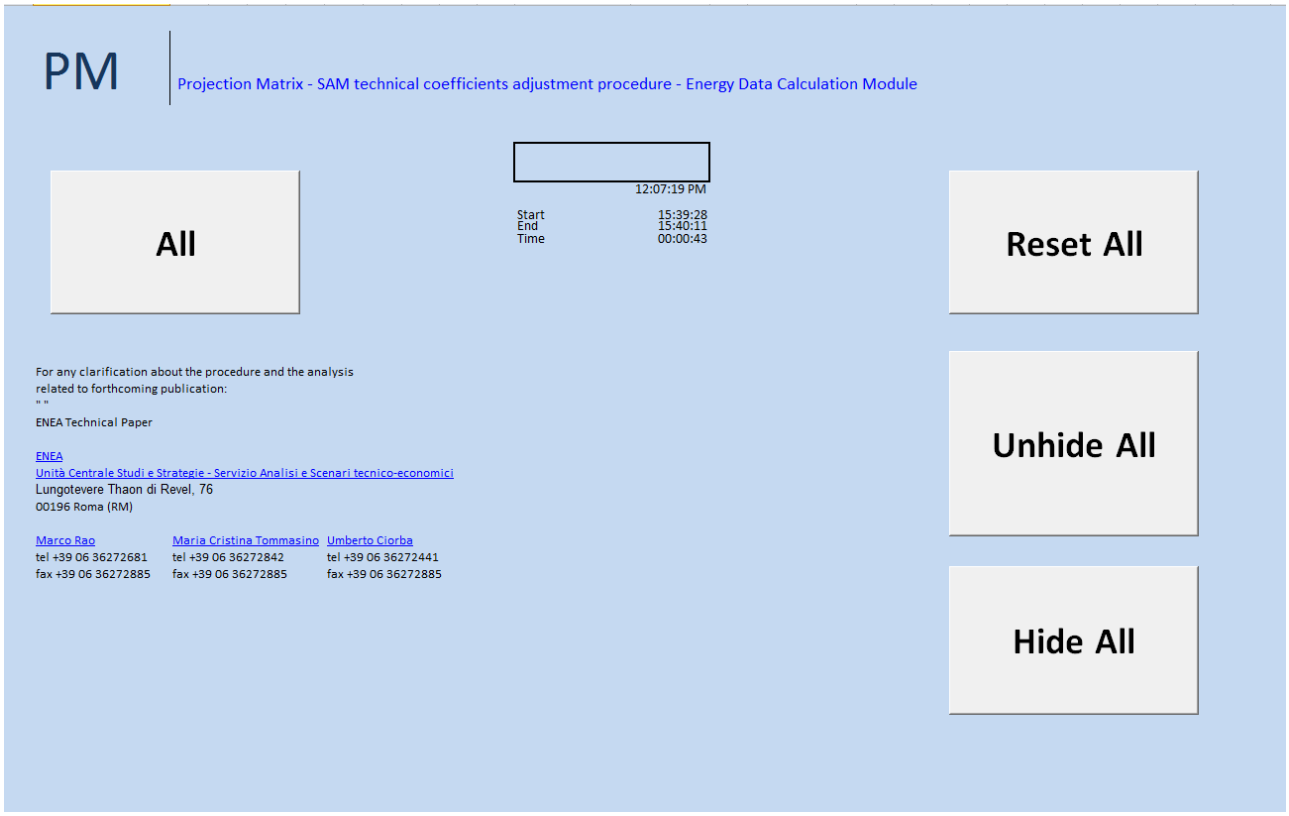
20. **Code** contains source code of the Interface 1

Interface 2

This routine is hosted in an .xlsm file, that contains 17 sheets, described below.

Main contains the console that controls the entire Interface 2 workflow

Figure 4 – Interface 2 command console



Reading from left to right, and from up to down the console reports:

All	Execute the entire balance procedure
Reset All	Clear all results
Unhide All	Show the sheets hidden at the end of procedure
Hide All	Hide the sheets used in the procedure

Matrices Set contains the balanced matrices set as a result of the entire procedure

Constraints Set contains a set of matrices in which the internal constraints in the selected sectors are highlighted (the color of the cells are yellow)

RAS contains the matrices used in the balancing procedure following the standard method (without internal constraints)

RASAdv contains the matrices used in the balancing procedure following an advanced method (with internal constraints)

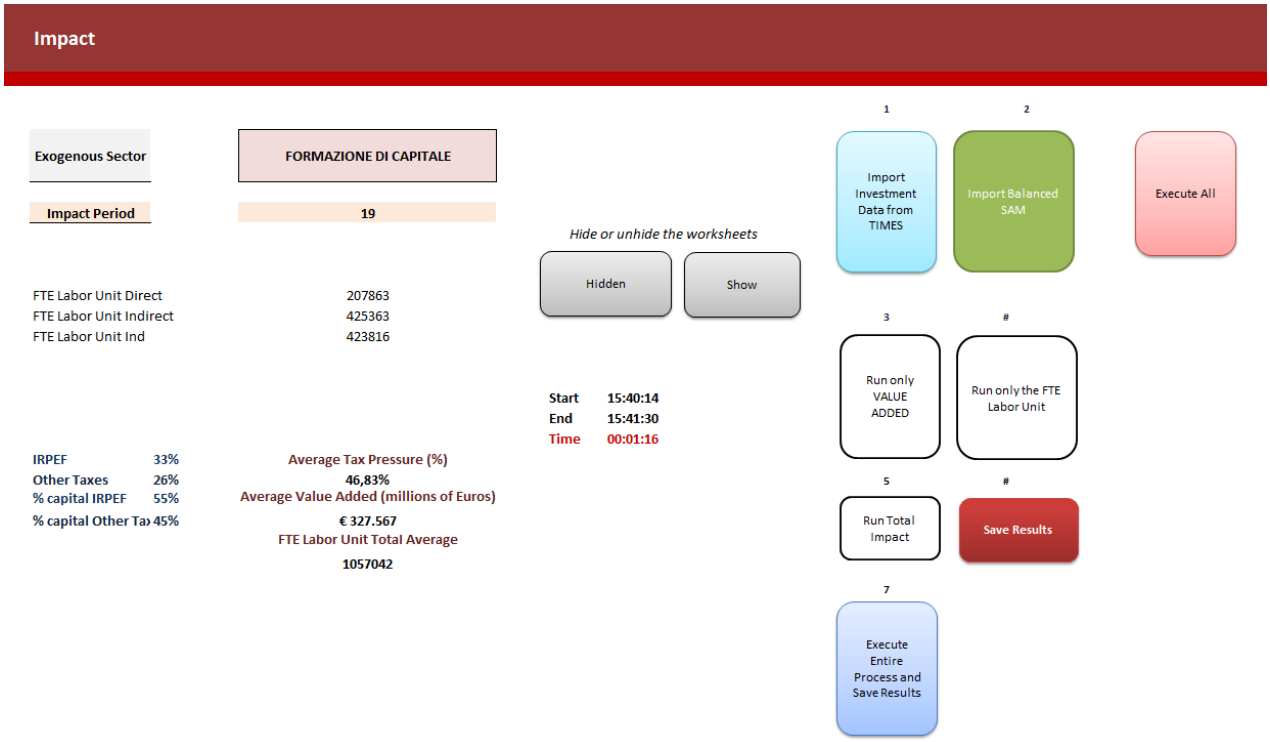
Old	contains the SAM at the base year (2010)
Temp	Temporary service sheet
Temp2	Temporary service sheet
Constraints	Sheet used in import constraints procedure
TIMES Vectors	contains the marginal totals of the SAM, the row-columns totals used to take into account the changes in the GDP and Value Added of selected sectors provided by TIMES model.
Old Mat Storage	contains tables that are identical to the SAM at the base year, for all the time horizon considered. Such a matrices set, is used to restore the balancing process at the start condition.
Italia	contains a SAM at a base year different from the one contained in OldItalia
TIMES Constraints	contains tables that report a set of index numbers used to constrain the trends of selected sectors of the SAM on a fixed path (not activated in this version)
Old Constraints Storage	contains a set of SAM used to restore the import constraints procedure
Dati TIMES	contains tables that reports selected rate of changes for a set of pre-determined sectors of the SAM, provided by TIMES model.
Check	Service sheet
Various	contains some information on the procedure

Interface 3

This routine is hosted in an .xlsm file, that contains 25 sheets, described below.

Main contain the console that control the entire Interface 3 workflow

Figure 5 – Interface 2 command console



Reading from left to right, and from up to down the console reports:

Exogenous sector	Choose the exogenous sector
Impact Period	Choose the time horizon for simulation
Hidden	Hide the sheets at the end of procedure
Show	Show the sheets used in the procedure
1	Import Investment Data from TIMES model
2	Import Balanced SAM from Interface 2
3	Run only Value Added
4	Run only ULA
5	Run Total Impact (VA + ULA)
6	Save Results
7	Execute Entire Procedure & Save Results
Execute All	Execute all as at point 7 for both the Base and the Counterfactual Scenario

Input contain the "shock vectors" used in the evaluation process

VI contains the same vectors of "Input" sheet with the exception of exogenous sector

SAMr contains the balanced SAM from Interface 2

CoeRIs contains SAM's technical coefficient

CoeRisRDM contains the SAM's technical coefficient used by import part of the procedure

SAM contains the SAM at the base year(2010)

Coe contains SAM's technical coefficient at base year

coeI contains SAM's technical coefficient that have to be copy to calculate salary

I (contains Identity Matrix for the SAM)

I-A (contains I - SAM)

Moltiplicatori (contains $I\text{-}A^{-1}$)

Impatto (contains the shock vectors used in evaluation procedure)

VA (contains Value Added output)

ULA (contains Labor Unit)

Sintesi (contains a synthesis of results)

Tasse (contains elaboration on the fiscal revenue related to the impact)

ResOut (used for temporary elaboration)

VAOut (contains VA output saved in result file)

ExpOut (contains Export data output saved in result file)

ImpOut (contains Import output saved in result file)

ULAout (contains ULA output saved in result file)

PILout (contains GDP output saved in result file)

PRODout (contains Production output saved in result file)

INVSAM (contains Investment data output saved in result file)

Bibliography

Di Palma, M. (2005). Tecniche di aggiornamento di una tavola delle interdipendenze settoriali. Roma: Università degli Studi di Roma "La Sapienza".

Gaeta, M., & Baldissara, B. (2011). *Il modello energetico TIMES-Italia: struttura e dati.* Roma: ENEA.

Gilchrist, D. A., & St Louis, L. V. (1999). Completing Input-Output Tables using Partial Information, with an Application to Canadian Data. *Economic Systems Research* , 185-194.

Klaassen, M., Vos, D., Seebregts, A., Kram, T., Kruitwagen, S., Huiberts, R., et al. (1999). *Markal-IO : Linking an input-output model with MARKAL.* Bilthoven, The Netherlands: NOP Commission.

Lahr, M., & De Mesnard, L. (2004). Biproportional techniques in input-output analysis: table updating and structural analysis. *Economic Systems Research* , 115-134.

Loulou, R., Goldstein, G., & Noble, K. (2004). *Documentation for the MARKAL Family of Models.* Paris: IEA.

Loulou, R., Remne, U., Kanudia, A., Lehtila, A., & Goldstein, G. (2005). PART I. In R. Loulou, U. Remne, A. Kanudia, A. Lehtila, & G. Goldstein, *Dcoumentation for the TIMES Model* (p. 1-78). Paris: IEA.

Mesnard, L. d. (2002). Failure of the normalization of the RAS method : absorption and fabrication effects are still incorrect. *The Annals of Regional Science* , 139-144 .

Miller, R., & Blair, P. D. (2009). *Input-Output Analysis: Foundations and Extensions.* New York: Cambridge University Press.

Rao, M., & Tommasino, M. C. (2015). Roma: ENEA.

Rao, M., & Tommasino, M. C. (2014). *Updating technical coefficients of an input-output matrix with RAS - the TRIOBal software.* Roma: ENEA.

Scandizzo, P., & Ferrarese, C. (2015). Social accounting matrix: A new estimation methodology. *Journal of Policy Modeling* , 14-34.

Szyrmer, J. (1989). Trade-Off between Error and Information in the RAS Procedure. In K. P. R. Miller, *Frontiers of Input-Output Analysis* (p. 258-277). New York: Oxford University Press.

U.N. (s.d.). Tratto il giorno February 2, 2014 da System of National Accounts 2008: http://synagonism.net/standard/economy/un.sna.2008.html

U.N. (1968). A System of National Accounts. New York: U.N.

Appendix A – The code

Main Interface

Module 1

Sub All()

```
'*************************************************************************************
'This routine executes the entire work flow

'Authors: Marco Rao
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it
'Date: November 8th 2014
'*************************************************************************************


    Application.ScreenUpdating = False
    Application.DisplayAlerts = False

    Range("O3") = Time

    Workbooks.Open Filename:="C:\INPUT SAM\INPUT SAM - Costi INV.xlsm", _
    UpdateLinks:=0
    Application.Run "'INPUT SAM - Costi INV.xlsm'!CreaVetINVnuovo"
    Windows("INPUT SAM - Costi INV.xlsm").Activate
    ActiveWorkbook.Close SaveChanges:=True

    Workbooks.Open Filename:="C:\INPUT SAM\PM.xlsm", _
    UpdateLinks:=0
    Application.Run "'PM.xlsm'!All"
    Windows("PM.xlsm").Activate
    ActiveWorkbook.Close SaveChanges:=True

    Workbooks.Open Filename:="C:\INPUT SAM\Impatto.xlsm", _
    UpdateLinks:=0
    Application.Run "'Impatto.xlsm'!Allnuovo"
    Windows("Impatto.xlsm").Activate
    ActiveWorkbook.Close SaveChanges:=True

    Sheets("Main").Select

    Range("O4") = Time

End Sub
```

```
Sub Inv()

'*************************************************************************
****
'This routine runs the Interface 1
'Authors: Marco Rao
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la
sostenibilità
'marco.rao@enea.it
'Date: November 8th 2014
'*************************************************************************
****

    Application.ScreenUpdating = False

    Range("O3") = Time

    Application.Run "'C:\INPUT SAM\INPUT SAM - Costi INV.xlsm'!CreaVetINVnuovo"
    Windows("INPUT SAM - Costi INV.xlsm").Activate
    ActiveWorkbook.Close

    Sheets("Main").Select

    Range("O4") = Time


End Sub


Sub PM()

'*************************************************************************
****
'This routine runs the Interface 2

'Authors: Marco Rao
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la
sostenibilità
'marco.rao@enea.it
'Date: November 8th 2014
'*************************************************************************
****

    Application.ScreenUpdating = False

    Range("O3") = Time

    Application.Run "'C:\INPUT SAM\PM.xlsm'!All"
    Windows("PM.xlsm").Activate
```

```
    ActiveWorkbook.Close

    Sheets("Main").Select

    Range("O4") = Time

End Sub
```

Sub Impact()

```
'*************************************************************************
****
'This routine runs the Interface 3

'Authors: Marco Rao
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la
sostenibilità
'marco.rao@enea.it
'Date: November 8th 2014
'*************************************************************************
****

    Application.ScreenUpdating = False
    Range("O3") = Time

    Application.Run "'C:\INPUT SAM\Impatto.xlsm'!All"
    Windows("Impatto.xlsm").Activate
    ActiveWorkbook.Close

    Sheets("Main").Select

    Range("O4") = Time

End Sub
```

Module 2

Sub ScenarioSelect()

```
'*************************************************************************
****
'This routine executes the entire work flow for a set of Scenarios

'Authors: Marco Rao
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la
sostenibilità
'marco.rao@enea.it
```

```
'Date: November 8th 2014
'*************************************************************************
****

    'Base

    Workbooks.Open Filename:="C:\INPUT SAM\Base.xlsx", _
    UpdateLinks:=0
    Columns("E:AC").Select
    Selection.Copy

    Workbooks.Open Filename:="C:\INPUT SAM\Input SAM all.xlsx", _
    UpdateLinks:=0
    Columns("E:AC").Select
    ActiveSheet.Paste

    Windows("Base.xlsx").Activate
    Columns("A").Select
    Selection.Copy

    Windows("Input SAM all").Activate
    Columns("A").Select
    ActiveSheet.Paste
    ActiveWorkbook.Close SaveChanges:=True

    Windows("Base.xlsx").Activate
    ActiveWorkbook.Close SaveChanges:=True

    Windows("TIMES-SAM link - main interface.xlsm").Activate

    All

    'DEC_2030

    Workbooks.Open Filename:="C:\INPUT SAM\DEC2030.xlsx", _
    UpdateLinks:=0
    Columns("E:AC").Select
    Selection.Copy

    Workbooks.Open Filename:="C:\INPUT SAM\Input SAM all.xlsx", _
    UpdateLinks:=0
    Columns("E:AC").Select
    ActiveSheet.Paste

    Windows("DEC2030.xlsx").Activate
    Columns("A").Select
    Selection.Copy

    Windows("Input SAM all").Activate
    Columns("A").Select
```

```
    ActiveSheet.Paste
    ActiveWorkbook.Close SaveChanges:=True

    Windows("DEC2030.xlsx").Activate
    ActiveWorkbook.Close SaveChanges:=True

    Windows("TIMES-SAM link - main interface.xlsm").Activate

    All

    'ETS_2030

    Workbooks.Open Filename:="C:\INPUT SAM\ETS2030.xlsx", _
    UpdateLinks:=0
    Columns("E:AC").Select
    Selection.Copy

    Workbooks.Open Filename:="C:\INPUT SAM\Input SAM all.xlsx", _
    UpdateLinks:=0
    Columns("E:AC").Select
    ActiveSheet.Paste

    Windows("ETS2030.xlsx").Activate
    Columns("A").Select
    Selection.Copy

    Windows("Input SAM all").Activate
    Columns("A").Select
    ActiveSheet.Paste
    ActiveWorkbook.Close SaveChanges:=True

    Windows("ETS2030.xlsx").Activate
    ActiveWorkbook.Close SaveChanges:=True

    Windows("TIMES-SAM link - main interface.xlsm").Activate

    All

End Sub
```

Interface 1

Module 1

Sub SpalmaCosti()

```
'*************************************************************************
****
```

```
'This routine re-allocates investment costs by technology using a construction time provided by TIMES

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: January 16th 2014
'*************************************************************************
****

    Dim Periodo As Variant
    Dim Cella As Variant
    Dim Anni As Variant

    Anni = 25

    Sheets("Result").Select
    Range("E8").Select

    For i = 1 To 508

        ActiveCell.Offset(0, -2).Activate
        Periodo = ActiveCell
        If Periodo = 1 Then
            ActiveCell.Offset(1, 2).Activate
            Periodo = ActiveCell
            GoTo 232
        End If
        ActiveCell.Offset(0, 2).Activate

      For j = 1 To Anni
193
        ActiveCell.Select
        Cella = ActiveCell

        If Cella = 0 Then GoTo 227

Cella = Cella / Periodo
        ActiveCell = Cella

        If Periodo < j Then

ActiveCell.Offset(0, -Periodo + 1).Activate

            For k = 1 To Periodo - 1

                ActiveCell = ActiveCell + Cella
                ActiveCell.Offset(0, 1).Activate
```

```
            Next k

            'j = j + Periodo
            'ActiveCell.Offset(0, 1).Activate

        GoTo 227


        End If

        If Periodo >= j Then

        ActiveCell.Offset(0, -j + 1).Activate

            For k = 1 To j - 1

               ActiveCell = ActiveCell + Cella
               ActiveCell.Offset(0, 1).Activate

            Next k

            'j = j + Periodo
            'ActiveCell.Offset(0, 1).Activate

        'GoTo 193

        End If

227
      ActiveCell.Offset(0, 1).Activate
      Next j

      ActiveCell.Offset(1, -j + 1).Activate
232
   Next i

End Sub
Sub Clear()

'*************************************************************************************
'This routine erases the results provided by Interface 1

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: Janaury 16th 2014
'*************************************************************************************
```

```
    Sheets("Result").Select
    Cells.Select
    Selection.Clear
    Range("A1").Select

    Sheets("Cap Inst").Select
    Cells.Select
    Selection.Clear
    Range("A1").Select

    Sheets("INVCOST").Select
    Cells.Select
    Selection.Clear
    Range("A1").Select

    Sheets("Main").Select

End Sub

Sub RestoreAllocation()

'*************************************************************************************
'This routine restores the originary investment allocations costs scheme in "Italia" sheet

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: Janaury 16th 2014
'*************************************************************************************

    Sheets("OldItalia").Select
    Cells.Select
    Selection.Copy

    Sheets("Italia").Select
    Range("A1").Select
    ActiveSheet.Paste

End Sub

Sub SetTIMESGROUP()

'*************************************************************************************
'This routine searches technology name by suffix in "Results" sheet and elaborates, year by year, the group totals that must be allocated in the SAM
```

```
'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: Janaury 16th 2014
'*************************************************************************

Application.ScreenUpdating = False
Dim INDV As Variant
INDV = "IND - VAPORE"
Dim INDPSI As Variant
INDPSI = "IND - PROC SIDER"
Dim INDPNM As Variant
INDPNM = "IND - PROC NO METAL"
Dim INDPNF As Variant
INDPNF = "IND - PROC NO FERR"
Dim INDPCH As Variant
INDPCH = "IND - PROC CHIMICA"
Dim INDPCC As Variant
INDPCC = "IND - PROC CARTA"
Dim INDPAL As Variant
INDPAL = "IND - PROC ALTRI"
Dim INDELETTC As Variant
INDELETTC = "IND - ELETTRCHIMICO"
Dim INDALS As Variant
INDALS = "IND - ALTRI SERVIZI"
Dim RESPDC As Variant
RESPDC = "RES - PDC"
Dim RESRISC As Variant
RESRISC = "RES - RISC"
Dim RESRIQU As Variant
RESRIQU = "RES - RIQU"
Dim RESBIO As Variant
RESBIO = "RES - BIO"
Dim RESCUC As Variant
RESCUC = "RES - CUC"
Dim ELEBIO As Variant
ELEBIO = "ELE - BIO"
Dim ELECCS As Variant
ELECCS = "ELE - CCS"
Dim ELECSP As Variant
ELECSP = "ELE - CSP"
Dim ELEFOS As Variant
ELEFOS = "ELE - FOSSIL"
Dim ELEFV As Variant
ELEFV = "ELE - FV"
Dim ELEGEO As Variant
ELEGEO = "ELE - GEO"
Dim ELEHYD As Variant
ELEHYD = "ELE - HYDRO"
```

```
Dim ELEWIN As Variant
ELEWIN = "ELE - WIN"
Dim TRAAER As Variant
TRAAER = "TRA - AEREI"
Dim TRABUS As Variant
TRABUS = "TRA - BUS"
Dim TRAFAM As Variant
TRAFAM = "TRA - FAMIGLIE"
Dim TRAMER As Variant
TRAMER = "TRA - MERCI"
Dim TRANAV As Variant
TRANAV = "TRA - NAVI"
Dim RESAPPELE As Variant
RESAPPELE = "RES - APP ELE"
Dim TRARAI As Variant
TRARAI = "TRA - RAIL"

Dim COMPDC As Variant
COMPDC = "COM - PDC"
Dim COMRISC As Variant
COMRISC = "COM - RISC"
Dim COMRIQU As Variant
COMRIQU = "COM - RIQU"
Dim COMBIO As Variant
COMBIO = "COM - BIO"
Dim COMCUC As Variant
COMCUC = "COM - CUC"
Dim COMAPPELE As Variant
COMAPPELE = "COM - APP ELE"

Dim INDMOTORI As Variant
INDMOTORI = "IND - MOTORI"

Dim Gruppi As Variant

Gruppi = Array(INDV, INDPSI, INDPNM, INDPNF, INDPCH, INDPCC, INDPAL,
INDELETTC, INDALS, RESPDC, RESRISC, RESRIQU, RESBIO, RESCUC, ELEBIO,
ELECCS, ELECSP, ELEFOS, ELEFV, ELEGEO, ELEHYD, ELEWIN, TRAAER, TRABUS,
TRAFAM, TRAMER, TRANAV, RESAPPELE, TRARAI, COMPDC, COMRISC, COMRIQU,
COMBIO, COMCUC, COMAPPELE, INDMOTORI)
LGruppi = UBound(Gruppi)

    Sheets("SET TIMES").Select
    Range("T3").Select
    Sheets("Result").Select
    Range("B8").Select

    Dim Righe As Variant
    Righe = 508
```

```
    Dim Valore As Variant
    Dim ValoreTot As Variant

For i = 0 To LGruppi
Group = Gruppi(i)

    For Anno = 1 To 25

    'Imposto la ricerca dal 2006 al 2030

For j = 1 To Righe



            MyCheck = ActiveCell.Value Like Group

            If MyCheck Then

               ActiveCell.Offset(0, Anno + 2).Activate
Valore = ActiveCell.Value
               ValoreTot = ValoreTot + Valore
ActiveCell.Offset(0, -(Anno + 2)).Activate

            End If

            ActiveCell.Offset(1, 0).Select

         Next j

    Sheets("SET TIMES").Select
    ActiveCell = ValoreTot
    Valore = 0
    ValoreTot = 0
    ActiveCell.Offset(0, 1).Activate
    Sheets("Result").Select
    Range("B8").Select

    Next Anno

    Sheets("SET TIMES").Select
    ActiveCell.Offset(1, -(Anno - 1)).Activate
    Sheets("Result").Select
    Range("B8").Select

 Next i



    Sheets("SET TIMES").Select
```

```
    Range("T3:AS38").Select
    Selection.NumberFormat = "0.00"
    Columns("T:AS").Select
    Columns("T:AS").EntireColumn.AutoFit
    Range("T3").Select

End Sub
Sub ALLGROUP()

'*************************************************************************
'This routine associates the technology group to the SAM scheme

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: November 8th 2014
'*************************************************************************

Application.ScreenUpdating = False
Dim INDV As Variant
INDV = "IND - VAPORE"
Dim INDPSI As Variant
INDPSI = "IND - PROC SIDER"
Dim INDPNM As Variant
INDPNM = "IND - PROC NO METAL"
Dim INDPNF As Variant
INDPNF = "IND - PROC NO FERR"
Dim INDPCH As Variant
INDPCH = "IND - PROC CHIMICA"
Dim INDPCC As Variant
INDPCC = "IND - PROC CARTA"
Dim INDPAL As Variant
INDPAL = "IND - PROC ALTRI"
Dim INDELETTC As Variant
INDELETTC = "IND - ELETTRCHIMICO"
Dim INDALS As Variant
INDALS = "IND - ALTRI SERVIZI"
Dim RESPDC As Variant
RESPDC = "RES - PDC"
Dim RESRISC As Variant
RESRISC = "RES - RISC"
Dim RESRIQU As Variant
RESRIQU = "RES - RIQU"
Dim RESBIO As Variant
RESBIO = "RES - BIO"
Dim RESCUC As Variant
RESCUC = "RES - CUC"
Dim ELEBIO As Variant
ELEBIO = "ELE - BIO"
```

Dim ELECCS As Variant
ELECCS = "ELE - CCS"
Dim ELECSP As Variant
ELECSP = "ELE - CSP"
Dim ELEFOS As Variant
ELEFOS = "ELE - FOSSIL"
Dim ELEFV As Variant
ELEFV = "ELE - FV"
Dim ELEGEO As Variant
ELEGEO = "ELE - GEO"
Dim ELEHYD As Variant
ELEHYD = "ELE - HYDRO"
Dim ELEWIN As Variant
ELEWIN = "ELE - WIN"
Dim TRAAER As Variant
TRAAER = "TRA - AEREI"
Dim TRABUS As Variant
TRABUS = "TRA - BUS"
Dim TRAFAM As Variant
TRAFAM = "TRA - FAMIGLIE"
Dim TRAMER As Variant
TRAMER = "TRA - MERCI"
Dim TRANAV As Variant
TRANAV = "TRA - NAVI"
Dim RESAPPELE As Variant
RESAPPELE = "RES - APP ELE"
Dim TRARAI As Variant
TRARAI = "TRA - RAIL"

Dim COMPDC As Variant
COMPDC = "COM - PDC"
Dim COMRISC As Variant
COMRISC = "COM - RISC"
Dim COMRIQU As Variant
COMRIQU = "COM - RIQU"
Dim COMBIO As Variant
COMBIO = "COM - BIO"
Dim COMCUC As Variant
COMCUC = "COM - CUC"
Dim COMAPPELE As Variant
COMAPPELE = "COM - APP ELE"

Dim INDMOTORI As Variant
INDMOTORI = "IND MOTORI"

Dim AllocGruppi As Variant

AllocGruppi = Array(ELEFV, ELEBIO, ELEWIN, ELECSP, ELECCS, ELEFOS, ELEGEO, ELEHYD, INDALS, INDELETTC, INDPCC, INDPCH, INDPAL, INDPNF, INDPNM, INDPSI, INDV, RESAPPELE, RESBIO, RESCUC, RESPDC, RESRISC, RESRIQU, TRANAV,

```
TRARAI, TRAAER, TRAFAM, TRABUS, TRAMER, COMPDC, COMRISC, COMRIQU,
COMBIO, COMCUC, COMAPPELE, INDMOTORI)
LGruppi = UBound(AllocGruppi)

Sheets("SET TIMES").Select
Range("S3").Select
Sheets("Italia").Select
Range("A2").Select
Sheets("SET TIMES").Select

   For i = 0 To LGruppi
   Group = AllocGruppi(i)

        For j = 1 To 36

           MyCheck = ActiveCell.Value Like Group

           If MyCheck Then

              ActiveCell.Offset(0, 1).Activate
              ActiveCell.Select
              Range(Selection, Selection.End(xlToRight)).Select
              Selection.Copy
              Sheets("Italia").Select
              ActiveCell = Group
              ActiveCell.Offset(0, 1).Activate
              ActiveSheet.Paste
              ActiveCell.Offset(0, -1).Activate
              GoTo 2140

           End If

           ActiveCell.Offset(1, 0).Select

        Next j

2140

      Sheets("Italia").Select
      ActiveCell.Offset(69, 0).Activate
      Sheets("SET TIMES").Select
      Range("S3").Select

   Next i

End Sub
```

Sub SetALLOCAPERIODOCANTIERE()

```
'*************************************************************************
```

```
'This routine associates a construction time to the main technology groups

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: Janaury 16th 2014
'*************************************************************************

Application.ScreenUpdating = False
Dim INDV As Variant
INDV = "IND - VAPORE"
Dim INDPSI As Variant
INDPSI = "IND - PROC SIDER"
Dim INDPNM As Variant
INDPNM = "IND - PROC NO METAL"
Dim INDPNF As Variant
INDPNF = "IND - PROC NO FERR"
Dim INDPCH As Variant
INDPCH = "IND - PROC CHIMICA"
Dim INDPCC As Variant
INDPCC = "IND - PROC CARTA"
Dim INDPAL As Variant
INDPAL = "IND - PROC ALTRI"
Dim INDELETTC As Variant
INDELETTC = "IND - ELETTRCHIMICO"
Dim INDALS As Variant
INDALS = "IND - ALTRI SERVIZI"
Dim RESPDC As Variant
RESPDC = "RES - PDC"
Dim RESRISC As Variant
RESRISC = "RES - RISC"
Dim RESRIQU As Variant
RESRIQU = "RES - RIQU"
Dim RESBIO As Variant
RESBIO = "RES - BIO"
Dim RESCUC As Variant
RESCUC = "RES - CUC"
Dim ELEBIO As Variant
ELEBIO = "ELE - BIO"
Dim ELECCS As Variant
ELECCS = "ELE - CCS"
Dim ELECSP As Variant
ELECSP = "ELE - CSP"
Dim ELEFOS As Variant
ELEFOS = "ELE - FOSSIL"
Dim ELEFV As Variant
ELEFV = "ELE - FV"
Dim ELEGEO As Variant
ELEGEO = "ELE - GEO"
```

```
Dim ELEHYD As Variant
ELEHYD = "ELE - HYDRO"
Dim ELEWIN As Variant
ELEWIN = "ELE - WIN"
Dim TRAAER As Variant
TRAAER = "TRA - AEREI"
Dim TRABUS As Variant
TRABUS = "TRA - BUS"
Dim TRAFAM As Variant
TRAFAM = "TRA - FAMIGLIE"
Dim TRAMER As Variant
TRAMER = "TRA - MERCI"
Dim TRANAV As Variant
TRANAV = "TRA - NAVI"
Dim RESAPPELE As Variant
RESAPPELE = "RES - APP ELE"
Dim TRARAI As Variant
TRARAI = "TRA - RAIL"

Dim COMPDC As Variant
COMPDC = "COM - PDC"
Dim COMRISC As Variant
COMRISC = "COM - RISC"
Dim COMRIQU As Variant
COMRIQU = "COM - RIQU"
Dim COMBIO As Variant
COMBIO = "COM - BIO"
Dim COMCUC As Variant
COMCUC = "COM - CUC"
Dim COMAPPELE As Variant
COMAPPELE = "COM - APP ELE"

Dim INDMOTORI As Variant
INDMOTORI = "IND - MOTORI"

Dim Gruppi As Variant

Gruppi = Array(INDV, INDPSI, INDPNM, INDPNF, INDPCH, INDPCC, INDPAL, INDELETTC, INDALS, RESPDC, RESRISC, RESRIQU, RESBIO, RESCUC, ELEBIO, ELECCS, ELECSP, ELEFOS, ELEFV, ELEGEO, ELEHYD, ELEWIN, TRAAER, TRABUS, TRAFAM, TRAMER, TRANAV, RESAPPELE, TRARAI, COMPDC, COMRISC, COMRIQU, COMBIO, COMCUC, COMAPPELE, INDMOTORI)
LGruppi = UBound(Gruppi)

    Sheets("SET TIMES").Select
    Range("J3").Select
    Sheets("Result").Select
    Range("B8").Select

    Dim Righe As Variant
```

```
    Righe = 508

    Dim Cantiere As Variant

For i = 0 To LGruppi
Group = Gruppi(i)


        For j = 1 To Righe

            MyCheck = ActiveCell.Value Like Group

            If MyCheck Then

                Sheets("SET TIMES").Select
                ActiveCell.Offset(0, -1).Activate
                Cantiere = ActiveCell.Value
                ActiveCell.Offset(0, 1).Activate
                Sheets("Result").Select
                ActiveCell.Offset(0, 1).Activate
                ActiveCell = Cantiere
                ActiveCell.Offset(0, -1).Select

            End If

            ActiveCell.Offset(1, 0).Select

        Next j

        Sheets("SET TIMES").Select
        ActiveCell.Offset(1, 0).Activate
        Sheets("Result").Select
        Range("B8").Select

Next i

Sheets("Result").Select
Range("B8").Select

End Sub
```

Sub AllocaCostiPerCantiere()

```
'*************************************************************************
'This routine associates a construction time to every technology using a value associated to
the main technology groups

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la
sostenibilità
```

```
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: January 16th 2014
'*****************************************************************************

SetALLOCAPERIODOCANTIERE
SpalmaCosti
End Sub

Sub Alloca()

'*****************************************************************************
'This routine executes the entire process of the allocation of construction time to technology

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: January 16th 2014
'*****************************************************************************

SetTIMESGROUP
ALLGROUP
Sheets("FinalFCAP").Select
Range("B3").Select
End Sub

Sub ImportCostTIMES()

'*****************************************************************************
'This routine imports the TIMES investment costs data

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
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'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: January 16th 2014
'*****************************************************************************

    Sheets("Result").Select

    Workbooks.Open Filename:= _
        "C:\INPUT SAM\Input SAM all.xlsx"
    Windows("Input SAM all.xlsx").Activate
    Sheets("INV_y").Select

    Range("D6").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.Copy
```

```
    Windows("INPUT SAM - Costi INV.xlsm").Activate
    Range("D7").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Windows("Input SAM all.xlsx").Activate
    Range("C6").Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.Copy
    Windows("INPUT SAM - Costi INV.xlsm").Activate
    Range("B7").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Windows("Input SAM all.xlsx").Activate
    Range("A7").Select
    Selection.Copy
    Windows("INPUT SAM - Costi INV.xlsm").Activate
    Range("B5").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Windows("Input SAM all.xlsx").Activate
    ActiveWindow.Close
    ActiveWorkbook.Save

End Sub

Sub CreaVetINV()

'*************************************************************************
'This routine executes the entire work flow of Interface 1 (first version - not implemented)

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
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'Date: January 16th 2014
'*************************************************************************

Windows("INPUT SAM - Costi INV.xlsm").Activate
Sheets("Main").Select
Range("R6") = Time

Unhide
    ImportCostTIMES
    SetALLOCAPERIODOCANTIERE
    SpalmaCosti
    SetTIMESGROUP
    ALLGROUP
```

```
Sheets("FinalFCAP").Select
    Range("B3").Select
    Hide

Sheets("Main").Select
Range("R7") = Time

End Sub

Sub CreaVetINVnuovo()

'*************************************************************************
'This routine executes the entire work flow of Interface 1 (second version - implemented)

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: January 16th 2014
'*************************************************************************

Windows("INPUT SAM - Costi INV.xlsm").Activate
Sheets("Main").Select
Range("R6") = Time

Unhide

    Base
    ImportCostTIMES
    SetALLOCAPERIODOCANTIERE
    SpalmaCosti
    SetTIMESGROUP
ALLGROUP
    Sheets("FinalFCAP").Select
    Range("B3:Z67").Select
    Selection.Copy
    Sheets("FinalFCAPBaseeC").Select
    Range("B3").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Sheets("Italia").Select
    Range("FH:GG").Select
    Selection.Copy
    Range("GI:HH").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False

    Controfattuale
    ImportCostTIMES
```

```
    SetALLOCAPERIODOCANTIERE
SpalmaCosti
    SetTIMESGROUP
    ALLGROUP
    Sheets("FinalFCAP").Select
    Range("B3:Z67").Select
    Selection.Copy
    Sheets("FinalFCAPBaseeC").Select
    Range("B72").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Hide

Sheets("Main").Select
Range("R7") = Time

End Sub
```

Module 2

```
Sub Hide()

'*************************************************************************************
'This routine hides some sheets

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: January 16th 2014
'*************************************************************************************

    Sheets("INVCOST").Visible = xlVeryHidden
    Sheets("Cap Inst").Visible = xlVeryHidden
    Sheets("Italia Old").Visible = xlVeryHidden
    Sheets("SET TIMES").Visible = xlVeryHidden
    Sheets("Italia").Visible = xlVeryHidden
    Sheets("Settori CEIS").Visible = xlVeryHidden
    Sheets("% CEIS").Visible = xlVeryHidden
    Sheets("TavRacOrig").Visible = xlVeryHidden
    Sheets("Tavrac").Visible = xlVeryHidden
    Sheets("NOMI TIMES").Visible = xlVeryHidden
    Sheets("NOMI SAM").Visible = xlVeryHidden
    Sheets("OldItalia").Visible = xlVeryHidden
    Sheets("Temp").Visible = xlVeryHidden

    Sheets("Result").Visible = xlVeryHidden
    Sheets("Technology Sets").Visible = xlVeryHidden
    Sheets("FinalFCAP").Visible = xlVeryHidden
```

```
    Sheets("Code").Visible = xlVeryHidden


    Sheets("Main").Select
    Range("R8").Select

End Sub

Sub Unhide()

'*************************************************************************
'This routine unhides some sheets

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
'marco.rao@enea.it, umberto.ciorba@enea.it, maria.gaeta@enea.it
'Date: January 16th 2014
'*************************************************************************

    Sheets("Main").Select

    Sheets("INVCOST").Visible = True
    Sheets("Cap Inst").Visible = True
    Sheets("Italia Old").Visible = True
    Sheets("SET TIMES").Visible = True
    Sheets("Italia").Visible = True
    Sheets("Settori CEIS").Visible = True
    Sheets("% CEIS").Visible = True
    Sheets("TavRacOrig").Visible = True
    Sheets("Tavrac").Visible = True
    Sheets("NOMI TIMES").Visible = True
    Sheets("NOMI SAM").Visible = True
    Sheets("OldItalia").Visible = True
    Sheets("Temp").Visible = True

    Sheets("Result").Visible = True
    Sheets("Technology Sets").Visible = True
    Sheets("FinalFCAP").Visible = True
    Sheets("Code").Visible = True

    Sheets("Main").Select
    Range("R8").Select

End Sub
```

Module 3

```
Sub Base()
```

```
'*************************************************************************
'This routine use the appropriate percentage in the allocation phase in the base scenario in the "Italia" sheet

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
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'Date: January 16th 2014
'*************************************************************************

    Sheets("Italia").Select
    Columns("BJ:CM").Select
    Selection.Copy
    Columns("AC:AC").Select
    ActiveSheet.Paste
    Sheets("Main").Select
    Range("R6").Select

End Sub

Sub Controfattuale()

'*************************************************************************
'This routine use the appropriate percentage in the allocation phase in the counterfactual scenario in the "Italia" sheet

'Authors: Marco Rao, Umberto Ciorba, Maria Gaeta
'ENEA - UCS Studi - Servizio analisi e scenari e prospettive tecnologiche per la sostenibilità
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'Date: January 16th 2014
'*************************************************************************

    Sheets("Italia").Select
    Columns("CQ:DT").Select
    Selection.Copy
    Columns("AC:AC").Select
    ActiveSheet.Paste
    Sheets("Main").Select
    Range("R6").Select

End Sub
```

Interface 2

Module 1

```
Sub RAS()
```

```
'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine balances the SAM with the standard RAS method
'*************************************************************************

 Application.ScreenUpdating = False

 Sheets("Main").Select
 Soglia = Range("M9")

 Sheets("RAS").Select
Do Until Range("EN5").Value < Soglia        'Esegue il bilanciamento fino a che lo scarto tra la matrice da bilanciare e il valore
 If Range("EN5").Value < Soglia Then GoTo 58 'di soglia prescelto non sono inferiori a 0.0001

   'Riquadra matrice per riga

    Range("BV2:EH66").Select                 'seleziona la matrice calibrata per pareggiare per riga
    Selection.Copy                      'copia la matrice
    Range("B2").Select                   'seleziona la prima cella della matrice da bilanciare
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False           'copia i valori
Application.CutCopyMode = False
 'If (Range("EN3").Value <> 0 And i > 0) Then RASOverBalancing

 If Range("EN5").Value < Soglia Then GoTo 58
'Riquadra matrice per colonna

    Range("B74:BN138").Select                'seleziona la matrice calibrata per pareggiare per colonna
    Selection.Copy                      'copia la matrice
    Range("B2").Select                   'seleziona la prima cella della matrice da bilanciare
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False           'copia i valori
    Application.CutCopyMode = False

i = i + 1                               ' incrementa un contatore che registra il numero di iterazioni necessarie al bilanciamento

   Loop

'MsgBox "Matrice bilanciata. Iterazioni effettuate = " & i       'Messaggio finale modificabile a piacimento
```

```
   'Sheets("RAS").Select                    'Questa istruzione evidenzia le celle della matrice bilanciata
'Range("B2:AC29").Select
   'With Selection.Interior
   '    .Pattern = xlSolid
   '    .PatternColorIndex = xlAutomatic
   '    .Color = 65535
   '    .TintAndShade = 0
   '    .PatternTintAndShade = 0
   'End With
   'Range("A1").Select

'Sheets("Main").Select
'Range("B6").Select

58
End Sub
```

Module 2

```
Sub Resetta()

'*************************************************************************
'Autori : Marco Rao e Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine restores the RAS process
'*************************************************************************

Application.ScreenUpdating = False

Sheets("Old").Select          'nel foglio "Old" è contenuta la vecchia matrice
Range("B2:BN66").Select       'seleziono la matrice da bilanciare
Selection.Copy                'copio i valori

Sheets("RAS").Select          'seleziono il foglio dove eseguirò i calcoli
Range("B2").Select            'mi posiziono sulla prima cella della matrice da bilanciare
ActiveSheet.Paste             'incollo i valori

   Range("B67").Select
   Range(Selection, Selection.End(xlToRight)).Select
   Application.CutCopyMode = False
   Selection.Copy
   Range("B68").Select
   Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=False
   Selection.Copy

   Range("BP2").Select
```

```
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=True


    Range("BV2").Select
    Selection.Copy
    Range("BV2:EH66").Select
    ActiveSheet.Paste

Sheets("Main").Select
Range("B6").Select

End Sub

Sub Resetta2()

'*************************************************************************
'Autori : Marco Rao e Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine restores the RAS advanced process
'*************************************************************************

Application.ScreenUpdating = False

Sheets("Old").Select          'nel foglio "Old" è contenuta la vecchia matrice
Range("B2:BN66").Select       'seleziono la matrice da bilanciare
Selection.Copy                'copio i valori

Sheets("RASAdv").Select          'seleziono il foglio dove eseguirò i calcoli
Range("B2").Select            'mi posiziono sulla prima cella della matrice da bilanciare
ActiveSheet.Paste             'incollo i valori

    Range("B67").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Application.CutCopyMode = False
    Selection.Copy
    Range("B68").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    Selection.Copy

    Range("BP2").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=True


    'Range("BV2").Select
    'Selection.Copy
```

```
    'Range("BV2:EH66").Select
    'ActiveSheet.Paste

Sheets("Main").Select
Range("B6").Select

End Sub
```

Module 3

Sub ResetConstraints()

```
'*************************************************************************************
'Autori : Marco Rao e Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine clears the constraints
'*************************************************************************************

    Application.ScreenUpdating = False

    Sheets("Old").Select
    Range("B2:BN66").Select
    Selection.Copy
    Sheets("Constraints").Select
    Range("B2").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

End Sub
```

Module 4

Sub ImportConstraints()

```
'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine imports constraints in the balancing process
'*************************************************************************************

Application.ScreenUpdating = False

Sheets("Constraints").Select
Range("B2").Select

Sheets("RAS").Select
```

```
Range("BV2").Select
For i = 0 To 64

   For j = 0 To 64
      Sheets("Constraints").Select
      ActiveCell.Select

      If ActiveCell.Interior.Color = 65535 Or ActiveCell = 0 Then
      ActiveCell.Select
      Selection.Copy
      Sheets("RAS").Select
      ActiveCell.Select
      Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=False
      With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
      End With

      ActiveCell.Offset(0, 1).Activate
      Sheets("Constraints").Select
      ActiveCell.Offset(0, 1).Activate

      Else
      ActiveCell.Offset(0, 1).Activate
      Sheets("RAS").Select
      ActiveCell.Offset(0, 1).Activate

      End If

   Next j

   Sheets("Constraints").Select
   ActiveCell.Offset(1, -65).Activate
   Sheets("RAS").Select
   ActiveCell.Offset(1, -65).Activate
Next i

End Sub

Sub ImportConstraints2()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0
```

```
'This routine imports constraints in the advancved balancing process
'*************************************************************************

Application.ScreenUpdating = False

Sheets("Constraints").Select
Range("B2").Select


Sheets("RASAdv").Select
Range("B2").Select

For i = 0 To 64

   For j = 0 To 64

      Sheets("Constraints").Select
      ActiveCell.Select

      If ActiveCell.Interior.Color = 65535 Or ActiveCell = 0 Then
      ActiveCell.Select
      Selection.Copy
      Sheets("RASAdv").Select
      ActiveCell.Select
      Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=False

      With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
      End With

      ActiveCell.Offset(0, 1).Activate
      Sheets("Constraints").Select
      ActiveCell.Offset(0, 1).Activate

      Else
      ActiveCell.Offset(0, 1).Activate
      Sheets("RASAdv").Select
      ActiveCell.Offset(0, 1).Activate

      End If

   Next j

   Sheets("Constraints").Select
   ActiveCell.Offset(1, -65).Activate
```

```
    Sheets("RASAdv").Select
    ActiveCell.Offset(1, -65).Activate
Next i

End Sub

Sub RestoreNoConstraints()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine resets constraints in the balancing process
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("Temp").Visible = True
Sheets("Temp").Select       'Nel foglio Temp è salvata una replica del bilanciamento rAs privo di vincoli
    Range("BV2:EH66").Select    'Seleziono la matrice che quadra per riga, quella modificata dall'inserimento vincoli
    Selection.Copy            'Copio la matrice
    Sheets("RAS").Select       'Mi riporto sul foglio dove si esegue il bilanciamento
    Range("BV2").Select        'Seleziono la cella dove incollare la matrice
    ActiveSheet.Paste          'Incollo la matrice priva di vincoli

Sheets("Main").Select
    Range("L4").Select

End Sub

Sub HideTemp()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine hides the sheet "Temp"
'*************************************************************************

Application.ScreenUpdating = False

    Sheets("Temp").Select
    ActiveWindow.SelectedSheets.Visible = False
End Sub

Sub HideConstraints()
```

```
'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine hides the constraints sheet
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("Main").Select
    Sheets("Constraints").Visible = False
End Sub

Sub UnhideTemp()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine unhides Sheet "Temp"
'*************************************************************************

Application.ScreenUpdating = False

    Sheets("Main").Select
    Sheets("Temp").Visible = True
End Sub

Sub UnhideConstraints()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine unhides the sheet "Constraints"
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("Main").Select
    Sheets("Constraints").Visible = True
End Sub

Sub Constraints()

'*************************************************************************
```

```
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine prompt a message box in constraints import process
'*************************************************************************

Application.ScreenUpdating = False

UnhideTemp
UnhideConstraints

Sheets("Constraints").Select
Range("A1").Select

Dim Alex
Alex = InputBox(prompt:="Seleziona vincoli evidenziando le celle da bloccare in giallo: ",
Title:="Richiesta conferma")
If Alex = "ok" Then
 MsgBox "Prosegui"
End If

End Sub

Sub Restore()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2013
'Release: 1.0

'This routine restores entire process of import constraints
'*************************************************************************

Application.ScreenUpdating = False

RestoreNoConstraints
HideTemp
HideConstraints

End Sub
```

Module 5

```
Sub ImportaVincoliTIMES()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0
```

```
'This routine import constraints for Energy Sector and other sectors from TIMES model
'*************************************************************************

Application.ScreenUpdating = False

Dim Constr As Variant

Sheets("TIMES Constraints").Select
Range("D2").Select
Sheets("Constraints Set").Select
Range("D37").Select

    For i = 1 To 24
       For j = 1 To 65

          Sheets("TIMES Constraints").Select
          ActiveCell.Select
          Constr = ActiveCell
          ActiveCell.Offset(0, 1).Activate

          Sheets("Constraints Set").Select
          ActiveCell.Select
          ActiveCell = ActiveCell * Constr
             With Selection.Interior
                .Pattern = xlSolid
                .PatternColorIndex = xlAutomatic
                .Color = 65535
                .TintAndShade = 0
                .PatternTintAndShade = 0
             End With
          ActiveCell.Offset(0, 1).Activate

       Next j

       ActiveCell.Offset(68, -65).Activate
       Sheets("TIMES Constraints").Select
       ActiveCell.Offset(1, -65).Activate
    Next i

Sheets("TIMES Constraints").Select
Range("D28").Select
Sheets("Constraints Set").Select
Range("D40").Select

    For i = 1 To 24
       For j = 1 To 65

          Sheets("TIMES Constraints").Select
          ActiveCell.Select
```

```
            Constr = ActiveCell
            ActiveCell.Offset(0, 1).Activate

            Sheets("Constraints Set").Select
            ActiveCell.Select
            ActiveCell = ActiveCell * Constr
               With Selection.Interior
                  .Pattern = xlSolid
                  .PatternColorIndex = xlAutomatic
                  .Color = 65535
                  .TintAndShade = 0
                  .PatternTintAndShade = 0
               End With
            ActiveCell.Offset(0, 1).Activate

         Next j

         ActiveCell.Offset(68, -65).Activate
         Sheets("TIMES Constraints").Select
         ActiveCell.Offset(1, -65).Activate

      Next i

   Sheets("Main").Select
   Range("A1").Select

Sheets("TIMES Constraints").Select
Range("D54").Select
Sheets("Constraints Set").Select
Range("D10").Select

      For i = 1 To 24
         For j = 1 To 65

            Sheets("TIMES Constraints").Select
            ActiveCell.Select
            Constr = ActiveCell
            ActiveCell.Offset(0, 1).Activate

            Sheets("Constraints Set").Select
            ActiveCell.Select
            ActiveCell = ActiveCell * Constr
               With Selection.Interior
                  .Pattern = xlSolid
                  .PatternColorIndex = xlAutomatic
                  .Color = 65535
                  .TintAndShade = 0
                  .PatternTintAndShade = 0
               End With
            ActiveCell.Offset(0, 1).Activate
```

```
        Next j
        ActiveCell.Offset(68, -65).Activate
        Sheets("TIMES Constraints").Select
        ActiveCell.Offset(1, -65).Activate
    Next i

  Sheets("Main").Select
  Range("A1").Select

Sheets("TIMES Constraints").Select
Range("D80").Select
Sheets("Constraints Set").Select
Range("D22").Select

    For i = 1 To 24
        For j = 1 To 65

            Sheets("TIMES Constraints").Select
            ActiveCell.Select
            Constr = ActiveCell
            ActiveCell.Offset(0, 1).Activate

            Sheets("Constraints Set").Select
            ActiveCell.Select
            ActiveCell = ActiveCell * Constr
                With Selection.Interior
                    .Pattern = xlSolid
                    .PatternColorIndex = xlAutomatic
                    .Color = 65535
                    .TintAndShade = 0
                    .PatternTintAndShade = 0
                End With
            ActiveCell.Offset(0, 1).Activate

        Next j
        ActiveCell.Offset(68, -65).Activate
        Sheets("TIMES Constraints").Select
        ActiveCell.Offset(1, -65).Activate
    Next i

  Sheets("Main").Select
  Range("A1").Select

End Sub

Sub ResetMatricesSet()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
```

```
'Data   : January, 17th 2014
'Release: 1.0

'This routine imports reset Matrices Set
'*************************************************************************************

    Application.ScreenUpdating = False

    Sheets("OLD Mat Storage").Select
    Cells.Select
    Selection.Copy
    Range("A1").Select
    Sheets("Matrices Set").Select
    Cells.Select
    ActiveSheet.Paste
    Range("A1").Select
    Sheets("Main").Select
    Range("A1").Select

    Resetta

End Sub

Sub CalcolaMatrici()

'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine projects the matrices in the defined time horizon
'*************************************************************************************

Application.ScreenUpdating = False

Sheets("TIMES vectors").Select
Range("D2").Select
Sheets("Matrices Set").Select
Range("D3").Select
Sheets("Constraints Set").Select
Range("D3").Select

Resetta

    Sheets("TIMES vectors").Select
    Range("D28").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.Copy
    Range("D2").Select
```

```
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

AdjConstr


Sheets("Constraints Set").Select
Range("D3").Select
Sheets("TIMES vectors").Select
Range("D2").Select


        For i = 1 To 24

            Sheets("TIMES vectors").Select
            ActiveCell.Select
            Range(Selection, Selection.End(xlToRight)).Select
            Selection.Copy
            ActiveCell.Offset(1, 0).Activate

            Sheets("RAS").Select
            Range("BQ2").Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=True
            Range("B68").Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False

            Sheets("Constraints Set").Select
            ActiveCell.Select
            Range(Selection, Selection.End(xlDown)).Select
            Range(Selection, Selection.End(xlToRight)).Select
            Selection.Copy
            ActiveCell.Offset(68, 0).Activate

            Sheets("Constraints").Visible = True
            Sheets("Constraints").Select
            Range("B2").Select
ActiveSheet.Paste

            ImportConstraints

            'RAS

            RASAdv

            Sheets("RAS").Select                'Questa istruzione evidenzia le celle della matrice
bilanciata
Range("B2:BN66").Select
            Selection.Copy
```

```
        Sheets("Matrices Set").Select
        ActiveCell.Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
        With Selection.Interior
            .Pattern = xlSolid
            .PatternColorIndex = xlAutomatic
            .Color = 65535
            .TintAndShade = 0
            .PatternTintAndShade = 0
        End With
        ActiveCell.Offset(68, 0).Activate


    Next i

  Sheets("Main").Select
  Range("A1").Select

End Sub

Sub CalcolaMatrici2()

'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine calculates the matrices in the defined time horizon with a variant
'*************************************************************************************

Application.ScreenUpdating = False

Sheets("TIMES vectors").Select
Range("D2").Select
Sheets("Matrices Set").Select
Range("D3").Select
'Sheets("Constraints Set").Select
'Range("D3").Select

Resetta

  Sheets("TIMES vectors").Select
  Range("D28").Select
  Range(Selection, Selection.End(xlToRight)).Select
  Range(Selection, Selection.End(xlDown)).Select
  Selection.Copy
  Range("D2").Select
  Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False
```

```
'AdjConstr

'Sheets("Constraints Set").Select
'Range("D3").Select
Sheets("TIMES vectors").Select
Range("D2").Select

    For i = 1 To 24

        Sheets("TIMES vectors").Select
        ActiveCell.Select
        Range(Selection, Selection.End(xlToRight)).Select
        Selection.Copy
        ActiveCell.Offset(1, 0).Activate

        Sheets("RAS").Select
        Range("BP2").Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=True
        Range("B68").Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False

        'Sheets("Constraints Set").Select
        'ActiveCell.Select
        'Range(Selection, Selection.End(xlDown)).Select
        'Range(Selection, Selection.End(xlToRight)).Select
        'Selection.Copy
        'ActiveCell.Offset(68, 0).Activate

        'Sheets("Constraints").Visible = True
        'Sheets("Constraints").Select
        'Range("B2").Select
'ActiveSheet.Paste

        'ImportConstraints

        RAS

        'RASAdv2

        Sheets("RAS").Select                'Questa istruzione evidenzia le celle della matrice
bilanciata
Range("B2:BN66").Select
        Selection.Copy
        Sheets("Matrices Set").Select
        ActiveCell.Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
```

```
        With Selection.Interior
            .Pattern = xlSolid
            .PatternColorIndex = xlAutomatic
            .Color = 65535
            .TintAndShade = 0
            .PatternTintAndShade = 0
        End With
        ActiveCell.Offset(68, 0).Activate

    Next i

    Sheets("Main").Select
    Range("A1").Select

End Sub

Sub ResetConstraintsSet()

'************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine reset the applied constraints
'************************************************************************************

    Application.ScreenUpdating = False

    Sheets("OLD Constraints Storage").Select
    Cells.Select
    Selection.Copy
    Range("A1").Select
    Sheets("Constraints Set").Select
    Cells.Select
    ActiveSheet.Paste
    Range("A1").Select
    Sheets("Main").Select
    Range("A1").Select

End Sub

Sub ResetAll()

'************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine reset all worksheets
'************************************************************************************
```

```
    Resetta
    ResetMatricesSet
    ResetConstraintsSet

End Sub

Sub All()

'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine executes entire procedure
'*************************************************************************************

    Windows("PM.xlsm").Activate
    Sheets("Main").Select
    Range("M12") = Time

    UnhideAll
    'ImportaVincoliEnergyOeM
    ImportaTrendTimes
    ResetMatricesSet
    ResetConstraintsSet
    'ImportaVincoliTIMES
    'VA
    CalcolaMatrici2
    HideAll
    Sheets("Main").Select
    Range("M13") = Time

End Sub
```

Module 6

```
Sub AdjConstr()

'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine imports constraints for Energy Sector and other sectors from TIMES model
'*************************************************************************************

    Application.ScreenUpdating = False

    Sheets("Constraints Set").Select
```

```
Range("BQ37").Select
Sheets("TIMES vectors").Select
Range("AL2").Select

For i = 1 To 24

    Sheets("Constraints Set").Select
    ActiveCell.Select
    Selection.Copy
    ActiveCell.Offset(68, 0).Activate
    Sheets("TIMES vectors").Select
    ActiveCell.Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    ActiveCell.Offset(1, 0).Activate

Next i

Sheets("Constraints Set").Select
Range("BQ40").Select
Sheets("TIMES vectors").Select
Range("AO2").Select

For i = 1 To 24

    Sheets("Constraints Set").Select
    ActiveCell.Select
    Selection.Copy
    ActiveCell.Offset(68, 0).Activate
    Sheets("TIMES vectors").Select
    ActiveCell.Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    ActiveCell.Offset(1, 0).Activate

Next i

Sheets("Constraints Set").Select
Range("BQ10").Select
Sheets("TIMES vectors").Select
Range("K2").Select

For i = 1 To 24

    Sheets("Constraints Set").Select
    ActiveCell.Select
    Selection.Copy
    ActiveCell.Offset(68, 0).Activate
    Sheets("TIMES vectors").Select
    ActiveCell.Select
```

```
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    ActiveCell.Offset(1, 0).Activate

  Next i

  Sheets("Constraints Set").Select
  Range("BQ22").Select
  Sheets("TIMES vectors").Select
  Range("W2").Select

  For i = 1 To 24

    Sheets("Constraints Set").Select
    ActiveCell.Select
    Selection.Copy
    ActiveCell.Offset(68, 0).Activate
    Sheets("TIMES vectors").Select
    ActiveCell.Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    ActiveCell.Offset(1, 0).Activate

  Next i

End Sub
```

Module 7

```
Sub VA1()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine imports constraints for Energy Sector and other sectors from TIMES model
on Value Added
'*************************************************************************

Application.ScreenUpdating = False

'VA Agricolture
Sheets("Dati TIMES").Select
Range("P6").Select
Dim Tasso1015A As Variant
Tasso1015A = ActiveCell
Range("Q6").Select
Dim Tasso1520A As Variant
Tasso1520A = ActiveCell
```

```
Range("R6").Select
Dim Tasso2025A As Variant
Tasso2025A = ActiveCell
Range("S6").Select
Dim Tasso2530A As Variant
Tasso2530A = ActiveCell

Sheets("Constraints Set").Select

'2010-2015

Dim LavoroA As Variant
Range("H275").Select
LavoroA = ActiveCell
Dim CapitaleA As Variant
Range("H276").Select
CapitaleA = ActiveCell
ActiveCell.Offset(-1, 0).Activate


    For i = 1 To 5

    LavoroA = ActiveCell
    ActiveCell.FormulaR1C1 = LavoroA * (1 + Tasso1015A)
    LavoroA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleA
    CapitaleA = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleA * (1 + Tasso1015A)
    CapitaleA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroA

    Next i
```

```
'2016-2020

Range("H615").Select

   For i = 1 To 5

ActiveCell.FormulaR1C1 = LavoroA * (1 + Tasso1520A)
   LavoroA = ActiveCell
With Selection.Interior
       .Pattern = xlSolid
       .PatternColorIndex = xlAutomatic
       .Color = 65535
       .TintAndShade = 0
       .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(1, 0).Activate
   ActiveCell = CapitaleA
   CapitaleA = ActiveCell
   ActiveCell.FormulaR1C1 = CapitaleA * (1 + Tasso1520A)
   CapitaleA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(67, 0).Activate
   ActiveCell = LavoroA

   Next i

 '2021-2025

Range("H955").Select

   For i = 1 To 5


ActiveCell.FormulaR1C1 = LavoroA * (1 + Tasso2025A)
   LavoroA = ActiveCell
With Selection.Interior
       .Pattern = xlSolid
       .PatternColorIndex = xlAutomatic
       .Color = 65535
       .TintAndShade = 0
       .PatternTintAndShade = 0
```

```
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleA
    CapitaleA = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleA * (1 + Tasso2025A)
    CapitaleA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroA

    Next i

 '2026-2030

Range("H1295").Select

    For i = 1 To 5

ActiveCell.FormulaR1C1 = LavoroA * (1 + Tasso2530A)
    LavoroA = ActiveCell
With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleA
    CapitaleA = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleA * (1 + Tasso2530A)
    CapitaleA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
```

```
    ActiveCell = LavoroA

    Next i

    ActiveCell = ""

'*****************************
 'MARKET SERVICES**************
 '*****************************


'VA Market Services
Sheets("Dati TIMES").Select
Range("P9").Select
Dim Tasso1015MS As Variant
Tasso1015MS = ActiveCell
Range("Q9").Select
Dim Tasso1520MS As Variant
Tasso1520MS = ActiveCell
Range("R9").Select
Dim Tasso2025MS As Variant
Tasso2025MS = ActiveCell
Range("S9").Select
Dim Tasso2530MS As Variant
Tasso2530MS = ActiveCell

Sheets("Constraints Set").Select


End Sub

Sub VA2()

'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine imports constraints for Energy Sector and other sectors from TIMES model
on Value Added
'*************************************************************************************

'*****************************
'IRON AND STEEL***************
'*****************************

Application.ScreenUpdating = False

'VA Iron and steel
```

```
Sheets("Dati TIMES").Select
Range("P13").Select
Dim Tasso1015IS As Variant
Tasso1015IS = ActiveCell
Range("Q13").Select
Dim Tasso1520IS As Variant
Tasso1520IS = ActiveCell
Range("R13").Select
Dim Tasso2025IS As Variant
Tasso2025IS = ActiveCell
Range("S13").Select
Dim Tasso2530IS As Variant
Tasso2530IS = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Metalli e leghe
'*********************************************************************

'2010-2015

Dim LavoroIS As Variant
Range("AA275").Select
LavoroIS = ActiveCell
Dim CapitaleIS As Variant
Range("AA276").Select
CapitaleIS = ActiveCell
ActiveCell.Offset(-1, 0).Activate

   For i = 1 To 5

   LavoroIS = ActiveCell
   ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso1015IS)
   LavoroIS = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(1, 0).Activate
   ActiveCell = CapitaleIS
   CapitaleIS = ActiveCell
   ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso1015IS)
   CapitaleIS = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
```

```
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

    Next i

'2016-2020

Range("AA615").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso1520IS)
    LavoroIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleIS
    CapitaleIS = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso1520IS)
    CapitaleIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

    Next i

 '2021-2025

Range("AA955").Select

    For i = 1 To 5
```

```
    ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso2025IS)
    LavoroIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleIS
    CapitaleIS = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso2025IS)
    CapitaleIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

    Next i

  '2026-2030

Range("AA1295").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso2530IS)
    LavoroIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleIS
    CapitaleIS = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso2530IS)
    CapitaleIS = ActiveCell
```

```
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

Next i

    ActiveCell = ""

'*********************************************************************
'Prodotti metallici
'*********************************************************************

'2010-2015

Range("AB275").Select
LavoroIS = ActiveCell
Range("AB276").Select
CapitaleIS = ActiveCell
ActiveCell.Offset(-1, 0).Activate


    For i = 1 To 5

    LavoroIS = ActiveCell
    ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso1015IS)
    LavoroIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleIS
    CapitaleIS = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso1015IS)
    CapitaleIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
```

```
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

    Next i

'2016-2020

Range("AB615").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso1520IS)
    LavoroIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleIS
    CapitaleIS = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso1520IS)
    CapitaleIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

    Next i

 '2021-2025

Range("AB955").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso2025IS)
```

```
    LavoroIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleIS
    CapitaleIS = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso2025IS)
    CapitaleIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

    Next i

 '2026-2030

Range("AB1295").Select

    For i = 1 To 5


    ActiveCell.FormulaR1C1 = LavoroIS * (1 + Tasso2530IS)
    LavoroIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleIS
    CapitaleIS = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleIS * (1 + Tasso2530IS)
    CapitaleIS = ActiveCell
    With Selection.Interior
```

```
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroIS

    Next i

    ActiveCell = ""

'*****************************
'NON FERROUS METALS**********
'*****************************

'VA Iron and steel
Sheets("Dati TIMES").Select
Range("P14").Select
Dim Tasso1015NFM As Variant
Tasso1015NFM = ActiveCell
Range("Q14").Select
Dim Tasso1520NFM As Variant
Tasso1520NFM = ActiveCell
Range("R14").Select
Dim Tasso2025NFM As Variant
Tasso2025NFM = ActiveCell
Range("S14").Select
Dim Tasso2530NFM As Variant
Tasso2530NFM = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Metalli e leghe
'*********************************************************************

'2010-2015

Dim LavoroNFM As Variant
Range("AA275").Select
LavoroNFM = ActiveCell
Dim CapitaleNFM As Variant
Range("AA276").Select
CapitaleNFM = ActiveCell
ActiveCell.Offset(-1, 0).Activate

    For i = 1 To 5
```

```
    LavoroNFM = ActiveCell
    ActiveCell.FormulaR1C1 = LavoroNFM * (1 + Tasso1015NFM)
    LavoroNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleNFM
    CapitaleNFM = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleNFM * (1 + Tasso1015NFM)
    CapitaleNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroNFM

    Next i

'2016-2020

Range("AA615").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroNFM * (1 + Tasso1520NFM)
    LavoroNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleNFM
    CapitaleNFM = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleNFM * (1 + Tasso1520NFM)
```

```
    CapitaleNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroNFM

    Next i

'2021-2025

Range("AA955").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroNFM * (1 + Tasso2025NFM)
    LavoroNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleNFM
    CapitaleNFM = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleNFM * (1 + Tasso2025NFM)
    CapitaleNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroNFM

    Next i

'2026-2030
```

```
Range("AA1295").Select

   For i = 1 To 5

   ActiveCell.FormulaR1C1 = LavoroNFM * (1 + Tasso2530NFM)
   LavoroNFM = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(1, 0).Activate
   ActiveCell = CapitaleNFM
   CapitaleNFM = ActiveCell
   ActiveCell.FormulaR1C1 = CapitaleNFM * (1 + Tasso2530NFM)
   CapitaleNFM = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(67, 0).Activate
   ActiveCell = LavoroNFM

   Next i

   ActiveCell = ""

'*****************************
'CHEMICALS*******************
'*****************************

'VA Chemicals
Sheets("Dati TIMES").Select
Range("P15").Select
Dim Tasso1015CH As Variant
Tasso1015CH = ActiveCell
Range("Q15").Select
Dim Tasso1520CH As Variant
Tasso1520CH = ActiveCell
Range("R15").Select
Dim Tasso2025CH As Variant
Tasso2025CH = ActiveCell
Range("S15").Select
```

```
Dim Tasso2530CH As Variant
Tasso2530CH = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Prodotti chimici
'*********************************************************************

'2010-2015

Dim LavoroCH As Variant
Range("X275").Select
LavoroCH = ActiveCell
Dim CapitaleCH As Variant
Range("X276").Select
CapitaleCH = ActiveCell
ActiveCell.Offset(-1, 0).Activate

    For i = 1 To 5
    LavoroCH = ActiveCell
    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso1015CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso1015CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH

    Next i

'2016-2020
```

```
Range("X615").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso1520CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso1520CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH

    Next i

 '2021-2025

Range("X955").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso2025CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With
```

```
    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso2025CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH

    Next i

'2026-2030

Range("X1295").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso2530CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso2530CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH
```

```
    Next i

    ActiveCell = ""

'*****************************************************************
'Gomma
'*****************************************************************

'2010-2015

Range("Y275").Select
LavoroCH = ActiveCell
Range("Y276").Select
CapitaleCH = ActiveCell
ActiveCell.Offset(-1, 0).Activate

    For i = 1 To 5

    LavoroCH = ActiveCell
    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso1015CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso1015CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH

    Next i

'2016-2020
```

```
    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso1520CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso1520CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH

    Next i

 '2021-2025

Range("Y955").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso2025CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
```

```
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso2025CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH

    Next i

 '2026-2030

Range("Y1295").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroCH * (1 + Tasso2530CH)
    LavoroCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCH
    CapitaleCH = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCH * (1 + Tasso2530CH)
    CapitaleCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCH

    Next i

    ActiveCell = ""
```

```
'*****************************
'NON METALLIC MINERALS*******
'*****************************

'VA Non metallic minerals
Sheets("Dati TIMES").Select
Range("P14").Select
Dim Tasso1015NMM As Variant
Tasso1015NMM = ActiveCell
Range("Q14").Select
Dim Tasso1520NMM As Variant
Tasso1520NMM = ActiveCell
Range("R14").Select
Dim Tasso2025NMM As Variant
Tasso2025NMM = ActiveCell
Range("S14").Select
Dim Tasso2530NMM As Variant
Tasso2530NMM = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Altri minerali non metalliferi
'*********************************************************************

'2010-2015

Dim LavoroNMM As Variant
Range("Z275").Select
LavoroNMM = ActiveCell
Dim CapitaleNMM As Variant
Range("Z276").Select
CapitaleNMM = ActiveCell
ActiveCell.Offset(-1, 0).Activate

   For i = 1 To 5

   LavoroNMM = ActiveCell
   ActiveCell.FormulaR1C1 = LavoroNMM * (1 + Tasso1015NMM)
   LavoroNMM = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(1, 0).Activate
```

```
    ActiveCell = CapitaleNMM
    CapitaleNMM = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleNMM * (1 + Tasso1015NMM)
    CapitaleNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroNMM

    Next i

'2016-2020

Range("Z615").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroNMM * (1 + Tasso1520NMM)
    LavoroNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleNMM
    CapitaleNMM = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleNMM * (1 + Tasso1520NMM)
    CapitaleNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroNMM

    Next i
```

```
'2021-2025

Range("Z955").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroNMM * (1 + Tasso2025NMM)
    LavoroNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleNMM
    CapitaleNMM = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleNMM * (1 + Tasso2025NMM)
    CapitaleNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroNMM

    Next i

'2026-2030

Range("Z1295").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroNMM * (1 + Tasso2530NMM)
    LavoroNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With
```

```
    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleNMM
    CapitaleNMM = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleNMM * (1 + Tasso2530NMM)
    CapitaleNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroNMM

    Next i

    ActiveCell = ""

'*****************************
'PULP, PAPER AND PRINTING****
'*****************************



'VA Non metallic minerals
Sheets("Dati TIMES").Select
Range("P17").Select
Dim Tasso1015CA As Variant
Tasso1015CA = ActiveCell
Range("Q17").Select
Dim Tasso1520CA As Variant
Tasso1520CA = ActiveCell
Range("R17").Select
Dim Tasso2025CA As Variant
Tasso2025CA = ActiveCell
Range("S17").Select
Dim Tasso2530CA As Variant
Tasso2530CA = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Carta e prodotti della carta
'*********************************************************************

'2010-2015
```

```
Dim LavoroCA As Variant
Range("U275").Select
LavoroCA = ActiveCell
Dim CapitaleCA As Variant
Range("U276").Select
CapitaleCA = ActiveCell
ActiveCell.Offset(-1, 0).Activate

For i = 1 To 5

   LavoroCA = ActiveCell
   ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso1015CA)
   LavoroCA = ActiveCell
With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(1, 0).Activate
   ActiveCell = CapitaleCA
   CapitaleCA = ActiveCell
   ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso1015CA)
   CapitaleCA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(67, 0).Activate
   ActiveCell = LavoroCA

   Next i

'2016-2020

Range("U615").Select

   For i = 1 To 5

   ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso1520CA)
   LavoroCA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
```

```
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With

ActiveCell.Offset(1, 0).Activate
ActiveCell = CapitaleCA
CapitaleCA = ActiveCell
ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso1520CA)
CapitaleCA = ActiveCell
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With

ActiveCell.Offset(67, 0).Activate
ActiveCell = LavoroCA

Next i

'2021-2025

Range("U955").Select

For i = 1 To 5

ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso2025CA)
LavoroCA = ActiveCell
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With

ActiveCell.Offset(1, 0).Activate
ActiveCell = CapitaleCA
CapitaleCA = ActiveCell
ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso2025CA)
CapitaleCA = ActiveCell
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
```

```
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCA

    Next i

 '2026-2030

Range("U1295").Select

    For i = 1 To 5


    ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso2530CA)
    LavoroCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCA
    CapitaleCA = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso2530CA)
    CapitaleCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCA

    Next i

    ActiveCell = ""

'*****************************************************************
'Editoria e stampa
'*****************************************************************

'2010-2015
```

```
Range("V275").Select
LavoroCA = ActiveCell
Range("V276").Select
CapitaleCA = ActiveCell
ActiveCell.Offset(-1, 0).Activate

For i = 1 To 5

   LavoroCA = ActiveCell
   ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso1015CA)
   LavoroCA = ActiveCell
With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(1, 0).Activate
   ActiveCell = CapitaleCA
   CapitaleCA = ActiveCell
   ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso1015CA)
   CapitaleCA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(67, 0).Activate
   ActiveCell = LavoroCA

   Next i

'2016-2020

Range("V615").Select

   For i = 1 To 5

   ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso1520CA)
   LavoroCA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
```

```
    .PatternTintAndShade = 0
End With

ActiveCell.Offset(1, 0).Activate
ActiveCell = CapitaleCA
CapitaleCA = ActiveCell
ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso1520CA)
CapitaleCA = ActiveCell
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With

ActiveCell.Offset(67, 0).Activate
ActiveCell = LavoroCA

Next i

'2021-2025

Range("V955").Select

For i = 1 To 5

ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso2025CA)
LavoroCA = ActiveCell
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With

ActiveCell.Offset(1, 0).Activate
ActiveCell = CapitaleCA
CapitaleCA = ActiveCell
ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso2025CA)
CapitaleCA = ActiveCell
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .Color = 65535
    .TintAndShade = 0
    .PatternTintAndShade = 0
End With
```

```
    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCA

    Next i

 '2026-2030

Range("V1295").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = LavoroCA * (1 + Tasso2530CA)
    LavoroCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(1, 0).Activate
    ActiveCell = CapitaleCA
    CapitaleCA = ActiveCell
    ActiveCell.FormulaR1C1 = CapitaleCA * (1 + Tasso2530CA)
    CapitaleCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(67, 0).Activate
    ActiveCell = LavoroCA

    Next i

    ActiveCell = ""

 '*****************************
'OTHER INDUSTRIES*************
'*****************************


'VA Other industries
Sheets("Dati TIMES").Select
Range("P18").Select
Dim Tasso1015OI As Variant
```

```
Tasso1015OI = ActiveCell
Range("Q18").Select
Dim Tasso1520OI As Variant
Tasso1520OI = ActiveCell
Range("R18").Select
Dim Tasso2025OI As Variant
Tasso2025OI = ActiveCell
Range("S18").Select
Dim Tasso2530OI As Variant
Tasso2530OI = ActiveCell

Sheets("Constraints Set").Select

End Sub

Sub VA()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine imports constraints for Energy Sector and other sectors from TIMES model on Value Added
'*************************************************************************

VA1
VA2
VA1GOV
VA2GOV
Sheets("Main").Select
Range("A1").Select
End Sub

Sub VA1GOV()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine imports constraints for Energy Sector and other sectors from TIMES model on Value Added
'*************************************************************************
Application.ScreenUpdating = False

'VA Agricolture
Sheets("Dati TIMES").Select
Range("P6").Select
Dim Tasso1015A As Variant
```

```
Tasso1015A = ActiveCell
Range("Q6").Select
Dim Tasso1520A As Variant
Tasso1520A = ActiveCell
Range("R6").Select
Dim Tasso2025A As Variant
Tasso2025A = ActiveCell
Range("S6").Select
Dim Tasso2530A As Variant
Tasso2530A = ActiveCell

Sheets("Constraints Set").Select

'2010-2015

Dim GovernoA As Variant
Range("H337").Select
GovernoA = ActiveCell

   For i = 1 To 5

   GovernoA = ActiveCell
   ActiveCell.FormulaR1C1 = GovernoA * (1 + Tasso1015A)
   GovernoA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(68, 0).Activate
   ActiveCell = GovernoA

   Next i

'2016-2020


Range("H677").Select

   For i = 1 To 5

   ActiveCell.FormulaR1C1 = GovernoA * (1 + Tasso1520A)
   GovernoA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
```

```
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoA

    Next i

 '2021-2025

Range("H1017").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoA * (1 + Tasso2025A)
    GovernoA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoA

    Next i

'2026-2030

Range("H1357").Select

    For i = 1 To 5
    ActiveCell.FormulaR1C1 = GovernoA * (1 + Tasso2530A)
    GovernoA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With


    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoA

    Next i
```

```
    ActiveCell = ""

'*****************************
 'MARKET SERVICES**************
 '*****************************

'VA Market Services
Sheets("Dati TIMES").Select
Range("P9").Select
Dim Tasso1015MS As Variant
Tasso1015MS = ActiveCell
Range("Q9").Select
Dim Tasso1520MS As Variant
Tasso1520MS = ActiveCell
Range("R9").Select
Dim Tasso2025MS As Variant
Tasso2025MS = ActiveCell
Range("S9").Select
Dim Tasso2530MS As Variant
Tasso2530MS = ActiveCell

Sheets("Constraints Set").Select

End Sub

Sub VA2GOV()

'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : January, 17th 2014
'Release: 1.0

'This routine imports constraints for Energy Sector and other sectors from TIMES model
on Value Added
'*************************************************************************************


'*****************************
'IRON AND STEEL***************
'*****************************

Application.ScreenUpdating = False

'VA Iron and steel
Sheets("Dati TIMES").Select
Range("P13").Select
Dim Tasso1015IS As Variant
Tasso1015IS = ActiveCell
Range("Q13").Select
```

```
Dim Tasso1520IS As Variant
Tasso1520IS = ActiveCell
Range("R13").Select
Dim Tasso2025IS As Variant
Tasso2025IS = ActiveCell
Range("S13").Select
Dim Tasso2530IS As Variant
Tasso2530IS = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Metalli e leghe
'*********************************************************************

'2010-2015

Dim GovernoIS As Variant
Range("AA337").Select
GovernoIS = ActiveCell

   For i = 1 To 5

   GovernoIS = ActiveCell
   ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso1015IS)
   GovernoIS = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With


   ActiveCell.Offset(68, 0).Activate
   ActiveCell = GovernoIS

   Next i

'2016-2020

Range("AA677").Select

   For i = 1 To 5

   ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso1520IS)
   GovernoIS = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
```

```
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With


    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoIS

    Next i

 '2021-2025

Range("AA1017").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso2025IS)
    GovernoIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoIS

    Next i

 '2026-2030

Range("AA1357").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso2530IS)
    GovernoIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With
```

```
    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoIS

Next i

    ActiveCell = ""

'*****************************************************************
'Prodotti metallici
'*****************************************************************

'2010-2015

Range("AB337").Select
GovernoIS = ActiveCell

    For i = 1 To 5

    GovernoIS = ActiveCell
    ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso1015IS)
    GovernoIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With


    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoIS

    Next i

'2016-2020

Range("AB677").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso1520IS)
    GovernoIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With
```

```
    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoIS

    Next i

 '2021-2025

Range("AB1017").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso2025IS)
    GovernoIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoIS

    Next i

 '2026-2030

Range("AB1357").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoIS * (1 + Tasso2530IS)
    GovernoIS = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoIS

    Next i

    ActiveCell = ""
```

```
'****************************
'NON FERROUS METALS**********
'****************************

'VA Iron and steel
Sheets("Dati TIMES").Select
Range("P14").Select
Dim Tasso1015NFM As Variant
Tasso1015NFM = ActiveCell
Range("Q14").Select
Dim Tasso1520NFM As Variant
Tasso1520NFM = ActiveCell
Range("R14").Select
Dim Tasso2025NFM As Variant
Tasso2025NFM = ActiveCell
Range("S14").Select
Dim Tasso2530NFM As Variant
Tasso2530NFM = ActiveCell

Sheets("Constraints Set").Select


'*********************************************************************
'Metalli e leghe
'*********************************************************************

'2010-2015

Dim GovernoNFM As Variant
Range("AA337").Select
GovernoNFM = ActiveCell

   For i = 1 To 5

   GovernoNFM = ActiveCell
   ActiveCell.FormulaR1C1 = GovernoNFM * (1 + Tasso1015NFM)
   GovernoNFM = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(68, 0).Activate
   ActiveCell = GovernoNFM

   Next i
```

```
'2016-2020

Range("AA677").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoNFM * (1 + Tasso1520NFM)
    GovernoNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoNFM

    Next i

'2021-2025

Range("AA1017").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoNFM * (1 + Tasso2025NFM)
    GovernoNFM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoNFM

    Next i

 '2026-2030

Range("AA1357").Select

    For i = 1 To 5
    ActiveCell.FormulaR1C1 = GovernoNFM * (1 + Tasso2530NFM)
    GovernoNFM = ActiveCell
    With Selection.Interior
```

```
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoNFM

    Next i

    ActiveCell = ""

'*****************************
'CHEMICALS*********************
'*****************************

'VA Chemicals
Sheets("Dati TIMES").Select
Range("P15").Select
Dim Tasso1015CH As Variant
Tasso1015CH = ActiveCell
Range("Q15").Select
Dim Tasso1520CH As Variant
Tasso1520CH = ActiveCell
Range("R15").Select
Dim Tasso2025CH As Variant
Tasso2025CH = ActiveCell
Range("S15").Select
Dim Tasso2530CH As Variant
Tasso2530CH = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Prodotti chimici
'*********************************************************************

'2010-2015

Dim GovernoCH As Variant
Range("X337").Select
GovernoCH = ActiveCell

    For i = 1 To 5

    GovernoCH = ActiveCell
    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso1015CH)
    GovernoCH = ActiveCell
```

```
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCH

    Next i

'2016-2020

Range("X677").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso1520CH)
    GovernoCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCH

    Next i

 '2021-2025

Range("X1017").Select

    For i = 1 To 5
    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso2025CH)
    GovernoCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
```

```
    ActiveCell = GovernoCH

    Next i

 '2026-2030

Range("X1357").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso2530CH)
    GovernoCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCH

    Next i

    ActiveCell = ""

'*********************************************************************
'Gomma
'*********************************************************************

'2010-2015

Range("Y337").Select
GovernoCH = ActiveCell

    For i = 1 To 5

    GovernoCH = ActiveCell
    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso1015CH)
    GovernoCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
```

```
    ActiveCell = GovernoCH

    Next i

'2016-2020

Range("Y677").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso1520CH)
    GovernoCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCH

    Next i

'2021-2025

Range("Y1017").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso2025CH)
    GovernoCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCH

    Next i

'2026-2030

Range("Y1357").Select
```

```
    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCH * (1 + Tasso2530CH)
    GovernoCH = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCH

    Next i

    ActiveCell = ""

'*****************************
'NON METALLIC MINERALS********
'*****************************

'VA Non metallic minerals
Sheets("Dati TIMES").Select
Range("P14").Select
Dim Tasso1015NMM As Variant
Tasso1015NMM = ActiveCell
Range("Q14").Select
Dim Tasso1520NMM As Variant
Tasso1520NMM = ActiveCell
Range("R14").Select
Dim Tasso2025NMM As Variant
Tasso2025NMM = ActiveCell
Range("S14").Select
Dim Tasso2530NMM As Variant
Tasso2530NMM = ActiveCell

Sheets("Constraints Set").Select

'*********************************************************************
'Altri minerali non metalliferi
'*********************************************************************

'2010-2015

Dim GovernoNMM As Variant
Range("Z337").Select
GovernoNMM = ActiveCell
```

```
    For i = 1 To 5

    GovernoNMM = ActiveCell
    ActiveCell.FormulaR1C1 = GovernoNMM * (1 + Tasso1015NMM)
    GovernoNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoNMM

    Next i

'2016-2020

Range("Z677").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoNMM * (1 + Tasso1520NMM)
    GovernoNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoNMM

    Next i

 '2021-2025

Range("Z1017").Select

    For i = 1 To 5
    ActiveCell.FormulaR1C1 = GovernoNMM * (1 + Tasso2025NMM)
    GovernoNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
```

```
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoNMM

    Next i

 '2026-2030

Range("Z1357").Select
    For i = 1 To 5
    ActiveCell.FormulaR1C1 = GovernoNMM * (1 + Tasso2530NMM)
    GovernoNMM = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoNMM

    Next i

    ActiveCell = ""

'*****************************
'PULP, PAPER AND PRINTING****
'*****************************

'VA Non metallic minerals
Sheets("Dati TIMES").Select
Range("P17").Select
Dim Tasso1015CA As Variant
Tasso1015CA = ActiveCell
Range("Q17").Select
Dim Tasso1520CA As Variant
Tasso1520CA = ActiveCell
Range("R17").Select
Dim Tasso2025CA As Variant
Tasso2025CA = ActiveCell
Range("S17").Select
Dim Tasso2530CA As Variant
Tasso2530CA = ActiveCell

Sheets("Constraints Set").Select
```

```
'*****************************************************************
'Carta e prodotti della carta
'*****************************************************************

'2010-2015

Dim GovernoCA As Variant
Range("U337").Select
GovernoCA = ActiveCell

   For i = 1 To 5

   GovernoCA = ActiveCell
   ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso1015CA)
   GovernoCA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(68, 0).Activate
   ActiveCell = GovernoCA

   Next i

'2016-2020

Range("U677").Selec

   For i = 1 To 5
   ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso1520CA)
   GovernoCA = ActiveCell
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   ActiveCell.Offset(68, 0).Activate
   ActiveCell = GovernoCA

   Next i

 '2021-2025
```

```
Range("U1017").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso2025CA)
    GovernoCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCA

    Next i

 '2026-2030

Range("U1357").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso2530CA)
    GovernoCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With
    ActiveCell = ""

'*****************************************************************
'Editoria e stampa
'*****************************************************************

'2010-2015

Range("V337").Select
GovernoCA = ActiveCell

    For i = 1 To 5

    GovernoCA = ActiveCell
    ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso1015CA)
```

```
    GovernoCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCA

    Next i

'2016-2020


Range("V677").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso1520CA)
    GovernoCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCA

    Next i

 '2021-2025

Range("V1017").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso2025CA)
    GovernoCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
```

```
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCA

    Next i

 '2026-2030

Range("V1357").Select

    For i = 1 To 5

    ActiveCell.FormulaR1C1 = GovernoCA * (1 + Tasso2530CA)
    GovernoCA = ActiveCell
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With

    ActiveCell.Offset(68, 0).Activate
    ActiveCell = GovernoCA

    Next i

    ActiveCell = ""

 '*****************************
'OTHER INDUSTRIES*************
'*****************************

'VA Other industries
Sheets("Dati TIMES").Select
Range("P18").Select
Dim Tasso1015OI As Variant
Tasso1015OI = ActiveCell
Range("Q18").Select
Dim Tasso1520OI As Variant
Tasso1520OI = ActiveCell
Range("R18").Select
Dim Tasso2025OI As Variant
Tasso2025OI = ActiveCell
Range("S18").Select
Dim Tasso2530OI As Variant
Tasso2530OI = ActiveCell

Sheets("Constraints Set").Select
```

End Sub

Module 8

Sub RASAdv()

```
'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2015
'Release: 1.0

'This routine executes RAS with constraints
'*************************************************************************
```

```
Application.ScreenUpdating = False
Dim SomVinc As Variant
Dim Vinc As Variant
Dim Difference As Variant
Dim CoeFree As Variant

 Sheets("Main").Select
 Soglia = Range("M9")


Sheets("RASAdv").Select

'Vettori riga e colonna dei totali della SAM
TotaliR = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)
TotaliC = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)

Range("BO2").Select

   For i = 0 To UBound(TotaliR)
      TotaliR(i) = ActiveCell
      TotaliC(i) = ActiveCell
      ActiveCell.Offset(1, 0).Activate
   Next i

Range("BO2").Select
```

'Definizione del vettore totale delle variabili della matrice

Matrix

'Acquisizione nuovo target

TotaliRN = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)
TotaliCN = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)

Range("BP2").Select

```
For i = 0 To UBound(TotaliRN)
   TotaliRN(i) = ActiveCell
   TotaliCN(i) = ActiveCell
   ActiveCell.Offset(1, 0).Activate
Next i
```

Range("BP2").Select

i = 0

Do Until (Range("BT2").Value < Soglia And Range("BU2").Value < Soglia)

```
        Do Until Range("BT2").Value <
'Vettori riga e colonna dei totali della SAM
        TotaliR = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)
```

```
Range("BO2").Select

    For i = 0 To UBound(TotaliR)
       TotaliR(i) = ActiveCell
       ActiveCell.Offset(1, 0).Activate
    Next i

'riquadramento per riga

' declare ALL your variables
Dim n As Long, m As Long
Dim ws As Excel.Worksheet

' Explicitly reference the required sheet
Set ws = ActiveSheet ' or ActiveSheet or whatever

' Qualify range references with worksheet
Range("B2").Select

Dim matrixelement(0 To 64, 0 To 64) As Variant

Count = 0

    For n = 0 To 64
    CoeFree = 0
    SomVinc = 0

       For m = 0 To 64

       If ActiveCell.Interior.Color = 65535 Then
          matrixelement(n, m) = ActiveCell
          Vinc = ActiveCell
          SomVinc = SomVinc + Vinc
          ActiveCell.Offset(0, 1).Activate

          Else

          CoeFree = CoeFree + 1
          Factor = TotaliRN(n) / TotaliR(n)
          NewCell = ActiveCell
          matrixelement(n, m) = NewCell * Factor
          ActiveCell.Offset(0, 1).Activate
          End If

       Next m
       Constr = 0
       ActiveCell.Offset(0, -m).Activate

       If CoeFree = 0 Then
       Difference = (TotaliRN(n) - TotaliR(n))
```

```
        Else
        Difference = (TotaliRN(n) - TotaliR(n)) / CoeFree
        End If

        For m = 0 To 64
        If ActiveCell.Interior.Color = 65535 Then
           matrixelement(n, m) = ActiveCell
           ActiveCell.Offset(0, 1).Activate

           Else
           NewCell = ActiveCell + Difference
           matrixelement(n, m) = NewCell
           ActiveCell.Offset(0, 1).Activate
           End If
        Next m
      ActiveCell.Offset(1, -m).Activate
      Next n

    ' Return result to sheet in one go
     ws.Range("B2:BN66") = matrixelement

    k = k + 1
      Loop

    Do Until Range("BU2").Value < Soglia
'Vettori colonna dei totali della SAM
    TotaliC = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)

Range("B67").Select

      For i = 0 To UBound(TotaliR)
         TotaliC(i) = ActiveCell
         ActiveCell.Offset(0, 1).Activate
      Next i

    'riquadramento per colonna

    ' declare ALL your variables
    Dim p As Long, q As Long
    Dim ws2 As Excel.Worksheet

    ' Explicitly reference the required sheet
    Set ws2 = ActiveSheet ' or ActiveSheet or whatever

    ' Qualify range references with worksheet
```

```
Range("B2").Select

Dim matrixelement2(0 To 64, 0 To 64) As Variant

   Count = 0

      For q = 0 To 64
      CoeFree = 0
      SomVinc = 0

         For p = 0 To 64

         If ActiveCell.Interior.Color = 65535 Then
         Vinc = ActiveCell
         SomVinc = SomVinc + Vinc
         matrixelement2(p, q) = ActiveCell
         ActiveCell.Offset(1, 0).Activate

         Else

         CoeFree = CoeFree + 1
         Factor = TotaliCN(q) / TotaliC(q)
         NewCell = ActiveCell
         matrixelement2(p, q) = NewCell * Factor
         ActiveCell.Offset(1, 0).Activate
         End If

         Next p

      ActiveCell.Offset(-p, 0).Activate
      Constr = 0
      If CoeFree = 0 Then
      Difference = (TotaliCN(q) - TotaliC(q))
      Else
      Difference = (TotaliCN(q) - TotaliC(q)) / CoeFree
      End If
      For p = 0 To 64

      If ActiveCell.Interior.Color = 65535 Then
         matrixelement(p, q) = ActiveCell
         ActiveCell.Offset(1, 0).Activate

         Else
         NewCell = ActiveCell + Difference
         matrixelement(p, q) = NewCell
         ActiveCell.Offset(1, 0).Activate
         End If

      Next p
      ActiveCell.Offset(-p, 1).Activate
```

```
            Next q


        ' Return result to sheet in one go
ws2.Range("B2:BN66") = matrixelement2

        k = k + 1                    ' incrementa un contatore che registra il numero di
iterazioni necessarie al bilanciamento

Loop


k = k + 1

Loop



End Sub

Sub RASAdv2()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Data   : May, 27th 2015
'Release: 1.0

'This routine executes a variant of the RAS with constraints
'*************************************************************************

Application.ScreenUpdating = False
Dim SomVinc As Variant
Dim Vinc As Variant
Dim Difference As Variant
Dim CoeFree As Variant

Sheets("Main").Select
Range("M8") = Time

   Sheets("Old").Select
   Range("BP2:BP66").Select
   Selection.Copy

   Sheets("RASAdv").Select
   Range("BP2").Select
   Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=False
   Range("B68").Select
```

```
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=True

ImportConstraints

'**************
'correzione per il settore estrazione minerali non metalliferi

Range("K67").Select
NuovoEMNM = ActiveCell
Range("K68") = NuovoEMNM
Range("BP11") = NuovoEMNM

'fine correzione per il settore estrazione minerali non metalliferi
'**************

'Vettori riga e colonna dei totali della SAM
TotaliR = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra,
Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme,
Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco,
Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi,
Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes,
GOVER, FCAPI, RESTO)
TotaliC = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra,
Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme,
Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco,
Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi,
Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes,
GOVER, FCAPI, RESTO)

Range("BO2").Select

    For i = 0 To UBound(TotaliR)
        TotaliR(i) = ActiveCell
        TotaliC(i) = ActiveCell
        ActiveCell.Offset(1, 0).Activate
    Next i

Range("BO2").Select

'Definizione del vettore totale delle variabili della matrice

Matrix

'Acquisizione nuovo target

TotaliRN = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra,
Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme,
Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco,
Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi,
```

```
Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)
TotaliCN = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)

Range("BP2").Select

   For i = 0 To UBound(TotaliRN)
      TotaliRN(i) = ActiveCell
      TotaliCN(i) = ActiveCell
      ActiveCell.Offset(1, 0).Activate
   Next i

Range("BP2").Select

i = 0



Do Until Range("BV2").Value < 1          'Esegue il bilanciamento fino a che lo scarto tra la matrice da bilanciare e il valore
                                         'di soglia prescelto non sono inferiori a 0.0001


         Do Until Range("BT2").Value < 0.5          'Esegue il bilanciamento fino a che lo scarto tra la matrice da bilanciare e il valore
                                                    'di soglia prescelto non sono inferiori a 0.0001
         'Vettori riga e colonna dei totali della SAM
         TotaliR = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)

Range("BO2").Select

            For i = 0 To UBound(TotaliR)
               TotaliR(i) = ActiveCell
               ActiveCell.Offset(1, 0).Activate
            Next i

         'riquadramento per riga
```

```
' declare ALL your variables
Dim n As Long, m As Long
Dim ws As Excel.Worksheet

' Explicitly reference the required sheet
Set ws = ActiveSheet ' or ActiveSheet or whatever

' Qualify range references with worksheet
Range("B2").Select

Dim matrixelement(0 To 64, 0 To 64) As Variant

Count = 0

   For n = 0 To 64
   CoeFree = 0
   SomVinc = 0

      For m = 0 To 64

      If ActiveCell.Interior.Color = 65535 Then
         matrixelement(n, m) = ActiveCell
         Vinc = ActiveCell
         SomVinc = SomVinc + Vinc
         ActiveCell.Offset(0, 1).Activate

         Else

         CoeFree = CoeFree + 1
         Factor = TotaliRN(n) / TotaliR(n)
         NewCell = ActiveCell
         matrixelement(n, m) = NewCell * Factor
         ActiveCell.Offset(0, 1).Activate
         End If

      Next m
      Constr = 0
      ActiveCell.Offset(0, -m).Activate
      If CoeFree = 0 Then
      Difference = (TotaliRN(n) - TotaliR(n))
      Else
      Difference = (TotaliRN(n) - TotaliR(n)) / CoeFree
      End If

      For m = 0 To 64
      If ActiveCell.Interior.Color = 65535 Then
         matrixelement(n, m) = ActiveCell
         ActiveCell.Offset(0, 1).Activate
```

```
                Else
                NewCell = ActiveCell + Difference
                   If NewCell < 0 Then
                   NewCell = 0
                   Else
                   matrixelement(n, m) = NewCell
                   End If
                ActiveCell.Offset(0, 1).Activate
                End If
              Next m
            ActiveCell.Offset(1, -m).Activate
            Next n

        ' Return result to sheet in one go
          ws.Range("B2:BN66") = matrixelement

        Range("B2").Select

    For n = 1 To 65
    For m = 1 To 65
       Var = ActiveCell

        If Var = 0 Then
        ActiveCell.Interior.Color = 65535
        ActiveCell.Offset(0, 1).Activate
        Else
        ActiveCell.Offset(0, 1).Activate
        End If
    Next m
    ActiveCell.Offset(1, -65).Activate


Next n
        k = k + 1                    ' incrementa un contatore che registra il numero di iterazioni necessarie al bilanciamento

          Loop

        Do Until Range("BU2").Value < 0.5        'Esegue il bilanciamento fino a che lo scarto tra la matrice da bilanciare e il valore
                                                 'di soglia prescelto non sono inferiori a 0.0001
        'Vettori colonna dei totali della SAM
        TotaliC = Array(LAVOR, CAPIT, FAMIG, IMPRE, Agric, Silvi, Pesca, Carbo, Petro, Estra, Altri, Alibe, Tabac, Tessi, Vesti, Cuoio, Legno, Carta, Edito, Coke, Chimi, Gomma, Nonme, Metal, Menoa, Macch, Uffpc, Elett, Radio, Medic, Veico, AlTra, Mobil, Recup, Energ, Racco, Costr, Comme, Ingro, Detta, Alber, Terre, Marit, Aerei, Ausil, Poste, Inter, Assic, Servi, Immob, Noleg, Compu, Ricer, Profe, Pubbl, Istru, Sanit, Smalt, Organ, Attiv, AlSer, Domes, GOVER, FCAPI, RESTO)

Range("B67").Select
```

```
   For i = 0 To UBound(TotaliR)
      TotaliC(i) = ActiveCell
      ActiveCell.Offset(0, 1).Activate
   Next i

'riquadramento per colonna

' declare ALL your variables
Dim p As Long, q As Long
Dim ws2 As Excel.Worksheet

' Explicitly reference the required sheet
Set ws2 = ActiveSheet ' or ActiveSheet or whatever

' Qualify range references with worksheet
Range("B2").Select

Dim matrixelement2(0 To 64, 0 To 64) As Variant

   Count = 0

      For q = 0 To 64
      CoeFree = 0
      SomVinc = 0

         For p = 0 To 64

         If ActiveCell.Interior.Color = 65535 Then
         Vinc = ActiveCell
         SomVinc = SomVinc + Vinc
         matrixelement2(p, q) = ActiveCell
         ActiveCell.Offset(1, 0).Activate

         Else

         CoeFree = CoeFree + 1
         Factor = TotaliCN(q) / TotaliC(q)
         NewCell = ActiveCell
         matrixelement2(p, q) = NewCell * Factor
         ActiveCell.Offset(1, 0).Activate
         End If

         Next p

      ActiveCell.Offset(-p, 0).Activate
      Constr = 0
      If CoeFree = 0 Then
      Difference = (TotaliCN(q) - TotaliC(q))
      Else
```

```
                Difference = (TotaliCN(q) - TotaliC(q)) / CoeFree
                End If

                For p = 0 To 64

                If ActiveCell.Interior.Color = 65535 Then
                   matrixelement(p, q) = ActiveCell
                   ActiveCell.Offset(1, 0).Activate

                   Else
                   NewCell = ActiveCell + Difference
                      If NewCell < 0 Then
                      NewCell = 0
                      Else
                      matrixelement(p, q) = NewCell
                      End If
                   ActiveCell.Offset(1, 0).Activate
                   End If

                Next p
                ActiveCell.Offset(-p, 1).Activate
                Next q



          ' Return result to sheet in one go
            ws2.Range("B2:BN66") = matrixelement2

            Range("B2").Select

      For n = 1 To 65
      For m = 1 To 65
         Var = ActiveCell

          If Var = 0 Then
          ActiveCell.Interior.Color = 65535
          ActiveCell.Offset(0, 1).Activate
          Else
          ActiveCell.Offset(0, 1).Activate
          End If
      Next m
      ActiveCell.Offset(1, -65).Activate
Next n
          k = k + 1                    ' incrementa un contatore che registra il numero di
iterazioni necessarie al bilanciamento

            Loop
```

```
k = k + 1

Loop

'MsgBox "Matrice bilanciata. Iterazioni effettuate = " & k       'Messaggio finale modificabile a piacimento

   Sheets("RASAdv").Select                    'Questa istruzione evidenzia le celle della matrice bilanciata
Range("B2:BN66").Select
   With Selection.Interior
      .Pattern = xlSolid
      .PatternColorIndex = xlAutomatic
      .Color = 65535
      .TintAndShade = 0
      .PatternTintAndShade = 0
   End With

   Columns("B:BN").Select
   Selection.ColumnWidth = 11
   Range("BR2").Select

Sheets("Main").Select
Range("M10") = Time
Range("M12").Select

End Sub
```

Sub Matrix()

```
'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Date   : May, 27th 2015
'Release: 1.0

'This routine prepares a matrix for RASAdv
'*************************************************************************************

Application.ScreenUpdating = False

' declare ALL your variables
Dim n As Long, m As Long
Dim ws As Excel.Worksheet

' specify type for all variables, otherwise they will be Variant
Dim Sigmai As Single, Sigmaj As Single, Rho As Single

' Explicitly reference the required sheet
Set ws = ActiveSheet ' or ActiveSheet or whatever
```

```
' qualify range references with worksheet
Range("B2").Select

Dim matrixelement(1 To 65, 1 To 65) As Variant

   For n = 1 To 65
      For m = 1 To 65
         matrixelement(n, m) = ActiveCell
         ActiveCell.Offset(0, 1).Activate
      Next m
      ActiveCell.Offset(1, -m + 1).Activate
   Next n

' return result to sheet in one go
  ws.Range("B2:BN66") = matrixelement


End Sub
```

Module 9

```
Sub ImportaVincoliEnergyOeM()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Date   : November, 1th 2014
'Release: 1.0

'This routine imports a file that contain index numbers from TIMES
'*************************************************************************

Workbooks.Open Filename:="C:\INPUT SAM\InputVincoliTimes.xlsx", _
   UpdateLinks:=0


Cells.Select
Selection.Copy

Windows("PM.xlsm").Activate
Sheets("TIMES Constraints").Select
Range("A1").Select
ActiveSheet.Paste
Windows("InputVincoliTimes.xlsx").Activate
ActiveWorkbook.Close

End Sub

Sub ImportaTrendTimes()
```

```
'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Date   : November, 1th 2014
'Release: 1.0

'This routine imports a file that contain VA trends from TIMES
'*************************************************************************

Workbooks.Open Filename:="C:\INPUT SAM\TabellaTrendTIMES.xlsx", _
   UpdateLinks:=0


Range("A1:E17").Select
Selection.Copy

Windows("PM.xlsm").Activate
Sheets("Dati TIMES").Select
Range("O2").Select
ActiveSheet.Paste
Windows("TabellaTrendTIMES.xlsx").Activate
ActiveWorkbook.Close

End Sub
```

Module 10

```
Sub HideAll()

'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Date   : November, 1th 2014
'Release: 1.0

'This routine hides the worksheets
'*************************************************************************

   Sheets("Constraints Set").Visible = xlVeryHidden
   Sheets("RAS").Visible = xlVeryHidden
   Sheets("RASAdv").Visible = xlVeryHidden
   Sheets("Old").Visible = xlVeryHidden
   Sheets("Temp").Visible = xlVeryHidden
   Sheets("Temp2").Visible = xlVeryHidden
   Sheets("Constraints").Visible = xlVeryHidden
   Sheets("TIMES vectors").Visible = xlVeryHidden
   Sheets("OLD Mat Storage").Visible = xlVeryHidden
   Sheets("Italia").Visible = xlVeryHidden
   Sheets("TIMES Constraints").Visible = xlVeryHidden
   Sheets("OLD Constraints Storage").Visible = xlVeryHidden
   Sheets("Dati TIMES").Visible = xlVeryHidden
   Sheets("Check").Visible = xlVeryHidden
```

```
    Sheets("Various").Visible = xlVeryHidden


End Sub

Sub UnhideAll()

'*************************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Date   : November, 1th 2014
'Release: 1.0

'This routine unhides the worksheets
'*************************************************************************************

    Sheets("Main").Select
    Sheets("Constraints Set").Visible = True
    Sheets("Main").Select
    Sheets("RAS").Visible = True
    Sheets("Main").Select
    Sheets("RASAdv").Visible = True
    Sheets("Main").Select
    Sheets("Old").Visible = True
    Sheets("Main").Select
    Sheets("Temp").Visible = True
    Sheets("Main").Select
    Sheets("Constraints").Visible = True
    Sheets("Main").Select
    Sheets("TIMES vectors").Visible = True
    Sheets("Main").Select
    Sheets("OLD Mat Storage").Visible = True
    Sheets("Main").Select
    Sheets("Italia").Visible = True
    Sheets("Main").Select
    Sheets("TIMES Constraints").Visible = True
    Sheets("Main").Select
    Sheets("OLD Constraints Storage").Visible = True
    Sheets("Main").Select
    Sheets("Dati TIMES").Visible = True
    Sheets("Main").Select
    Sheets("Temp2").Visible = True
    Sheets("Main").Select
    Sheets("Check").Visible = True
    Sheets("Main").Select
    Sheets("Various").Visible = True



End Sub
```

Module 11

Sub SetZeroToConstraints()

```
'*************************************************************************
'Autori : Marco Rao, Maria Cristina Tommasino
'Date   : November, 1th 2014
'Release: 1.0

'This routine set the zeros of the SAM as a constraints
'*************************************************************************

    Sheets("RAS").Select
    Range("BV2").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlToLeft)).Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range("BV2:EH2").Select
    Range(Selection, Selection.End(xlDown)).Select
    Range("BV2:EH66").Select
    Selection.FormatConditions.Add Type:=xlCellValue, Operator:=xlEqual, _
        Formula1:="=0"
    Selection.FormatConditions(Selection.FormatConditions.Count).SetFirstPriority
    With Selection.FormatConditions(1).Interior
        .PatternColorIndex = xlAutomatic
        .Color = 65535
        .TintAndShade = 0
    End With
    Selection.FormatConditions(1).StopIfTrue = False
End Sub
```

Interface 3

Module 1

Sub CoerlC()

```
'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine transfers the coefficient of salary to sheet "Impatto" from "coe" sheet
'*************************************************************************

    Application.ScreenUpdating = False
    Dim CntrFam As Variant
    Sheets("Main").Select
    Range("D6").Select
    CntrFam = ActiveCell
    If CntrFam = "FAMIGLIE" Then GoTo 43
```

```
    Sheets("coeI").Select
    Range("F2").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Selection.Copy
    Sheets("Impatto").Select
    Range("D7").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=True

    Sheets("coe").Select
    Range("D2:E66").Select
    Selection.Copy
    Sheets("Impatto").Select
    Range("N3").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    Sheets("coe").Select
    Range("BL2:BL66").Select
    Selection.Copy
    Sheets("Impatto").Select
    Range("P3").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    GoTo 69
43

    Sheets("coeI").Select
    Range("E2").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Selection.Copy
    Sheets("Impatto").Select
    Range("D6").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=True

    Sheets("coe").Select
    Range("D2:D66").Select
    Selection.Copy
    Sheets("Impatto").Select
    Range("O3").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    Sheets("coe").Select
    Range("BK2:BK66").Select
    Selection.Copy
    Sheets("Impatto").Select
    Range("P3").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    Range("N3:N66") = 0
```

69

End Sub

Module 2

Sub EvidPer()

```
'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine highlights the impact period on "Main" sheet (not activate)
'*************************************************************************

Application.ScreenUpdating = False

Dim Periodo As Variant
Dim Orizzonte As Variant
Dim Regime As Variant


    Sheets("Main").Select
    Range("D8").Select
    Periodo = ActiveCell
    Range("D10").Select
    Orizzonte = ActiveCell

    Range("N8:N46").Select
    With Selection.Interior
        .Pattern = xlSolid
        .PatternColorIndex = xlAutomatic
        .ThemeColor = xlThemeColorDark1
        .TintAndShade = 0
        .PatternTintAndShade = 0
    End With
    Selection.Font.Bold = False

    Range("O8").Select

    For i = 1 To Periodo

        With Selection.Interior
            .Pattern = xlSolid
            .PatternColorIndex = xlAutomatic
            .ThemeColor = xlThemeColorDark1
            .TintAndShade = -0.149998474074526
            .PatternTintAndShade = 0
        End With

    ActiveCell.Offset(1, 0).Activate
```

```
    Next i

End Sub

Sub MatrCan()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine "cut" the exogenous sector from coefficient matrix sheets "coeI"
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("coeI").Select
    Cells.Select
    Selection.Copy
    Sheets("I-A").Select
    Cells.Select
    ActiveSheet.Paste
    Sheets("I-A").Select
    Range("A2").Select

    Dim Esogeno As Variant
    Sheets("Main").Select
    Range("D6").Select
    Esogeno = ActiveCell

    Sheets("I-A").Select
    ActiveCell.Select

       For i = 1 To 64
          If ActiveCell = Esogeno Then
                            Selection.EntireRow.Delete
                        Else
                            ActiveCell.Offset(1, 0).Activate
          End If
       Next i

       Range("B1").Select

       For i = 1 To 64
          If ActiveCell = Esogeno Then
                            Selection.EntireColumn.Delete
                        Else
                            ActiveCell.Offset(0, 1).Activate
          End If
       Next i
```

```
    Rows("65:65").Select
    Selection.Delete Shift:=xlUp

    Columns("BM:BM").Select
    Selection.Delete Shift:=xlToLeft

    Sheets("I-A").Select
    Range("B2").Select
    ActiveCell.FormulaR1C1 = "=I!RC-coeI!RC"
    Range("B2").Select
    Selection.Copy
    Range("B2:BL64").Select
    ActiveSheet.Paste

End Sub
```

Sub CoeCan()

```
'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine "cut" the exogenous sector from coefficient matrix sheets "coe"
'*************************************************************************

  Application.ScreenUpdating = False

  Sheets("coe").Select
  Cells.Select
  Selection.Copy
  Sheets("coeI").Select
  Cells.Select
  ActiveSheet.Paste
  Sheets("coe").Select
  Range("A1").Select
  Sheets("coeI").Select
  Range("A2").Select

  Dim Esogeno As Variant
  Sheets("Main").Select
  Range("D6").Select
  Esogeno = ActiveCell

  Sheets("coeI").Select
  ActiveCell.Select

    For i = 1 To 64
      If ActiveCell = Esogeno Then
                    Selection.EntireRow.Delete
                  Else
                    ActiveCell.Offset(1, 0).Activate
```

```
    End If
  Next i

  Range("B1").Select

  For i = 1 To 64
    If ActiveCell = Esogeno Then
                    Selection.EntireColumn.Delete
                  Else
                    ActiveCell.Offset(0, 1).Activate
    End If
  Next i

  Rows("65:65").Select
  Selection.Delete Shift:=xlUp

  Columns("BM:BM").Select
  Selection.Delete Shift:=xlToLeft

End Sub

Sub MoltiplicatoriMultC()

'*************************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine calculates multipliers for construction period
'*************************************************************************************

  Application.ScreenUpdating = False

  Sheets("coeI").Select
  Cells.Select
  Selection.Copy

  Sheets("Moltiplicatori").Select
  Cells.Select
  ActiveSheet.Paste

  Range("B2:BL64").Select
  Selection.Clear
  ActiveCell.FormulaR1C1 = "=MINVERSE('I-A'!RC:R[62]C[62])"
  Selection.FormulaArray = "=MINVERSE('I-A'!RC:R[62]C[62])"
  Selection.NumberFormat = "0.00"
  Range("B2").Select

  Sheets("Moltiplicatori").Select
  Range("A2:A64").Select
  Selection.Copy
  Sheets("Impatto").Select
```

```
    Range("A3").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Range("C3:C65").Select
    Selection.Clear
    ActiveCell.FormulaR1C1 = "=MMULT(Moltiplicatori!R[-1]C[-1]:R[61]C[61],RC[-
1]:R[62]C[-1])"
    Selection.FormulaArray = "=MMULT(Moltiplicatori!R[-1]C[-1]:R[61]C[61],RC[-
1]:R[62]C[-1])"

    Range("A1").Select
End Sub

Sub ResetCan()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine clears calculus from dedicated sheets
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("I-A").Select
    Cells.Select
    Sheets("I-A").Select
    Selection.Delete Shift:=xlUp
    Sheets("Moltiplicatori").Select
    Cells.Select
    Selection.Delete Shift:=xlUp

    Sheets("Impatto").Select
    Range("C3").Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.Clear

    Sheets("Main").Select
    Range("A1").Select

End Sub

Sub ImpostaPeriodo()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine prepares the conditions for the impact calculus
'*************************************************************************
Application.ScreenUpdating = False
```

```
   CoeCan
   MatrCan
MoltiplicatoriMultC
   CoerlC

End Sub

Sub ImpattoVA()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine calculates impact only for Value Added
'*************************************************************************

Unhide

   Application.ScreenUpdating = False

   'Sheets("Input").Select
   'Cells.Select
   'Selection.Copy

   Sheets("VI").Select
   Cells.Select
   'ActiveSheet.Paste

   Dim Esogeno As Variant
   Sheets("Main").Select
   Range("D6").Select
   Esogeno = ActiveCell

   Sheets("VI").Select
   Range("A2").Select
         For w = 1 To 64
           If ActiveCell = Esogeno Then
                        Selection.EntireRow.Delete
                     Else
                        ActiveCell.Offset(1, 0).Activate
           End If
         Next w
   Range("C2").Select

   Sheets("VA").Select
   Range("B2").Select
   Range("B2").Select
   Sheets("SAM r").Select
   Range("C2").Select
```

```
    Sheets("Main").Select
    Range("D8").Select
    Periodo = ActiveCell
    Range("D10").Select
    Orizzonte = ActiveCell

        For i = 1 To Periodo

            Sheets("SAM r").Select
            ActiveCell.Select
            Range(Selection, Selection.End(xlToRight)).Select
            Range(Selection, Selection.End(xlDown)).Select
            Selection.Copy
            ActiveCell.Offset(68, 0).Activate

            Sheets("SAM").Select

            Range("B2").Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False

            CoerlC

            ImpostaPeriodo

            Sheets("VI").Select

            ActiveCell.Select
            Range(Selection, Selection.End(xlDown)).Select
            Selection.Copy
            ActiveCell.Offset(0, 1).Activate

            Sheets("Impatto").Select
            Range("B3").Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False

            Range("C3:C65").Select
            Selection.Copy
            Sheets("VA").Select
            ActiveCell.Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False
            ActiveCell.Offset(0, 1).Activate

        Next i
Hide

End Sub
```

```
Sub ImpattoULA()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine calculates impact only for ULA
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("VI").Select
    Range("C2").Select
    Sheets("ULA").Select
    Range("B6").Select
    Range("B6").Select
    Sheets("SAM r").Select
    Range("C2").Select

    Sheets("Main").Select
    Range("D8").Select
    Periodo = ActiveCell
    Range("D10").Select
    Orizzonte = ActiveCell

      For i = 1 To Periodo

        Sheets("SAM r").Select
        ActiveCell.Select
        Range(Selection, Selection.End(xlToRight)).Select
        Range(Selection, Selection.End(xlDown)).Select
        Selection.Copy
        ActiveCell.Offset(68, 0).Activate

        Sheets("SAM").Select

        Range("B2").Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
          :=False, Transpose:=False

        CoerlC

        ImpostaPeriodo

        Sheets("VI").Select
        ActiveCell.Select
        Range(Selection, Selection.End(xlDown)).Select
        Selection.Copy
        ActiveCell.Offset(0, 1).Activate

        Sheets("Impatto").Select
```

```
        Range("B3").Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False

        Range("J7:J65").Select
        Selection.Copy
        Sheets("ULA").Select
        ActiveCell.Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
        ActiveCell.Offset(0, 1).Activate

    Next i


End Sub

Sub ImpattoULAindotti()

'*************************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine calculates impact for a component of the ULA
'*************************************************************************************

    Application.ScreenUpdating = False

    Sheets("VI").Select
    Range("C2").Select
    Range("C2").Select
    Sheets("ULA").Select
    Range("B134").Select
    Sheets("SAM r").Select
    Range("C2").Select

    Sheets("Main").Select
    Range("D8").Select
    Periodo = ActiveCell
    Range("D10").Select
    Orizzonte = ActiveCell

    For i = 1 To Periodo

        Sheets("SAM r").Select
        ActiveCell.Select
        Range(Selection, Selection.End(xlToRight)).Select
        Range(Selection, Selection.End(xlDown)).Select
        Selection.Copy
        ActiveCell.Offset(68, 0).Activate
```

```
        Sheets("SAM").Select

        Range("B2").Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False

        CoerlC

        ImpostaPeriodo

        Sheets("VI").Select
        ActiveCell.Select
        Range(Selection, Selection.End(xlDown)).Select
        Selection.Copy
        ActiveCell.Offset(0, 1).Activate

        Sheets("Impatto").Select
        Range("B3").Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False

        Range("K7:K65").Select
        Selection.Copy
        Sheets("ULA").Select
        ActiveCell.Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
        ActiveCell.Offset(0, 1).Activate

    Next i

End Sub

Sub ImpattoULAindiretti()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine calculates impact for a component of the ULA
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("VI").Select
    Range("C2").Select
    Range("C2").Select
    Sheets("ULA").Select
    Range("B70").Select
    Sheets("SAM r").Select
    Range("C2").Select
```

```
    Sheets("Main").Select
    Range("D8").Select
    Periodo = ActiveCell
    Range("D10").Select
    Orizzonte = ActiveCell

        For i = 1 To Periodo

            Sheets("SAM r").Select
            ActiveCell.Select
            Range(Selection, Selection.End(xlToRight)).Select
            Range(Selection, Selection.End(xlDown)).Select
            Selection.Copy
            ActiveCell.Offset(68, 0).Activate

            Sheets("SAM").Select

            Range("B2").Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False

            CoerlC

            ImpostaPeriodo

            Sheets("VI").Select
            ActiveCell.Select
            Range(Selection, Selection.End(xlDown)).Select
            Selection.Copy
            ActiveCell.Offset(0, 1).Activate

            Sheets("Impatto").Select
            Range("B3").Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False

            Range("L7:L65").Select
            Selection.Copy
            Sheets("ULA").Select
            ActiveCell.Select
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False
            ActiveCell.Offset(0, 1).Activate

        Next i

End Sub
```

Sub Lavoro()

```
'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine calculates impact for all the component of the ULA
'*************************************************************************

Unhide

ImpattoULA
ImpattoULAindotti
ImpattoULAindiretti

Hide

End Sub

Sub TransferRows()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine copy the name of the sector in VA e ULA results tables
'*************************************************************************

    Unhide

    Sheets("Impatto").Select
    Range("A3:A65").Select
    Selection.Copy

    Sheets("VA").Select
    Range("A2").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Sheets("ULA").Select
    Range("A2").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    Hide

End Sub

Sub Impatto()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
```

```
'This routine calculates impact for VA and ULA
'*************************************************************************

 Application.ScreenUpdating = False

 'EvidPer

 Unhide

    Sheets("VA").Select
    Range("B2:AN64").Select
    Selection.Clear
    Selection.Copy

    Sheets("ULA").Select
    Range("B2").Select
    ActiveSheet.Paste

    Sheets("Main").Select
Range("D6").Select

 ImpattoVA
 Lavoro
 TransferRows

 AggiustamentiForma

'Hide

 Sheets("Main").Select
 Range("D6").Select

End Sub

Sub AggiustamentiForma()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine executes some adjustments on tables contained in "Main", "VI", "VA", "ULA"
'*************************************************************************

    Unhide

    Sheets("Main").Select
    Range("E58:E68,E71:E77").Select
    Selection.NumberFormat = "0.00"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0"
```

```
    Range("D6").Select

    Sheets("VI").Select
    Range("C2").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.NumberFormat = "0.00"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0.00"
    Columns("C:AO").Select
    Columns("C:AO").EntireColumn.AutoFit
    Range("C2").Select

    Sheets("VA").Select
    Range("B2").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.NumberFormat = "0.00"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0.00"
    Columns("B:AO").Select
    Columns("B:AO").EntireColumn.AutoFit
    Range("B2").Select

    Sheets("ULA").Select
    Range("B6").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.NumberFormat = "0.00"
    Columns("B:AO").Select
    Columns("B:AO").EntireColumn.AutoFit
    Range("B6").Select

    'Hide

End Sub

Sub All()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine executes the entire evaluation procedure
'*************************************************************************

    Windows("Impatto.xlsm").Activate
```

```
    Sheets("Main").Select
    Range("G17") = Time


    UnHideAll
    UnHideServSheets
    ImportaVettoreImpatto
ImportaSAMriquadrate
    HideServSheets
    Impatto
    AcquisisciNome
    SalvaRisNuovoFormato
    HideAll

Sheets("Main").Select
    Range("G18") = Time

End Sub

Sub Allnuovo()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine executes execute the entire evaluation procedure (new version)
'*************************************************************************

    Windows("Impatto.xlsm").Activate

    Sheets("Main").Select
    Range("G17") = Time


    UnHideAll
    UnHideServSheets
    ImportaVettoreImpatto
ImportaSAMriquadrate
    HideServSheets
    Impatto
    AcquisisciNome
    AssociaNomeATabelle
    SalvaRisNuovoFormato

    UnHideAll
    UnHideServSheets
    ImportaVettoreImpattoContr
    ImportaSAMriquadrate
    HideServSheets
    Impatto
```

```
    AcquisisciNome
    AssociaNomeATabelle2
SalvaRisNuovoFormato2

    HideAll

    Sheets("Main").Select
    Range("G18") = Time

End Sub
```

Module 3

```
Sub AggiustamentiForma()

'*************************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine executes some adjustments on sheet "Main", "V-I-C", "VAc" e "ULAc"
'*************************************************************************************

    Sheets("Main").Select
    Range("E58:E68,E71:E77").Select
    Selection.NumberFormat = "0.00"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0"
    Range("D6").Select

    Sheets("V-I C").Select
    Range("C2").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.NumberFormat = "0.00"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0.00"
    Columns("C:AO").Select
    Columns("C:AO").EntireColumn.AutoFit
    Range("C2").Select

    Sheets("VAc").Select
    Range("B2").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.NumberFormat = "0.00"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0"
    Selection.NumberFormat = "0.0"
    Selection.NumberFormat = "0.00"
```

```
    Columns("B:AO").Select
    Columns("B:AO").EntireColumn.AutoFit
    Range("B2").Select

    Sheets("ULAc").Select
    Range("B6").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.NumberFormat = "0.00"
    Columns("B:AO").Select
    Columns("B:AO").EntireColumn.AutoFit
    Range("B6").Select

End Sub
```

Module 4

Sub HideAll()

```
'**********************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine hides some worksheets
'**********************************************************************************

    Application.ScreenUpdating = False

    Sheets("Input").Visible = xlVeryHidden
    Sheets("CoeRis").Visible = xlVeryHidden
    Sheets("CoeRisRDM").Visible = xlVeryHidden
    Sheets("coeI").Visible = xlVeryHidden
    Sheets("Sintesi").Visible = xlVeryHidden
    Sheets("Tasse").Visible = xlVeryHidden
    Sheets("ResOut").Visible = xlVeryHidden
    Sheets("VAOut").Visible = xlVeryHidden
    Sheets("ExpOut").Visible = xlVeryHidden
    Sheets("ImpOut").Visible = xlVeryHidden
    Sheets("ULAout").Visible = xlVeryHidden
    Sheets("PILout").Visible = xlVeryHidden
    Sheets("PRODout").Visible = xlVeryHidden

End Sub
```

Sub HideServSheets()

```
'**********************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine hides some worksheets
'**********************************************************************************
```

```
    Application.ScreenUpdating = False

    Sheets("VI").Visible = xlVeryHidden
    Sheets("SAM r").Visible = xlVeryHidden
    Sheets("SAM").Visible = xlVeryHidden
    Sheets("coe").Visible = xlVeryHidden
    Sheets("I").Visible = xlVeryHidden
    Sheets("I-A").Visible = xlVeryHidden
    Sheets("Moltiplicatori").Visible = xlVeryHidden
    Sheets("Impatto").Visible = xlVeryHidden

    Sheets("VA").Visible = xlVeryHidden
    Sheets("ULA").Visible = xlVeryHidden

End Sub

Sub UnHideServSheets()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine unhides some worksheets
'*************************************************************************

    Application.ScreenUpdating = False

    Sheets("VI").Visible = True
    Sheets("SAM r").Visible = True
    Sheets("SAM").Visible = True
    Sheets("coe").Visible = True
    Sheets("I").Visible = True
    Sheets("I-A").Visible = True
    Sheets("Moltiplicatori").Visible = True
    Sheets("Impatto").Visible = True
    Sheets("VA").Visible = True
    Sheets("ULA").Visible = True

    Sheets("Main").Select
    Range("D6").Select

End Sub

Sub UnHideAll()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine unhides some worksheets
'*************************************************************************
```

```
    Sheets("Input").Visible = True
    Sheets("CoeRis").Visible = True
    Sheets("CoeRisRDM").Visible = True
    Sheets("coeI").Visible = True
    Sheets("Sintesi").Visible = True
    Sheets("Tasse").Visible = True
    Sheets("ResOut").Visible = True
    Sheets("VAOut").Visible = True
    Sheets("ExpOut").Visible = True
    Sheets("ImpOut").Visible = True
    Sheets("ULAout").Visible = True
    Sheets("PILout").Visible = True
    Sheets("PRODout").Visible = True

    Sheets("Main").Select
    Range("D6").Select

End Sub
```

Sub Hide()

```
'*************************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine hides all worksheets
'*************************************************************************************

HideAll
HideServSheets

End Sub
```

Sub Unhide()

```
'*************************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine unhides all worksheets
'*************************************************************************************

UnHideAll
UnHideServSheets

End Sub
```

Module 5

Sub SalvaRis()

```
'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine saves results
'*************************************************************************

    CoeVA
    CoeExp
    CoeImp

    Dim Path As String
    Dim Name As String

    'Sheets("Main").Select
    'Range("C39").Select
    'ActiveCell.FormulaR1C1 = "=NOW()"
    'With Selection.Font
        '.ThemeColor = xlThemeColorDark1
        '.TintAndShade = 0
    'End With

    Sheets("Main").Select
    Name = "C:\Users\Rao\Documents\" & [C38] & ".xls"

    Sheets("Sintesi").Select
    Cells.Select
    Selection.Copy

    Workbooks.Add
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
        SkipBlanks:=False, Transpose:=False
    Range("A100").Select

    ActiveCell = Name

    Name = Range("A100")

    ActiveWorkbook.SaveAs Name
    ActiveWorkbook.Close
    Sheets("Main").Select
    Range("C38").Select

End Sub

Sub SalvaRisNuovoFormato()

'*************************************************************************
```

```
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine saves results in a new format
'*************************************************************************

    CoeVA
    CoeExp
    CoeImp

    Unhide

    Dim Path As String
    Dim Name As String

    'Sheets("Main").Select
    'Range("C39").Select
    'ActiveCell.FormulaR1C1 = "=NOW()"
    'With Selection.Font
        '.ThemeColor = xlThemeColorDark1
        '.TintAndShade = 0
    'End With

    Sheets("Main").Select
    Name = "C:\INPUT SAM\" & [C40] & ".xls"
    NameFile = [C40] & ".xls"

    Workbooks.Add
    Range("A100").Select
    ActiveCell = Name
    Name = Range("A100")
    ActiveWorkbook.SaveAs Name

            Sheets("Foglio1").Select
            Sheets("Foglio1").Name = "VAOut"
            Range("A1").Select
            Windows("Impatto.xlsm").Activate
            Sheets("VAout").Select
            Range("A1:AB64").Select
            Selection.Copy
            Windows(NameFile).Activate
            Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
                :=False, Transpose:=False
            Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
                SkipBlanks:=False, Transpose:=False
            ActiveWindow.Zoom = 80

            Sheets("Foglio2").Select
            Sheets("Foglio2").Name = "ExpOut"
            Range("A1").Select
            Windows("Impatto.xlsm").Activate
```

```
Sheets("ExpOut").Select
Range("A1:AB64").Select
Selection.Copy
Windows(NameFile).Activate
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
ActiveWindow.Zoom = 80

Sheets("Foglio3").Select
Sheets("Foglio3").Name = "ImpOut"
Range("A1").Select
Windows("Impatto.xlsm").Activate
Sheets("ImpOut").Select
Range("A1:AB64").Select
Selection.Copy
Windows(NameFile).Activate
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
ActiveWindow.Zoom = 80
Range("A1").Select

Sheets.Add After:=Sheets(Sheets.Count)
Sheets("Foglio4").Select
Sheets("Foglio4").Name = "ULAOut"
Range("A1").Select
Windows("Impatto.xlsm").Activate
Sheets("ULAout").Select
Range("A1:AB64").Select
Selection.Copy
Windows(NameFile).Activate
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
ActiveWindow.Zoom = 80
Range("A1").Select

Sheets.Add After:=Sheets(Sheets.Count)
Sheets("Foglio5").Select
Sheets("Foglio5").Name = "PILOut"
Range("A1").Select
Windows("Impatto.xlsm").Activate
Sheets("PILout").Select
Range("A1:AB65").Select
Selection.Copy
Windows(NameFile).Activate
```

```
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
        Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
            SkipBlanks:=False, Transpose:=False
        ActiveWindow.Zoom = 80
        Range("A1").Select

        Sheets.Add After:=Sheets(Sheets.Count)
        Sheets("Foglio6").Select
        Sheets("Foglio6").Name = "ProdOut"
        Range("A1").Select
        Windows("Impatto.xlsm").Activate
        Sheets("PRODout").Select
        Range("A1:AB64").Select
        Application.CutCopyMode = False
        Selection.Copy
        Windows(NameFile).Activate
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
        Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
            SkipBlanks:=False, Transpose:=False
        ActiveWindow.Zoom = 80

        Sheets.Add After:=Sheets(Sheets.Count)
        Sheets("Foglio7").Select
        Sheets("Foglio7").Name = "INVSAM"
        Range("A1").Select
        Windows("Impatto.xlsm").Activate
        Sheets("INVSAM").Select
        Range("A:Z").Select
        Application.CutCopyMode = False
        Selection.Copy
        Windows(NameFile).Activate
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
        Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
            SkipBlanks:=False, Transpose:=False
        ActiveWindow.Zoom = 80

        Range("A1").Select

ActiveWorkbook.SaveAs Name
ActiveWorkbook.Close
Sheets("Main").Select
Range("D6").Select
Hide

Range("D6").Select
Sheets("Main").Select
Range("D6").Select
```

```
    With Selection.Validation
        .Delete
        .Add Type:=xlValidateList, AlertStyle:=xlValidAlertStop, Operator:= _
        xlBetween, Formula1:="=$Y$8:$Y$72"
        .IgnoreBlank = True
        .InCellDropdown = True
        .InputTitle = ""
        .ErrorTitle = ""
        .InputMessage = ""
        .ErrorMessage = ""
        .ShowInput = True
        .ShowError = True
    End With
    Range("D6").Select
End Sub
```

Sub SalvaRisNuovoFormato2()

```
'*************************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine saves the results in a new format with a variant
'*************************************************************************************

    CoeVA
    CoeExp
    CoeImp

    Unhide

    Dim Path As String
    Dim Name As String

    'Sheets("Main").Select
    'Range("C39").Select
    'ActiveCell.FormulaR1C1 = "=NOW()"
    'With Selection.Font
        '.ThemeColor = xlThemeColorDark1
        '.TintAndShade = 0
    'End With


    Sheets("Main").Select
    Name = "C:\INPUT SAM\" & [C41] & ".xls"
    NameFile = [C41] & ".xls"


    Workbooks.Add

    Range("A100").Select
```

```
ActiveCell = Name

Name = Range("A100")

ActiveWorkbook.SaveAs Name


    Sheets("Foglio1").Select
    Sheets("Foglio1").Name = "VAOut"
    Range("A1").Select
    Windows("Impatto.xlsm").Activate
    Sheets("VAout").Select
    Range("A1:AB64").Select
    Selection.Copy
    Windows(NameFile).Activate
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
       :=False, Transpose:=False
    Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
       SkipBlanks:=False, Transpose:=False
    ActiveWindow.Zoom = 80

    Sheets("Foglio2").Select
    Sheets("Foglio2").Name = "ExpOut"
    Range("A1").Select
    Windows("Impatto.xlsm").Activate
    Sheets("ExpOut").Select
    Range("A1:AB64").Select
    Selection.Copy
    Windows(NameFile).Activate
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
       :=False, Transpose:=False
    Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
       SkipBlanks:=False, Transpose:=False
    ActiveWindow.Zoom = 80

    Sheets("Foglio3").Select
    Sheets("Foglio3").Name = "ImpOut"
    Range("A1").Select
    Windows("Impatto.xlsm").Activate
    Sheets("ImpOut").Select
    Range("A1:AB64").Select
    Selection.Copy
    Windows(NameFile).Activate
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
       :=False, Transpose:=False
    Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
       SkipBlanks:=False, Transpose:=False
    ActiveWindow.Zoom = 80
    Range("A1").Select
```

```
Sheets.Add After:=Sheets(Sheets.Count)
Sheets("Foglio4").Select
Sheets("Foglio4").Name = "ULAOut"
Range("A1").Select
Windows("Impatto.xlsm").Activate
Sheets("ULAout").Select
Range("A1:AB64").Select
Selection.Copy
Windows(NameFile).Activate
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
ActiveWindow.Zoom = 80
Range("A1").Select

Sheets.Add After:=Sheets(Sheets.Count)
Sheets("Foglio5").Select
Sheets("Foglio5").Name = "PILOut"
Range("A1").Select
Windows("Impatto.xlsm").Activate
Sheets("PILout").Select
Range("A1:AB65").Select
Selection.Copy
Windows(NameFile).Activate
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
ActiveWindow.Zoom = 80
Range("A1").Select

Sheets.Add After:=Sheets(Sheets.Count)
Sheets("Foglio6").Select
Sheets("Foglio6").Name = "ProdOut"
Range("A1").Select
Windows("Impatto.xlsm").Activate
Sheets("PRODout").Select
Range("A1:AB64").Select
Application.CutCopyMode = False
Selection.Copy
Windows(NameFile).Activate
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
ActiveWindow.Zoom = 80

Sheets.Add After:=Sheets(Sheets.Count)
```

```
        Sheets("Foglio7").Select
        Sheets("Foglio7").Name = "INVSAM"
        Range("A1").Select
        Windows("Impatto.xlsm").Activate
        Sheets("INVSAM").Select
        Range("A:Z").Select
        Application.CutCopyMode = False
        Selection.Copy
        Windows(NameFile).Activate
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
           :=False, Transpose:=False
        Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
           SkipBlanks:=False, Transpose:=False
        ActiveWindow.Zoom = 80

        Range("A1").Select

    ActiveWorkbook.SaveAs Name
    ActiveWorkbook.Close
    Sheets("Main").Select
    Range("D6").Select
    Hide

    Range("D6").Select
    Sheets("Main").Select
    Range("D6").Select
    With Selection.Validation
        .Delete
        .Add Type:=xlValidateList, AlertStyle:=xlValidAlertStop, Operator:= _
        xlBetween, Formula1:="=$Y$8:$Y$72"
        .IgnoreBlank = True
        .InCellDropdown = True
        .InputTitle = ""
        .ErrorTitle = ""
        .InputMessage = ""
        .ErrorMessage = ""
        .ShowInput = True
        .ShowError = True
    End With
    Range("D6").Select
End Sub
```

Module 6

```
Sub ImportaVettoreImpatto()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine imports investment matrix in "VI" sheet
```

```
'*************************************************************************

Workbooks.Open Filename:="C:\INPUT SAM\Input SAM - Costi INV.xlsm", _
   UpdateLinks:=0
Application.Run "'C:\INPUT SAM\INPUT SAM - Costi INV.xlsm'!Unhide"
Windows("Input SAM - Costi INV.xlsm").Activate
Sheets("FinalFCAPBaseeC").Select
Range("H3:Z67").Select
Selection.Copy

Windows("Impatto.xlsm").Activate
Sheets("VI").Select
Range("C2").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=False

Windows("Input SAM - Costi INV.xlsm").Activate
Sheets("Italia").Select
Range("GI:HH").Select
Selection.Copy

Windows("Impatto.xlsm").Activate
Sheets("INVSAM").Select
Range("A:A").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=False


Windows("Input SAM - Costi INV.xlsm").Activate
Application.Run "'C:\INPUT SAM\INPUT SAM - Costi INV.xlsm'!Unhide"
ActiveWorkbook.Close SaveChanges:=True


Windows("Impatto.xlsm").Activate
Sheets("VI").Select
Range("C2").Select

End Sub

Sub ImportaVettoreImpattoContr()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine imports investment matrix of the counterfactual scenario in "VI" sheet
'*************************************************************************

Workbooks.Open Filename:="C:\INPUT SAM\Input SAM - Costi INV.xlsm", _
   UpdateLinks:=0
Application.Run "'C:\INPUT SAM\INPUT SAM - Costi INV.xlsm'!Unhide"
```

```
Windows("Input SAM - Costi INV.xlsm").Activate
Sheets("FinalFCAPBaseeC").Select
Range("H72:Z136").Select
Selection.Copy

Windows("Impatto.xlsm").Activate
Sheets("VI").Select
Range("C2").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False

Windows("Input SAM - Costi INV.xlsm").Activate
Sheets("Italia").Select
Range("FH:GG").Select
Selection.Copy

Windows("Impatto.xlsm").Activate
Sheets("INVSAM").Select
Range("A:A").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
    :=False, Transpose:=False

Windows("Input SAM - Costi INV.xlsm").Activate
Application.Run "'C:\INPUT SAM\INPUT SAM - Costi INV.xlsm'!Unhide"
ActiveWorkbook.Close SaveChanges:=True


Windows("Impatto.xlsm").Activate
Sheets("VI").Select
Range("C2").Select

End Sub

Sub ImportaSAMriquadrate()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine imports balanced SAM in "SAM r" sheet
'*************************************************************************

Workbooks.Open Filename:="C:\INPUT SAM\PM.xlsm", _
   UpdateLinks:=0

Windows("Impatto.xlsm").Activate
Sheets("SAM r").Select
Range("C2").Select

Windows("PM.xlsm").Activate
Sheets("Matrices set").Select
```

```
Range("D343").Select

For i = 0 To 18

Windows("PM.xlsm").Activate
Sheets("Matrices set").Select
ActiveCell.Select

    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.Copy
    ActiveCell.Offset(68, 0).Activate

    Windows("Impatto.xlsm").Activate
    Sheets("SAM r").Select
    ActiveSheet.Paste

    ActiveCell.Offset(68, 0).Activate

Next i

Windows("PM.xlsm").Activate
ActiveWorkbook.Close SaveChanges:=True
Windows("Impatto.xlsm").Activate
Sheets("SAM r").Select
Range("C2").Select


End Sub
```

Module 7

```
Sub CoeVA()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine imports coefficient of "CoeRis" sheet in "VAOut" sheet
'*************************************************************************

Unhide

Sheets("CoeRis").Select
Range("G68").Select
Sheets("VAout").Select
Range("AI6").Select

   For i = 1 To 19

    Sheets("CoeRis").Select
```

```
        ActiveCell.Select
        Range(Selection, Selection.End(xlToRight)).Select
        Selection.Copy
        ActiveCell.Offset(68, 0).Activate

        Sheets("VAout").Select
        ActiveCell.Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=True
        ActiveCell.Offset(0, 1).Activate

    Next i

    Sheets("VAout").Select
    Range("AI65").Select
    Range(Selection, Selection.End(xlToRight)).Select
    Range(Selection, Selection.End(xlDown)).Select
    Selection.Clear
    Range("AI6").Select

Hide
End Sub

Sub CoeExp()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine imports coefficient of "CoeRis" sheet in "ExpOut" sheet
'*************************************************************************

Unhide

Sheets("CoeRisRDM").Select
Range("BQ6").Select
Sheets("ExpOut").Select
Range("AI6").Select

    For i = 1 To 19

        Sheets("CoeRisRDM").Select
        ActiveCell.Select
        Range(Selection, Selection.End(xlDown)).Select
        Selection.Copy
        ActiveCell.Offset(68, 0).Activate

        Sheets("ExpOut").Select
        ActiveCell.Select
        Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
            :=False, Transpose:=False
```

```
    ActiveCell.Offset(0, 1).Activate

  Next i

  Sheets("ExpOut").Select
  Range("AI65").Select
  Range(Selection, Selection.End(xlToRight)).Select
  Range(Selection, Selection.End(xlDown)).Select
  Selection.Clear
  Range("AI6").Select

Hide

End Sub

Sub CoeImp()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine imports coefficient of "CoeRis" sheet in "ImpOut" sheet
'*************************************************************************

Unhide

Sheets("CoeRisRDM").Select
Range("G68").Select
Sheets("ImpOut").Select
Range("AI6").Select

  For i = 1 To 19

    Sheets("CoeRisRDM").Select
    ActiveCell.Select
    Range(Selection, Selection.End(xlToRight)).Select
    Selection.Copy
    ActiveCell.Offset(68, 0).Activate

    Sheets("ImpOut").Select
    ActiveCell.Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=True
    ActiveCell.Offset(0, 1).Activate

  Next i

  Sheets("ImpOut").Select
  Range("AI65").Select
  Range(Selection, Selection.End(xlToRight)).Select
  Range(Selection, Selection.End(xlDown)).Select
```

```
    Selection.Clear
    Range("AI6").Select

Hide

End Sub
```

Module 8

```
Sub AcquisisciNome()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine acquires scenario name and copy it in "Main" sheet
'*************************************************************************

Workbooks.Open Filename:= _
      "C:\INPUT SAM\Input SAM all.xlsx"

    Sheets("INV_y").Select
    Range("A7").Select
    Selection.Copy
    Windows("Impatto.xlsm").Activate
    Range("C40").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    Windows("Input SAM all.xlsx").Activate
    ActiveWorkbook.Close SaveChanges:=True

End Sub
```

Module 9

```
Sub AssociaNomeATabelle()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine associates scenario name to results tables
'*************************************************************************

    Sheets("Main").Select
    Range("C40").Select
    Selection.Copy

    Sheets("VAout").Select
    Range("A2:A64").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
```

```
    Range("A2:A64").Select
    Selection.Copy

    Sheets("ExpOut").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("ImpOut").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("ULAout").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("PILout").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("PRODout").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("Main").Select
    Range("C40").Select
    Selection.Copy

    Sheets("INVSAM").Select
    Range("A1").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    RiportaNomeINVSAM

End Sub

Sub AssociaNomeATabelle2()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine associates scenario name to results tables
'*************************************************************************

    Sheets("Main").Select
    Range("C41").Select
    Selection.Copy

    Sheets("VAout").Select
    Range("A2:A64").Select
```

```
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    Range("A2:A64").Select
    Selection.Copy

    Sheets("ExpOut").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("ImpOut").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("ULAout").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("PILout").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("PRODout").Select
    Range("A2").Select
    ActiveSheet.Paste

    Sheets("Main").Select
    Range("C41").Select
    Selection.Copy

    Sheets("INVSAM").Select
    Range("A1").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False

    RiportaNomeINVSAM

End Sub
```

Module 10

```
Sub RiportaNomeINVSAM()

'*************************************************************************
'Authors: Marco Rao, Umberto Ciorba
'Date: September 2014
'This routine associates scenario name to results tables for investments
'*************************************************************************

    Sheets("INVSAM").Select
    Range("A1").Select
```

```
    Selection.Copy

    Range("A70,A139,A553,A1174,A1588,A2002").Select
    ActiveSheet.Paste

End Sub
```

Appendix B – Code details

Table 1 - Routines list by name, description, number of rows, author

				Authors			
	Name	**Description**	**rows**	**M. Rao**	**U. Ciorba**	**M. C. Tommasino**	**M. Gaeta**
1	All()	'This routine execute the entire work flow	31	yes			
2	Inv()	'This routine runs the Interface 1	22	yes			
3	PM()	'This routine runs the Interface 2	22	yes			
4	Impact()	'This routine runs the Interface 3	21	yes			
5	ScenarioSelect()	'This routine executes the entire work flow for a set of Scenarios	94	yes			
			190				
6	SpalmaCosti()	'This routine re-allocates investment costs by technology using a construction time provided by TIMES	83	yes	yes		yes
7	Clear()	'This routine erases the results provided by Interface 1	26	yes	yes		yes
8	RestoreAllocation()	'This routine restores the originary investment allocations costs scheme in "Italia" sheet	18	yes	yes		yes
9	SetTIMESGROUP()	'This routine searches technology name by suffix in "Results" sheet and elaborates, year by year, the group totals that must to be allocate in the SAM	148	yes	yes		yes
10	ALLGROUP()	'This routine associates the technology group to the SAM scheme	122	yes	yes		yes
11	SetALLOCAPERIODOCANTIERE()	'This routine associates a construction time to the main technology groups	129	yes	yes		yes
12	AllocaCostiPerCantiere()	'This routine associatesa construction time for every technology using a value associated to the main technology groups	11	yes	yes		yes
13	Alloca()	'This routine executes the entire process of the allocation of construction time to technology	13	yes	yes		yes
14	ImportCostTIMES()	'This routine imports the TIMES investment costs data	46	yes	yes		yes
15	CreaVetINV()	'This routine executes the entire work flow of Interface 1 (first version - not implemented)	25	yes	yes		yes

	Name	Description	rows	M. Rao	U. Ciorba	M. C. Tommasino	M. Gaeta
16	CreaVetINVnuovo()	'This routine executes the entire work flow of Interface 1 (second version - implemented)	54	yes	yes		yes
17	Hide()	'This routine hides some sheet	32	yes	yes		yes
18	Unhide()	'This routine unhides some sheet	33	yes	yes		yes
19	Base()	'This routine places the appropriate allocation percentage in the SAM allocation phase of the base scenario in the "Italia" sheet for the Base Scenario	17	yes	yes		yes
20	Controfattuale()	'This routine use the appropriate allocation percentage in the allocation phase for the counterfactual scenario	16	yes	yes		yes
			773				
21	RAS()	'This routine execute the RAS process	58	yes		yes	
22	Resetta()	'This routine restore the RAS process	35	yes		yes	
23	Resetta2()	'This routine restore the RAS advanced process	35	yes		yes	
24	ResetConstraints()	'This routine clear the constraints	19	yes		yes	
25	ImportConstraints()	'This routine import constraints in the balancing process	51	yes		yes	
26	ImportConstraints2()	'This routine import constraints in the advancved balancing process	54	yes		yes	
27	RestoreNoConstraints()	'This routine reset constraints in the balancing process	22	yes		yes	
28	HideTemp()	'This routine hide the sheet "Temp"	12	yes		yes	
29	HideConstraints()	'This routine hide constraints sheet	12	yes		yes	
30	UnhideTemp()	'This routine unhide Sheet "Temp"	12	yes		yes	
31	UnhideConstraints()	'This routine unhide sheet "Constraints"	13	yes		yes	
32	Constraints()	'This routine prompt a message box in constraints import process	18	yes		yes	
33	Restore()	'This routine restore entire process of import constraints	12	yes		yes	
34	ImportaVincoliTIMES()	'This routine import constraints for Energy Sector and other sectors from TIMES model	142	yes		yes	
35	ResetMatricesSet()	'This routine import reset Matrices Set	23	yes		yes	
36	CalcolaMatrici()	'This routine project the matrices in the defined time horizon	84	yes		yes	

	Name	Description	rows	M. Rao	U. Ciorba	M. C. Tommasino	M. Gaeta
37	CalcolaMatrici2()	'This routine calculate the matrices in the defined time horizon with a variant	83	yes		yes	
38	ResetConstraintsSet()	'This routine reset the applied constraints	21	yes		yes	
39	ResetAll()	'This routine reset all worksheets	13	yes		yes	
40	All()	'This routine execute entire procedure	25	yes		yes	
41	AdjConstr()	'This routine import constraints for Energy Sector and other sectors from TIMES model	87	yes		yes	
42	VA1()	'This routine import constraints for Energy Sector and other sectors from TIMES model on Value Added	182	yes		yes	
43	VA2()	'This routine import constraints for Energy Sector and other sectors from TIMES model on Value Added	1242	yes		yes	
44	VA()	'This routine import constraints for Energy Sector and other sectors from TIMES model on Value Added	14	yes		yes	
45	VA1GOV()	'This routine import constraints for Energy Sector and other sectors from TIMES model on Value Added	123	yes		yes	
46	VA2GOV()	'This routine import constraints for Energy Sector and other sectors from TIMES model on Value Added	794	yes		yes	
47	RASAdv()	'This routine execute RAS with constraints	212	yes		yes	
48	RASAdv2()	'This routine execute a variant of the RAS with constraints	293	yes		yes	
49	Matrix()	'This routine prepare a matrix for RASAdv	29	yes		yes	
50	ImportaVincoliEnergyOeM()	'This routine import a file that contain index numbers from TIMES	20	yes		yes	
51	ImportaTrendTimes()	'This routine import a file that contain VA trends from TIMES	19	yes		yes	
52	HideAll()	'This routine hide the worksheets	24	yes		yes	
53	UnhideAll()	'This routine unhide the worksheets	39	yes		yes	
54	SetZeroToConstraints()	'This routine set the zeros of the SAM as a constraints	25	yes		yes	
			3847				
55	CoerlC()	'This routine transfer the coefficient of salary to sheet "Impatto" from "coe" sheet	66	yes	yes		

	Name	Description	rows	M. Rao	U. Ciorba	M. C. Tommasino	M. Gaeta
56	EvidPer()	'This routine highlight the impact period on "Main" sheet (not activate)	40	yes	yes		
57	MatrCan()	'This routine "cut" the exogenous sector from coefficient matrix sheets "coeI"	58	yes	yes		
58	CoeCan()	'This routine "cut" the exogenous sector from coefficient matrix sheets "coe"	52	yes	yes		
59	MoltiplicatoriMultC()	'This routine calculate multipliers for construction period	38	yes	yes		
60	ResetCan()	'This routine erase calculus from dedicated sheets	25	yes	yes		
61	ImpostaPeriodo()	'This routine prepare the conditions for the impact calculus	13	yes	yes		
62	ImpattoVA()	'This routine calculate impact only for Value Added	88	yes	yes		
63	ImpattoULA()	'This routine calculate impact only for ULA	63	yes	yes		
64	ImpattoULAindotti()	'This routine calculate impact for a component of the ULA	64	yes	yes		
65	ImpattoULAindiretti()	'This routine calculate impact for a component of the ULA	64	yes	yes		
66	Lavoro()	'This routine calculate impact for all the component of the ULA	12	yes	yes		
67	TransferRows()	'This routine copy the name of the sector in VA e ULA results tables	25	yes	yes		
68	Impatto()	'This routine calculate impact for VA and ULA	37	yes	yes		
69	AggiustamentiForma()	'This routine execute some adjustments on tables contained in "Main", "VI", "VA", "ULA"	53	yes	yes		
70	All()	'This routine execute the entire evaluation procedure	26	yes	yes		
71	Allnuovo()	'This routine execute execute the entire evaluation procedure (new version)	38	yes	yes		
72	AggiustamentiForma()	'This routine execute some adjustments on sheet "Main", "V-I-C", "VAc" e "ULAc"	49	yes	yes		
73	HideAll()	'This routine hide some worksheets	24	yes	yes		
74	HideServSheets()	'This routine hide some worksheets	22	yes	yes		
75	UnHideServSheets()	'This routine unhide some worksheets	23	yes	yes		
76	UnHideAll()	'This routine unhide some worksheets	25	yes	yes		
77	Hide()	This routine hide all sheets	9	yes	yes		
78	Unhide()	'This routine unhide all worksheets	9	yes	yes		
79	SalvaRis()	'This routine save results	46	yes	yes		

	Name	Description	rows	M. Rao	U. Ciorba	M. C. Tommasino	M. Gaeta
80	SalvaRisNuovoFormato()	'This routine save results in a new format	166	yes	yes		
81	SalvaRisNuovoFormato2()	'This routine save the results in a new format with a variant	173	yes	yes		
82	ImportaVettoreImpatto()	'This routine import investment matrix in "VI" sheet	35	yes	yes		
83	ImportaVettoreImpattoContr()	'This routine import investment matrix of the counterfactual scenario in "VI" sheet	36	yes	yes		
84	ImportaSAMriquadrate()	'This routine import balanced SAM in "SAM r" sheet	37	yes	yes		
85	CoeVA()	'This routine import coefficient of "CoeRis" sheet in "VAOut" sheet	35	yes	yes		
86	CoeExp()	'This routine import coefficient of "CoeRis" sheet in "ExpOut" sheet	38	yes	yes		
87	CoeImp()	'This routine import coefficient of "CoeRis" sheet in "ImpOut" sheet	37	yes	yes		
88	AcquisisciNome()	'This routine acquire scenario name and copy it in "Main" sheet	19	yes	yes		
89	AssociaNomeATabelle()	'This routine associate scenario name to results tables	49	yes	yes		
90	AssociaNomeATabelle2()	This routine associate scenario name to results tables with a variant	49	yes	yes		
91	RiportaNomeINVSAM()	'This routine associate scenario name to results tables for investments	14	yes	yes		
			1657				

Table 2 - Interface by routines number and length

	routines number	routines length (number of rows)
Main Interface	5	190
Interface 1	15	773
Interface 2	34	3847
Interface 3	37	1657
Total	**91**	**6467**

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