Prototypical Policy Impacts on Multifunctional Activities in rural municipalities

A collaborative project under the EU Seventh Framework Programme

Pre-estimation, test and improvement of the regional economic land use modelling,covering agriculture, forestry, services and nature, as well as the aggregated modelling framework

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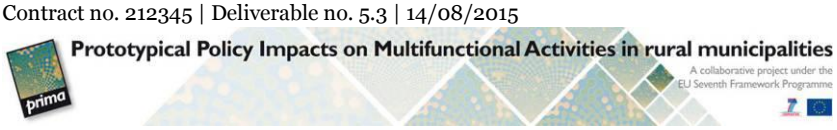

PRIMA aims to develop a method for scaling down the analysis of policy impacts on multifunctional land uses and on the economic activities. The scoped policies will include the cohesion policy (ERDF, ESF, CF), the enlargement process (IPA) & the rural development policy (EAFRD) of the European Commission, with a special focus on agriculture, forestry, tourism, and ecosystem services. The approach will: rely on micro-simulation and multi-agents models, designed and validated at municipality level, using input from stakeholders; address the structural evolution of the populations (appearance, disappearance and change of agents) depending on the local conditions for applying the structural policies on a set of municipality case studies. Involving eleven partners, the project is coordinated by *Cemagref*.

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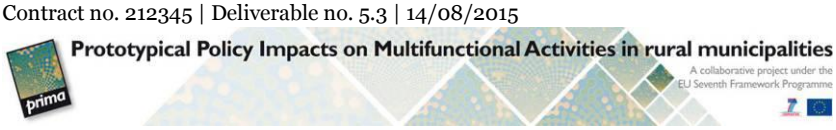
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EXECUTIVE SUMMARY

Work package 5 of PRIMA has resulted in an integrated modelling tool where policies and scenarios on a world, European and country level modelled by the general equilibrium model MAGNET (formerly LEITAP) can be downscaled towards NUTS2 level for European countries. The system is integrated with the MAGNET modelling system, implying that downscaling can be accomplished without much extra effort, as long as the data in the base year on a regional level are available. The system has been modelled in such a way that the downscaling can be done on a different sector and land use aggregation than the aggregation used by the MAGNET model. In this case we have implemented the downscaling on a 3, 6 and 12 sector aggregation at regional scale, and an aggregation consistent with the MAGNET primary agricultural sectors for agricultural production.

When data are not available for a country, the system generates zeros as outcomes, so it is easy to see when evaluating the outcomes for which regions and sectors useful data were available.

The report starts with a short description of some downscaling methods in the literature and argues that none of these methods is suitable for PRIMA, mainly because PRIMA needs downscaling of the whole economy as of land cover and land use. It would be an interesting exercise to compare outcomes of PRIMA downscaling procedures with outcomes of the other downscaling methods, but this is out of the scope of the project, although a short discussion of such an approach is presented in D5.4 of the project.

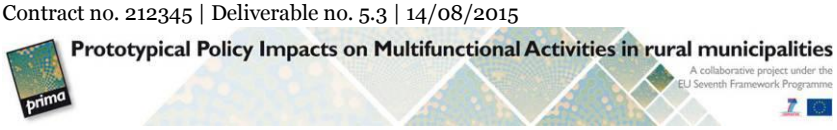
Chapter 3 is the main ingredient of this report, consisting of the model structure for downscaling. It start with an extremely simple downscaling method that is internally consistent, but assumes that there are no region specific characteristics that influence regional development and that population follows employment. This restriction is avoided enabling for region-specific arguments as presented in section 3.2. Section 3.3 discussed the issue that different sectoral aggregations at NUTS2 level are available for different countries. A flexible procedure to use these aggregations has been developed, and this provides research opportunities in the future to investigate to what extend sectoral composition influences regional development. Section 3.4 adds a price component to the regional development, making the regional component potentially endogenous. This is done by adding migration and a labour market in section 3.5, and a land market in section 3.6. For the population dynamics in section 3.5 age classes are defined, making also the population structure visible. For the land market in section 3.6 a new land cover module has been developed for the national model that is also implemented at the regional scale. Finally a host of region specific location factors may influence regional growth, including developments in the neighbouring regions and policies. In the equation of section 3.4 an explicit CAP pillar 2 budget is introduced that influences productivity and therefore output price. This is just an example how different policy variables can be introduced in the model in an easy way.

Chapter 4 discusses the processing of data to be used as input for the downscaling model or for econometric analyses to underpin coefficients used in the downscaling model. The approach has been rather ambitions in terms of coverage of the sectors of the whole economy and the variables available for each sector (like employment or gross value added). We targeted at matching and finding the data at NUTS2 level for the initial list of 57 sectors as defined in MAGNET. Due to limited data availability from various sources at NUST2 level, we have matched only 28 sectors of the MAGNET model to the data. But even this is quite laborious to process in terms of econometric work since the goodness of fit would greatly depend on the length of the panel data, which was not always ranging from 1974 to 2009 but for some cases was not longer than one year (2009). Moreover, the limited spatial coverage of data especially for New or pre-accessing Member States is yet another caveat. Nevertheless, the important value added of starting the work very thoroughly on assembling all the possibly available data at NUTS2 level has resulted in a large dataset available to the project which we have also well documented. We should mention that in case we would have proceeded with the 3-sector aggregation only (agriculture and fishery, industry, services) to scale down only two model variables like Employment and Gross Value Added, the data available from Cambridge Econometrics would have been sufficient. However the great limitation of this database is that it does not disentangle the agricultural sector into its activities nor has it data on cropped area or on livestock.

Chapter 5 discusses the approach used for econometric analysis underpinning the coefficients used in the model. The use of econometric estimates for the calibration of the model has been illustrated at different sector aggregations, but the econometric results are still far from satisfactory. Regional econometric research is a very labour intensive activity, and was not part of the targets of the PRIMA project. Nevertheless, we have shown that the modelling approach used in the PRIMA downscaling method has ample opportunity to include empirical information from econometric or other sources into the model.

Chapter 6 discusses an important but in many cases forgotten part of a good modelling system: the interface to run scenarios and analyse results. The downscaling system has been integrated in the general scenario system used to run MAGNET scenarios, and is very easy to run. At the background a lot of work is accomplished through this system that makes life for the modeller easy. On the other hand, a lucid way to present results also helps to find implausible and surprising results easily. This only partially makes life easier for the modeller, because a good tool to analyze results also shows inconsistencies, strange data, or implausible results in a lucid way to the modeller. And this may generate a lot of work!

The PRIMA downscaling system has been designed in such a way that it is very easy to extend. Introducing new mechanisms, regional explanatory variables or policy variables is relatively easy because of its modular design, while it is also easy to go to a lower level of aggregation such as a NUTS3 aggregation when data are available.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1 INTRODUCTION

1.1 General background

There is a strong need for accurate and spatially referenced information regarding policy making that has been expressed by land users, and policy and decision makers in order to estimate spatially and locally the impacts of European policy (like the Common Agricultural Policy) and/or global changes (Cantelaube et al., 2012). Impact Assessments are no longer done at a single level of analysis. Following Ewert et. al. (2011), Integrated Assessment and Modelling (IAM) is an attempt to capture complex multi-scale problems, which is achieved by applying models at different scales and linking these in addressing the same issue. Different methods have been employed in natural sciences to estimate system responses across scales or levels. The simplest approach is the extrapolation of results obtained from a detailed level to a higher level (Ewert et al., 2006). Other approaches have tried to couple models from different levels of organization ranging, for example, from leaf to ecosystem (Anderson et al., 2003). The input data and model parameter requirements are high when such process models are to be coupled. Insufficiently detailed data, at the various levels, often restricts the applicability of such a modelling approach.

Vidal et al. (2001) noticed that changing the spatial unit used in statistical data redistribution is faster and more effective than setting up a new tool requesting new data. Cantelaube et al. (2012) consider that changing the spatial distribution of data provided by a model from one geographical scale to another is faster than building a new model working at this new spatial unit. This approach is faster because it does not need to calibrate and to validate new models; it is also more effective, regarding amount and quality of data called for a new model based on new spatial units and scale.

Recent approaches dealing with downscaling issues are presented in Britz, 2008; Kempen et al., 2011; Temme and Verburg, 2011. They are focusing on agricultural activities mapping from homogeneous soil mapping units (HSMU) influenced by economic agents. Downscaling of the scenario results of a partial equilibrium model CAPRI (Britz, 2008) from NUTS2 level to clusters of 1x1 km grid cells for the agricultural area of EU27 is based on the combination of spatially explicit data as e.g. soil or climatic parameters and either statistically estimated or engineering relations. The approach of Cantelaube et al. (2012) focuses on different approach and maps representative farms from a regional level (small scale or coarse resolution) to a local level (large scale or fine resolution). The downscaling issue is tackled by using geographic and environmental information which can explain farming systems and is usually provided at fine resolution at European level.

In the PRIMA project the focus has been on downscaling the results from Members States of the EU27 area to a lower scale which according to nomenclature is equivalent to regions/provinces/states and is denoted as NUTS2. The scenario results at the level of Member States are available from the general equilibrium model MAGNET - Modular Applied GeNeral Equilibrium Tool, till 2010 called LEITAP (Woltjer, 2009). This model analyses the effect of changes in trade and agricultural policies on international trade, production, consumption, prices and use of production factors like labour, land, capital and natural resources. The model is mainly used to simulate long-term scenarios and analysing policy options within these scenarios.

1.2 Downscaling the results of the MAGNET model

The MAGNET model is based on the general equilibrium model GTAP (Hertel and Tsigas, 1997) which is a global computable general equilibrium model that covers the whole economy, including factor markets (see also D5.1). The standard model is characterized by an input-output structure (based on input-output tables of nations and groups of nations) that explicitly links industries in a value added chain from primary goods, over continuously higher stages of intermediate processing, to the final assembling of goods and services for consumption.

The most important variables needed in scenarios are: population growth, productivity growth (or GDP growth, where technology is distributed over sectors and inputs according to fixed proportions such as that primary agriculture has four times as much technological change as the service sector; land productivity growth in most cases is exogenously derived from FAO-projections), growth of production factor supply (sometimes simplified by the assumption that skilled and unskilled labour supply grow with population, and capital stock with GDP (not required in model with international capital dynamics).

All the variables that are input to the model are also output. MAGNET is flexible in its time periods, but the minimum length of a period is one year. All value changes are decomposed in quantity and price changes. Important outputs are the percentage changes in prices and quantities of land use, employment, capital use, productivity, production, trade, intermediate input use and consumption.

The agriculture sectors are modelled relatively well in MAGNET, while forestry is a sector but not handled very explicitly, and nature is more or less the land not included in agriculture. Services can be generated as a sector, but tourism is not a separate sector and also not modelled very precisely. The output of MAGNET (see also D5.1) that may be downscaled to the regional level consist of:

- Population
- GDP, i.e. value added per sector
- Production per sector
- Land use per sector, as far as land use is relevant, i.e. for agriculture, forestry.
- Land cover for all categories of land.
- Income per worker
- Employment per sector

This model has already a very flexible system of (dis)aggregating spatial units (countries) into groups, as well as sectors and their groups. List of sectors modelled in MAGNET can be found in Chapter 4 as well as in D5.1, (Woltjer, 2010).

A downscaling procedure has been developed and applied enabling to disaggregate model output to regions, which is the core of this report. The downscaling method builds up its complexity in a step-wise manner and is described in Chapter 3. Hypotheses are formulated regarding factors that may explain differences in growth between regions and market equations are added to allow for adjustment processes endogenously. Empirical work to quantify differences between regional and national growth developments is presented in Chapter 5, which follows the data description in Chapter 4 referring to sector aggregation at NUTS2 level following the data availability. The tools to run and analyse scenarios are discussed in chapter 6, while chpater 7 concludes the report.

2 CHALLENGES OF THE SCALING METHODS

2.1 Introduction

Several methods found in the literature have been reviewed regarding their applicability to scale the national indicators to the regional NUTS2 level. Five of these methods are presented shortly below, while the PRIMA approach will be discussed in chapter 3.

2.2 The Dixon-Rimmer approach

Dixon and Rimmer (2004) downscale the results for their national General Equilibrium model towards a regional level. Their basic approach is as follows. First, total demand is calculated as the weighted national growth of intermediate demand, investment demand, consumer demand, government demand, export demand and inventory demand. Investment and intermediate demand depends on the regional component of the sectors where the product has to be delivered.

Regional consumer demand depends on the national growth in consumer demand and the regional growth in disposable income, that depends on employment development in the region. Export demand depends on the national development, but may also have a regional component.

Output per region depends on the national component and what is called supply of domestically produced goods. This is determined by total demand in all regions, where the share from each region g going into region r is a fixed proportion that may change exogenously.

Employment in a sector in a region grows with national employment, corrected for the difference in output growth. So, the labor-output ratio remains the same.

Concluding, the Dixon-Rimmer approach assumes that the distribution of direct and intermediate demand streams remains the same, although they can be exogenously shocked. Employment and output are assumed to grow with the same percentage, where regional differences are a consequence of regional differences in income and sector growth. In the downscaling no migration, land market, or output and input price changes are considered. In that sense the method is not satisfactory from the PRIMA point of view.

2.3 The model MASST

At first sight, the model MASST (MAcroeconomic, Sectoral, Social, and Territorial) (Capello, 2008; Capello *et al.*, 2011) seems to be a useful downscaling model. The model explains regional GDP growth on a NUTS2 level by national growth and a regional shifter. National growth is explained by a very simple model, where the main characteristic is that inputs from regional technological change are included. This model should be replaced by the MAGNET-IMAGE combination. On a regional level the model is only able to downscale population and GDP. A nice feature is that innovative capacity is explicitly modelled and coupled indirectly through the share of self-employed people in total employment that is explained by available structural fund investments in the region. The MASST model uses regression analysis to find some empirical relationships. Regional development of GDP is faster than the national development when (see Capella and Chizzolini, 2009, tables 6.6, 6.7, 6.8):

- In poor regions there is a higher share of employment in science and technology
- Average population growth is faster
- Energy consumption is higher (but this is based on transport movements by car, plane and rail, and population)
- Regional share of self-employment and tertiary activity is higher

- Mega regions
- Distance weighted spillovers of growth in other regions; in agglomerated regions and urban areas in Eastern Countries this has a negative effect, suggesting a tendency towards concentration in the urban centres.

No shift share analyses is included in explaining regional GDP growth. Population growth is explained by lagged birth rates, death-rates, and net migration flows; New EU countries and agglomerated regions have a lower population growth rate than predicted by the equation. An interesting equation is the net migration inflow. This is explained by lagged differential GDP (but this is obviously correlated with population growth), the unemployment rate, is higher for mega regions (only for people between 17 and 27) and agglomerated regions, and Eastern countries for people between 17 and 27 years. For people older than 32 the net inflow decreases in Western countries when regional GDP is growing faster, while people older than 52 tend to come in easier when the regional share of tertiary activity is higher. The most interesting part of the model seems to be the explanation of migration inflows and its effect on regional GDP.

In summary, the MASST model has some elements that can be useful for downscaling, but is not a model capable of downscaling sector developments, employment changes or land use changes.

2.4 CLUE as a downscaling method

The Conversion of Land Use and its Effects (spatial land use and land cover change model CLUE) has been used to make land use explicitly downscaled to grids (see (Verburg *et al.*, 2002; Verburg *et al.*, 2006; Verburg *et al.*, 2008). CLUE-DYN allocates land use on a detailed grid level. Probit analysis is used to find empirical rules that determine the attractiveness of each grid of land for certain activities. The economic foundation of these rules is not always clear, but the explicit attempt to try to explain the land use changes through empirical analysis is very valuable. A fundamental problem for use of CLUE in PRIMA is that only land use is downscaled, not the other activities. Given that the current consortium of PRIMA does not include the advanced users/developers of the CLUS model, this option is not considered as practical.

2.5 CAPRI as a downscaling method

CAPRI, the Common Agricultural Policy Regional Impact model (http://www.capri-model.org/) has already been used as a downscaling method for the agricultural results of MAGNET. This has already been used in some projects like SCENAR2020. The advantage of this method is that a lot of environmental effects can be calculated at NUTS2 level, and the CAPRI model has also a possibility to allocate land use. The disadvantage of this method is that it is not easy to make CARPI consistent with MAGNET (see also the work of Britz and Keeney (2010) on comparing GTAP and CAPRI and of Jansson *et. al.* (2009) on working out a conceptual link between GTAP and CAPRI), while the non-agricultural sectors are not downscaled. The interrelationships between the agricultural and other sectors is not taken into account, and potentials for regional development cannot be included.

The CAPRI approach could also be combined with CLUE. Although both models have been used in combination with GTAP-IMAGE, the combination of both is not without problems. CAPRI allocates agricultural activities to regions based on cost minimization, and has no labour or capital in the model, which makes it difficult to downscale employment. For this reason, CAPRI seems not to be useful tool as the only downscaling tool in PRIMA.

2.6 Ben Gardiner approach

Gardiner (2001) models employment and value added development at a NUTS2 regional level. Five sectors are distinguished (agriculture, fuel and manufacturing industry, construction, market-services, and non-market services. Population is exogenous to the model. First, GVA per sector depends on economic potential and population density. All variables are defined as the regional value

(r) relative to the national value (n), where equation 2-1 captures the long term dynamics and equation 2-2 the long term equilibrium development. ECM is the error correction term.

$$\log\left(\frac{GVA_{i,r,t}}{GVA_{i,n,t}}\right) = \alpha_r + \alpha_1 \log\left(\frac{ECPOT_{r,t}}{ECPOT_{n,t}}\right) + \alpha_2 \log\left(\frac{POPD_{r,t}}{POPD_{n,t}}\right) + \alpha_3 dummies + \varepsilon_t \quad (2\text{-}1)$$

$$d\log\left(\frac{GVA_{i,r,t}}{GVA_{i,n,t}}\right) = \beta_r + \beta_1 d\log\left(\frac{ECPOT_{r,t}}{ECPOT_{n,t}}\right) + \beta_2 d\log\left(\frac{POPD_{r,t}}{POPD_{n,t}}\right) + \beta_3 d(dummies) + \gamma ECM_{t-1} + \varepsilon_t \quad (2\text{-}2)$$

The economic potential in regions depends on the distance weighted GVA in all regions. For employment not a share approach, but a regional approach is chosen, where employment follows GVA and a time trend to capture technological change:

$$\log(EMP_{i,r,t}) = \alpha_r + \alpha_1 \log(GVA_{i,r,t}) + \alpha_2 \log(TIME_t) + \varepsilon_t \quad (2\text{-}3)$$

$$d\log(EMP_{i,r,t}) = \beta_r + \beta_1 d\log(GVA_{i,r,t}) + \beta_2 d\log(TIME_t) + \gamma ECM_{t-1} + \varepsilon_t \quad (2\text{-}4)$$

The Gardiner model of regional growth is a source of inspiration for modelling in PRIMA, but is far from sufficient to model all aspects in in a consistent way. Especially land use is not included in the model.

2.7 Conclusion

Neither of the five approaches discussed above seem to be applicable for PRIMA downscaling. The models of Dixon-Rimmer, MASST, and Ben Gardiner tackle the whole economy, but lack land use downscaling, an important element of PRIMA. CLUE is completely focused on land use, but does not have economic downscaling, while CAPRI is only focused on the agricultural sector. For this reason, a new downscaling method will be developed for PRIMA. Some of the models discussed in this chapter are a source of inspiration for this method.

3 THE REGIONAL MODEL FOR DOWNSCALING NATIONAL RESULTS

This Chapter presents a theoretical framework for a downscaling procedure. The approach is to create a procedure that goes from simple to more complicated. This implies that the basic approach must be flexible enough to accommodate complications to be added. It starts from a very simple but consistent step assuming that regional percentage growth equals national percentage growth. Next, complications are added regarding explanatory variables, making population age specific and dynamic, and including migration, labour and land markets to the model. Finally, a land supply module is added to the system.

3.1 Equality between regional and national trends

The most simple downscaling method is to assume that the regional percentage change in variables like value added (y), employment (e), land use (l) are the same as the national ones:

$\dot{y}_{ir} = \dot{y}_{in}$ (3.1.a)

$\dot{e}_{ir} = \dot{e}_{in}$ (3.1.b)

$\dot{l}_{ir} = \dot{l}_{in}$ (3.1.c)

The subscript i refers to sector (e.g. agriculture, industry, services), while subscripts r and n denote region and nation, correspondingly. The percentage change in employment e is denoted as $\dot{e} = 100\ d \log e$, and is similarly defined for other variables.

An additional constraint to (3.1.b) is introduced to ensure consistency between employment e and population (pop), namely that population grows with employment, defined as:

$\dot{pop}_r = \dot{e}_r + \left[\dot{pop} - \sum_r \left(\frac{pop_r}{pop_n}\right) \dot{e}_r\right]$, where $\dot{e}_r = \sum_i \left(\frac{e_{ir}}{e_r}\right) \dot{e}_{ir}$ (3.1.d)

Equation (3.1.d) implies that population grows with the same percentage as employment corrected for the national tendency in the employment/population ratio. Implicitly it is assumed that migration adjusts to the labour market, and that other migration (elderly people, children) follow also the employees with whom they are related.

In this way a very simple, but internally consistent downscaling method has been created.

3.2 Adding a region specific component

It is obvious that some regions grow faster and other regions grow slower. After some experimentation with econometric estimates it became clear that only a fixed difference between regional and national developments is significant. For this reason a parameter α_{ir}^{y} is introduced that catches the region-specific developments. So, for the moment we add to the equations a regional component, where the guarantee that the sum of all regional value added changes equal the national value added change, a shift component is added:

$\dot{y}_{ir} = \dot{y}_{in} + \alpha_{ir}^{y} + y_i^s$ (3.2.a),

$$\dot{y}_{in} = \sum_r \left(\frac{y_{ir}}{y_{in}}\right) \dot{y}_{ir} \quad (3.2.b)$$

where α is s region specific coefficient, and y_i^s is the sector shifter to guarantee consistency between regional and sectoral changes where equation 3.2.b puts the restriction on 3.2.a to determine the shifter value y_i^s.

As long as the regional labor intensity changes with the same percentage as on a national level, regional employment change is determined by regional value added change. To allow for changes in region-specific changes in labor intensity a parameter α_{ir}^e is introduced. But also here a consistency problem arises between regional and national changes in employment, for which an employment shifter $e_i^s$is introduced:

$$\dot{e}_{ir} = \dot{y}_{ir} + \alpha_{ir}^e + e_i^s \quad (3.2.c)$$

$$\dot{e}_{in} = \sum_r \left(\frac{e_{ir}}{e_{in}}\right) \dot{e}_{ir} \quad (3.2.d)$$

The extension of the equations (3.1.c) is done in a similar way.

3.3 Adjustment of the procedures to data availability

Normally, regional sector and commodity aggregations are not the same as those used in the national model. For this reason, a mapping between the two aggregations is made, where the national development at the regional sector aggregation is a weighted average of the developments in the national sectors in the case the regional aggregation is more aggregated:

$$\dot{y}_{in} = \sum_{j:m(j)=i} \left(\frac{y_{jn}}{y_{in}}\right) \dot{y}_{jn} \quad (3.3.a)$$

Where m(j) is the mapping from the national sectors to the regional sectors.

This procedure can be applied to generate national developments at the regional sector aggregation for all variables that should be downscaled. It creates also a flexibility. For example, in the current downscaling module, we downscale value added towards a 3, 6 and 12 sector aggregation at a regional scale, and downscale production value in agriculture with a one-to-one mapping from the regional to the national sector aggregation.

The different levels of aggregation where regional total developments are determined by development of the sectors of which the regional economy consists poses a consistency problem. In general if regional development of total value added is seen as the sum of 3 aggregate sectors the result will be different than when a 6-sector aggregation is used. For this reason, we have also developed formulas that aggregate one sector aggregation to another. In this way it is possible to compare a 6-sector aggregation with a 3-sector or a 12-sector aggregation, and see what the consequences of these different decompositions are on regional developments. This enables research in the importance of shift share analysis in explaining regional growth. This will be a nice research topic for the future, also from an empirical point of view.

3.4 Adding extra components to the production and value added downscaling

Equation 3.2.a can be extended to include other factors as well. For example, it seems plausible that the regional sector development depends on the relative development of production prices ($\dot{p}_{cr}$):

$$\dot{q}_{cr} = \dot{q}_{cn} + \alpha_{cr}^{q} + \alpha_{cr}^{qp}(p_{cr} - \dot{p}_{cn}) + q_c^s \quad (3.4)$$

Where α_{cr}^{qp} represents the price elasticity of regional demand.

The inclusion of a price elasticity of regional demand creates a lot of opportunities to include other factors that influence output. For example, if a labor market is included somewhere in the model that generates wage changes, it is easy to include the result of it in an additional price equation:

$$\dot{p}_{cr} = \alpha_{cr}^{pw}\dot{w}_{cr} + \alpha_{cr}^{pl}\dot{p}_{cr}^{l} + \alpha_{cr}^{pCAP}CAP_{cr} \quad (3.4.1)$$

Where w is the wage rate, p^l is the land price, and CAP is the Common Agricultural Policy expenditures. The coefficients may be simply determined by the share in labour and land cost in total price, but may also be determined by empirical methods, like the coefficient for CAP policy.

3.5 Implementing population dynamics and the labour market

Population may not follow employment, and certainly not without changing relative wages and prices. So, it is obvious that a plausible regional model includes explicit population dynamics. The most starting point is to use a cohort approach. Population is divided in age classes, and we each year a percentage of this age class goes to a higher age class. With yearly age classes 100% is transferred, while with for example five year age classes 20% per year goes into a higher class. From each age class a certain percentage dies, and from the fertile women children are born that are added to the lowest age class. This creates an endogenous population dynamics.

The more complicated part start if we like to add migration, and this is essential if you would like to include a functioning labour market. Migration could be determined in the same way as we did with value added. First, assume simply that each age class in each region as a fixed net imigration probability:

$$\frac{m_{ar}}{pop_{ar}} = \alpha_{ar}^{m} + \alpha_{ar}^{mw}(\dot{w}_r - \dot{w}_n) + \alpha_{ar}^{mU}(U_r - U_n) + s_a^m \quad (3.5.1)$$

Net migration as fraction of population in age class a in region r ($\frac{m_{ar}}{pop_{ar}}$) is a fixed regional component (perhaps determined by average net migration in the past), and some components that are determined by the development of wages and unemployment rate. The shift component will make the sum of all regional migrations equal to the national net migration rate:

$$m_{an} = \sum_r m_{ar} \quad (3.5.2)$$

The labour force is determined by the regional population in working age, so:

$$e_r^s = \sum_{a \in wa} pop_{ar} \quad (3.5.3)$$

Where wa is the age classes in working age.

Unemployment can be determined easily by including calculating difference between labour force and employment in all sectors together:

$U_r = e_r^s - \sum_i e_{ir}$ (3.5.4)

In this way, we not only added population dynamics, but also implemented a labour market, where unemployment in regions is generated and wages and unemployment cause changes in migration and therefore labour supply, as well as changes in output prices and therefore labour demand.

3.6 Adding land cover and an agricultural land market

Downscaling the land market created the biggest problems. It was extremely difficult to apply an agricultural land supply curve approach as used in the national MAGNET model. Furthermore, land use was very important for the PRIMA project, because this includes all opportunities for multifunctionality. For this reason, the whole land supply curve in the national model was replaced by a land cover approach. The fundamental idea in this approach is the theory of land rent, i.e. that the price of normal quality agricultural land is determined by the productivity of the least productive land. This productivity includes a lot of issues, including accessibility, transportation cost and the productivity of land. The ease in which different land types can be transferred into agricultural land depends on the type of land cover. For this reason, for each non-agricultural land cover type a reaction curve depending on the price of land:

$\dot{lc}_{fr} = \alpha_{fr}^{lc} \dot{p}_{cr}^{ag} + lc_{fr}^s + lc^s$ (3.6.a)

$\dot{lc}_{fn} = \sum_r \left(\frac{lc_{fr}}{lc_{fn}}\right) \dot{lc}_{fr}$ (3.6.b)

Where lc= land cover, f (from forestry, but including all categories of land cover) is the type of land cover, $\dot{p}_{cr}^{ag}$ is the agricultural land price and the shifter lc_{fr}^s functions in the same way as the shifters in the other equations. There is an extra shifter added, , that is needed to guarantee that the sum of land cover changes equals zero (or the national land cover change, if there is added in some way some land cover) The change equations 3.6.a and 3.6.b holds only for non-agricultural land.

Agricultural land cover is defined as the difference between non-agricultural land:

$\sum_{f \in nag} (lc)_{fr} \dot{lc}_{fr} + \sum_{f \in ag} (lc)_{fr} \dot{lc}_{fr} = 0$ (3.6.c),

Where ag represent the agricultural land cover categories, and nag the non-agricultural land cover categories. Finally, land use for agricultural sectors is related with the broad land cover categories by:

$\sum_i l_{ir} \, l_{ir} = \sum_{f \in ag} lc_{fr} \, \dot{lc}_{fr}$ (3.6.d)

Where it is also possible to have these equations specifically for each agricultural land cover category by using the relevant mappings.

In this way the available land for agriculture depends on the price of agricultural land, where this price influences agricultural output and therefore demand for agricultural land through the output price. The land price may also influence land use intensities, but this requires that also other inputs are changed depending on land price. Therefore, this complication has not been implemented yet.

3.7 Concluding remarks

In summary, the extremely simple downscaling method presented in section 3.1 is consistent, but assumes that there are no region specific characteristics that influence regional development. This restriction is avoided enabling for region-specific arguments as presented in section 3.2. Section 3.3 discussed the issue that different sectoral aggregations at NUTS2 level are available for different countries. A flexible procedure to use these aggregations has been developed, and this provides research opportunities in the future to investigate to what extend sectoral composition influences regional development. Section 3.4 adds a price component to the regional development, making the regional component potentially endogenous. This is done by adding migration and a labour market in section 3.5, and a land market in section 3.6. For the population dynamics in section 3.5 age classes are defined, making also the population structure visible. For the land market in section 3.6 a new land cover module has been developed for the national model that is also implemented at the regional scale. Finally a host of region specific location factors may influence regional growth, including developments in the neighbouring regions and policies. In the equation of section 3.4 an explicit CAP pillar 2 budget is introduced that influences productivity and therefore output price. This is just and example how different policy variables can be introduced in the model in an easy way.

4 DATA

4.1 Data sources and data compatibility issues

Compiling data to be used in empirical analysis before it is useful in the downscaling procedure involves filling in missing values, combining and comparing different sources, procedures to make databases consistent (for example REGIO database, forestry database and farm structure survey) and working towards achieving its completeness (EUROSTAT, 2008; AMECO, 2010; ESPON, 2010). We have chosen a bottom-up approach in refining the data where we started with a vast amount of data available from all open sources at NUTS2 level (see Table 2) and created a routine to make the use of data complementary. This has resulted in a large database of refined definitions as a by-product of our work. The final downscaling procedure is however applied on a smaller sample of data with regard to the number of sectors/products distinguished in the prepared database and in the model MAGNET. In this section we intent to cover a full data description whereas in chapter 5 only a selection of data is econometrically processed.

REGIO database of the Eurostat presents various problems for the user: the data are of highly variable quality, across countries and across time. In some cases the data contain a clear break in the series (for example, because all years after a major census are on a different basis from the preceding period), but REGIO makes no attempt either to indicate data that are on a different basis, or to produce estimates on a time-consistent basis. There are also cases where there are inconsistencies between totals at the national or NUTS 1 levels and those available for NUTS 2 regions, or between the total and the detailed sectors presumably because the data have been updated from different sources at different dates.

The data rarely present a continuous series at the NUTS 2 level, but only data for particular years. The REGIO data on values (e.g. for gross value added) are expressed in current prices only. The latest year for which data are available differs among the different EU member states, and there is typically a considerable delay between the release of new regional data by the national statistical authorities and their incorporation in REGIO.

The comparability at world level of statistics produced on the basis of NACE is due to the fact that NACE is part of an integrated system of statistical classifications, developed mainly under the auspices of the United Nations Statistical Division. From the European point of view, this system can be represented as follows in Figure 1 (EUROSTAT, 2008).

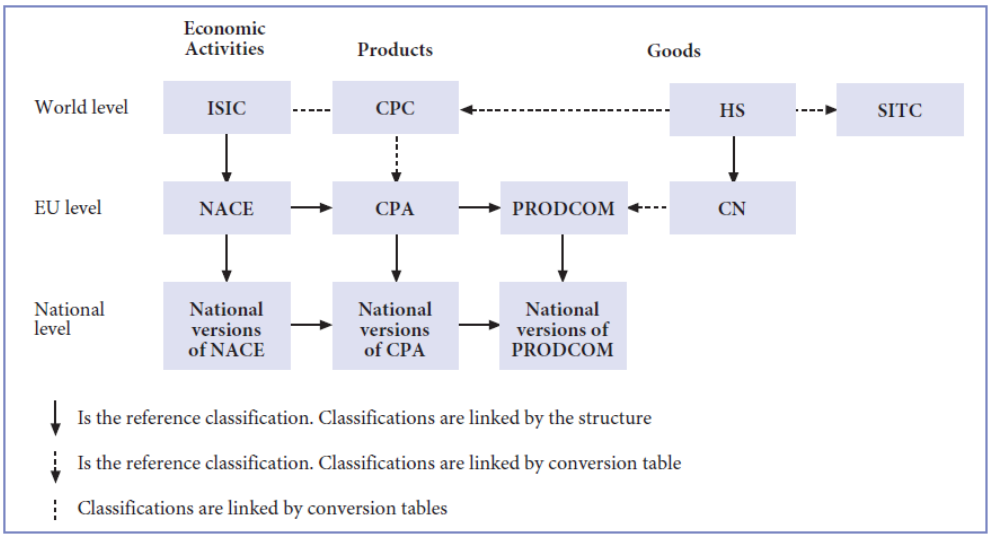


Figure 1: Matching between EU and world statistical classifications

Source: (EUROSTAT, 2008)

NACE is a derived classification of **ISIC**: categories at all levels of NACE are defined either to be identical to, or to form subsets of, single ISIC categories. The first level and the second level of ISIC Rev. 4 (sections and divisions) are identical to sections and divisions of NACE Rev. 2. The third and fourth levels (groups and classes) of ISIC Rev. 4 are subdivided in NACE Rev. 2 according to European requirements. However, groups and classes of NACE Rev. 2 can always be aggregated into the groups and classes of ISIC Rev. 4 from which they were derived. The aim of the further breakdowns in NACE Rev. 2, as compared with ISIC Rev. 4, is to obtain a classification more suited to the structures of the European economies.

CPA is the European version of the **CPC**, and the purposes it serves are in line with those of the CPC. In the EU, classifications for specific statistical domains are linked to the CPA unless the CPA is itself used as a survey classification. Although the CPA is the European counterpart of the CPC, it differs from the latter not only in that it is usually more detailed, but also as regards its structure. The EU adopted the criterion of economic origin for its development, with NACE as the reference framework. Therefore, up to the fourth level (classes) the structure of CPA corresponds to NACE. In general, CPC subclasses are re-arranged according to their economic origin. The link between the CPA and NACE Rev. 2 is evident in the CPA code: at all levels of the CPA, the coding of the first four digits is identical with that used in NACE Rev. 2, with very few exceptions. As a tool in practical everyday statistical work, CPA, like the other product classifications, can be used in delineating the characteristic products of the individual activities. It has to be noted, however, that in certain cases the activity-product link is a convention: this happens when the same products are outcomes of different activities, with different production processes. National versions of the CPA exist just as there are national versions of NACE Rev. 2.

Agricultural sector in NACE classification is presented as one aggregate, which is unfortunate for the purposes of our analysis. We would like to have agriculture and forestry separated, and further disaggregate agriculture into its products.

Up to year 2004 EUROSTAT provided NUTS2 data for 17 NACE branches (A-P) as listed in Table 1 below, following NACE rev1.1. After year 2004 only 6 branches are distinguished. Working with the aggregates over 6 sectors will cause difficulties in separating fishing and forestry from an aggregate A_B. Therefore it is proposed to limit the data by the year 2004, unless no alternative is available. This is for example the case for land use and land cover data that for respective categories (see Annex are only available for 2009.

Table 1 Classification of branch A3-A6-A17 (NACE Rev.1)

Codes (A3)	Codes (A6)	Labels	Codes (A17)
A_B	A_B	Agricultural, hunting, forestry and fishing	
		Agricultural, hunting and forestry	A
		Fishing	B
C_TO_F	C_E	Industry, including energy	
		Mining and quarrying	C
		Manufacturing	D
		Electricity, gas and water supply	E
	F	Construction	F
G_TO_P	G_I	Wholesale and retail trade, repair of motor vehicles and household goods, hotels and restaurants; transport and communication	
		Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods	G
		Hotels and restaurants	H
		Transport, storage and communication	I
	J_K	Financial intermediation, real estate, renting and business activities	
		Financial intermediation	J
		Real estate, renting and business activities	K
	L_TO_P	Other services activities	
		Public administration and defence, compulsory social security	L
		Education	M
		Health and social work	N
		Other community, social and personal service activities	O
		Private households with employed persons	P
A_TO_P		(A_B)+(C_TO_F)+(G_TO_P)	
TOTAL		A_TO_P – FISIM (1)	

(1) FISIM represents "Financial intermediation services indirectly measured"

NB.: The aggregate TOTAL is only available for tables E2VABP95, E3VABP95, XE2VABP and XE3VABP. For all other variables total corresponds to A_to_P.

Table 2 Sources of Data

Source	Table	Table Name	Source Parameter	Original unit	Conversion of units
EUROSTAT	DEMO_R_D3AREA	Area of the regions	d3ar	KM2	Ha
EUROSTAT	LAN_LCV_OVW	Land cover overview, by NUTS 2 regions	lcvo	KM2	Ha
EUROSTAT	LAN_LCV_ART	Land covered by artificial land, by NUTS 1 regions	lcva	KM2	Ha
EUROSTAT	LAN_LCV_WOO	Land covered by woodland, by NUTS 2 regions	lcvw	KM2	Ha
EUROSTAT	LAN_LCV_SHR	Land covered by shrubland, by NUTS 2 regions	lcvs	KM2	Ha
EUROSTAT	LAN_LCV_GRS	Land covered by grassland, by NUTS 2 regions	lcvg	KM2	Ha
EUROSTAT	LAN_LU_OVW	Land use overview , by NUTS 2 regions	luov	KM2	Ha
EUROSTAT	LAN_LU_AGR	Land use in agriculture, by NUTS 2 regions	luag	KM2	Ha
EUROSTAT	LAN_LU_HEA	Land use with heavy environmental impact, by NUTS 2 regions	luhe	KM2	Ha
EUROSTAT	LAN_LU_INF	Land use in services and residential, by NUTS 2 regions	luin	KM2	Ha
EUROSTAT	PEF_LU_OVCROPAA	Farmland: Number of farms and areas by size of farm (UAA) and region	craa	Ha	Ha
EUROSTAT	PEF_LU_OVCROPESU	Farmland: Number of farms and areas by economic size of farm (ESU) and region	cres	Ha	Ha
EUROSTAT	PEF_R_FARM	Structure of agricultural holdings by region, main indicators	rfar	Ha Head persons	Ha LSU 1000 persons
EUROSTAT	Pef_r_nuts	Structure of agricultural holdings by NUTS region, main indicators	rnut	Ha Head persons	Ha LSU 1000 persons
EUROSTAT	PAPRO_CPP_CROP	Crops products (excluding fruits and vegetables) (annual data)	cppc	1000ha	Ha
EUROSTAT	PAPRO_CPP_LUSE	Land use (annual data)	cppl	1000 ha	Ha
EUROSTAT	AGR_R_CROPS	Areas harvested, yields, production	crop	Ha	Ha
EUROSTAT	AGR_R_LANDUSE	Land use	Land	1000 ha	Ha
EUROSTAT	AGR_R_ANIMAL	Animal populations (December)	anim	1000 head	LSU
EUROSTAT	Pa2animal_Conv	Animal populations (December	a2an	1000 LSU	LSU
AMECO	AMECO	AMECO database: Population Employment Gross Value Added	 amec amec amec	 1000 persons 1000 persons mio eur	 1000 persons 1000 persons mio eur
EUROSTAT	DEMO_R_D3AVG	Annual average population by sex	d3av	1000 persons	1000 persons
EUROSTAT	DEMO_R_D2JAN	Population at 1st January by sex and age from 1990 onwards	d2pj	1000 persons	1000 persons
EUROSTAT	MIGR_R_2ARR	Arrivals due to internal migration (excluding intra-regional migration) by sex and age, NUTS2	miga	1000 persons	1000 persons
EUROSTAT	MIGR_R_2DEP	Departures due to internal migration (excluding intra-regional migration) by sex and age, NUTS2	migd	1000 persons	1000 persons
EUROSTAT	PREG_E2VABP_Conv	Gross value added at basic prices at NUTS level 2 (REG_E2VABP)	e2va	mio eur	mio eur
EUROSTAT	AGR_R_ACCTS	Agricultural accounts according to EAA 97 Rev.1.1	acct	mio eur	mio eur

EUROSTAT	FOR_EAF01	Economic accounts for forestry - values at current prices	eaf1	mio eur	mio eur
EUROSTAT	PREG_E2EMPL_Conv	Employment at NUTS level 2 (REG_E2EMPL)	e2em	mio eur	mio eur
EUROSTAT	NAMA_R_E2REM	Compensation of employees at NUTS level 2	e2re	mio eur	mio eur
EUROSTAT	NAMA_R_E2GFCF	Gross fixed capital formation at NUTS level 2	e2gf	mio eur	mio eur
EUROSTAT	PAPRI_PI00_OUTA	Price indices of agricultural products, output: base 2000=100 (annual)	prin	i2000 (Index, 2000=100)	2000=100%

To align the aggregation enabled in the MAGNET with the data available at the NUTS2 level, mapping of sectors/products is required.

Table 3 shows the aggregation of the original GTAP sectors (57) to the 28 PRIMA_MAGNET sectors. Annex 0 (Table 12 and Table 13) presents the mapping of MAGNET sectors and EUROSTAT sectors.

Table 3 PRIMA Aggregation of MAGNET sectors (available for Gross Value Added and Employment) and its mapping to NACE branches of Eurostat

	EUROSTAT NACE	PRIMA_MAGNET	String	original GTAP
1	A	rice	Paddy rice	pdr, pcr
2		wht	Wheat	wht
3		grain	Cereal grains not wheat	gro
4		oils	Oil seeds (incl. olive oil)	osd
5		sug	Sugar cane and beet	c_b
6		hort	Vegetables, fruit, nuts (incl. Wine)	v_f
7		pbfiber	plant based fibres	pfb
8		othcrops	Other crops	ocr
9		cattle	Cattle, sheep, goats, horses	wol, cmt, ctl
10		oap	Other animals	oap
11		milk	Raw milk	rmk
12	Is part of D		Dairy products processed	mil
13			Sugar processed	sgr
14			Vegetable oils and fats	vol
15			Food nec mainly compound feed	ofd
16	B	fish	Other agr-food products	fsh
17	Is part of D		Beverages and tobacco	b_t
18	Is part of A	frs	Forestry	frs
19	C	c_oil	Crude Oil	oil
20		mining	Mining	coa, gas, omn
21		petro	Petroleum	p_c

22	D	manuf	Manufacturing	tex, wap, lea, lum, ppp, crp, nmm, i_s, nfm, fmp, mvh, otn, ele, ome, omf mil, sgr, vol, ofd, bevtab
23	E	utilities	Electricity, gas, water supply	ely, gdt, wtr
24	F	construction	Construction	cns
25	G	trade	Trading sector	trd
26	I	transport	Transport services	otp, wtp, atp, cmn
27	P, H	recreation	Recreation plus more (plus hotels and restaurants)	ros
28	j+k+l+m+n+o	ser	Services	ofi, isr, obs, osg, dwe

4.2 Procedures for achieving data consistencies

Data series at the level of NUTS-2 regions defined by Eurostat are used. The data has been reconstructed to restore missing observations. The data for 1995-2004 are based on Eurostat figures and are filled using data from national statistical offices and other local sources.

The NUTS-2 region is considered as the most appropriate unit for modelling and analysis. It is sufficiently small, in most cases, to capture sub-national variations, and it is the unit adopted by the EC to define Objective 1 regions for Structural Funds purposes. It is also the level at which most countries have satisfactory regional data and so at which a comprehensive data set is provided by Eurostat (Gardiner, 2001).

In the process of revising the data processing routines, a few changes were made to the regional definitions to achieve greater consistency with the latest (1999) NUTS-2 areas as defined by Eurostat (see Figure 2 below). For example, Sweden is now modelled according to its eight NUTS-2 regions, rather than the 21 Län as previously.

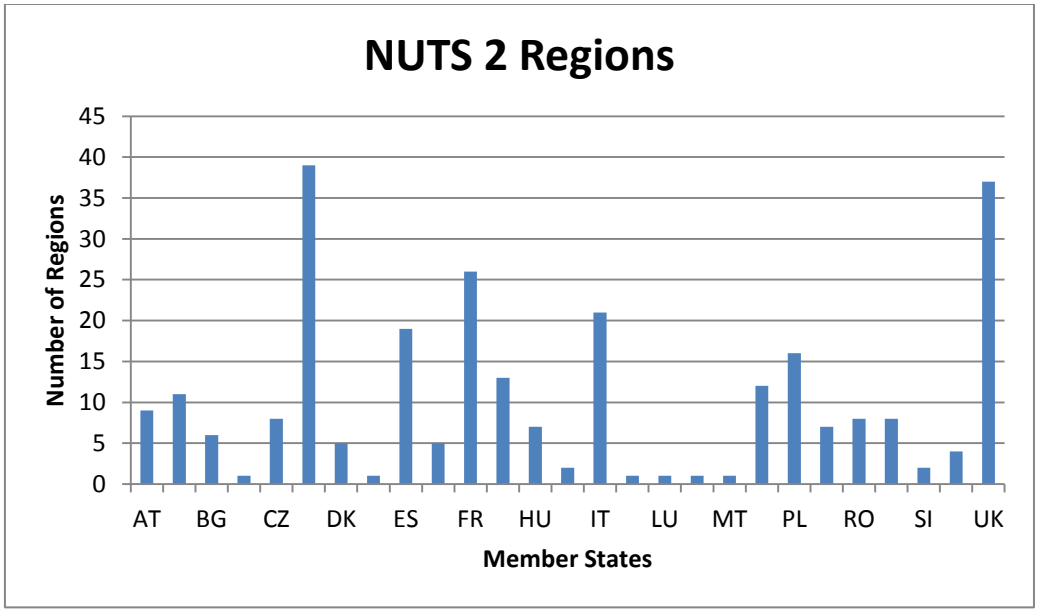


Figure 2 NUTS 2 Regions for the 27 Member States

In order to achieve comprehensive coverage, it is often necessary to reconstruct data missing from REGIO. Where an incomplete series exists at NUTS-2 level, interpolation methods have been used which fill gaps in the series from complete series available for aggregates of NUTS-2 regions. The totals of regions containing interpolated values are constrained to sum to known totals at higher levels of the spatial hierarchy. In this way, a detailed series has been built up which is consistent with the higher-order regional values available in published statistics.

Prior to 1991, the national data for Germany do not include the data for the eastern Länder. From 1991 onwards, the five eastern Länder are included in the national total and Berlin is the aggregation of east and west Berlin.

Annex 0 provides the correspondence between NUTS0-NUTS1-NUTS2 levels as has been applied in the PRIMA project.

4.3 Computerized Tools for ensuring data consistencies

Data is checked for consistency in the following areas:

- In regions between the years
- In units of measurements (animal heads to LSU, mrd euro to mio euro, km to hectares)
- In definition of the sectors (MAGNET sectors, NACE sectors in Eurostat, GTAP sectors based on FAO)

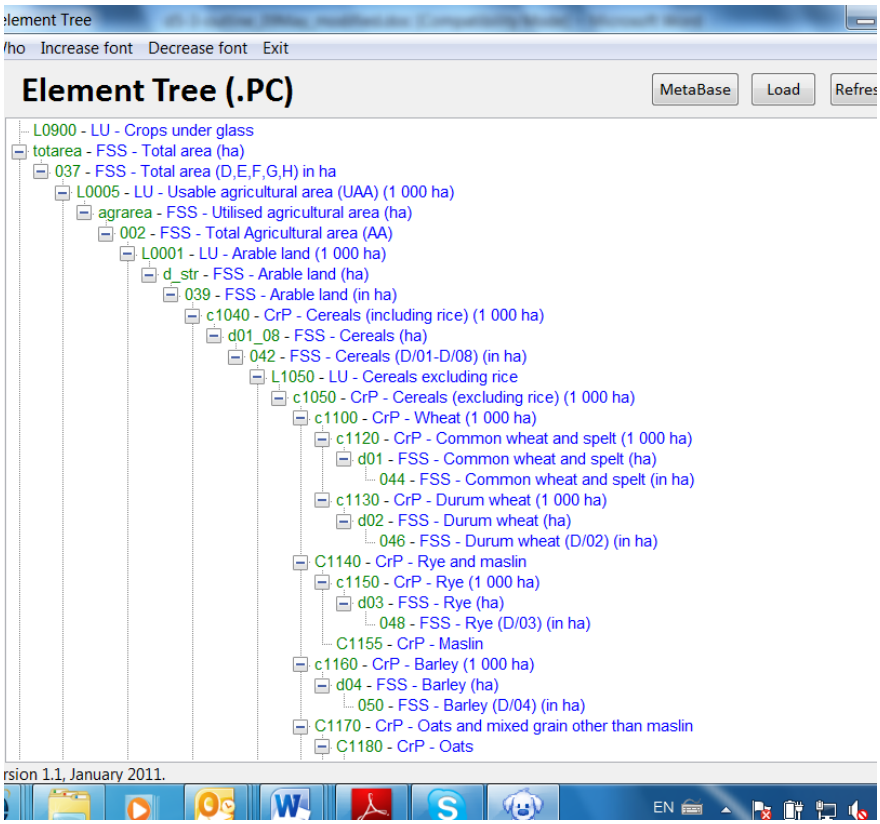


Figure 3 Example of the EUROSTAT data Tree filled in with data from various sources (file PrimaVarTree). The source can be looked up in Table 2 **(column Source parameter).**

The basic structure of the Element tree is taken from the Agricultural Account (see also Annex A), but all intermediate branches of the Tree are filled up with the data coming from alternative data sources (see as listed in Table 2) according to the priority as documented in Table 4.

The G-Tree tools developed at LEI use the GAMS programme Prima.gms in selecting data for variables from different external sources (AMECO and Eurostat-REGIO and FSS-Farm Structural Survey). These variables were combined in a tree structure, PrimaVarTree (see Figure 3). The source variables from PrimaVarTree were then linked to the GTAP (and MAGNET) sectors forming PrimaVarGtapTree (see Figure 4). A shortlist of variable was created from PrimaVarGtapTree for further analysis in GTAP/MAGNET and STATA (PrimaVarGtapSel).

The content of the GAMS program is presented in Annex 0.

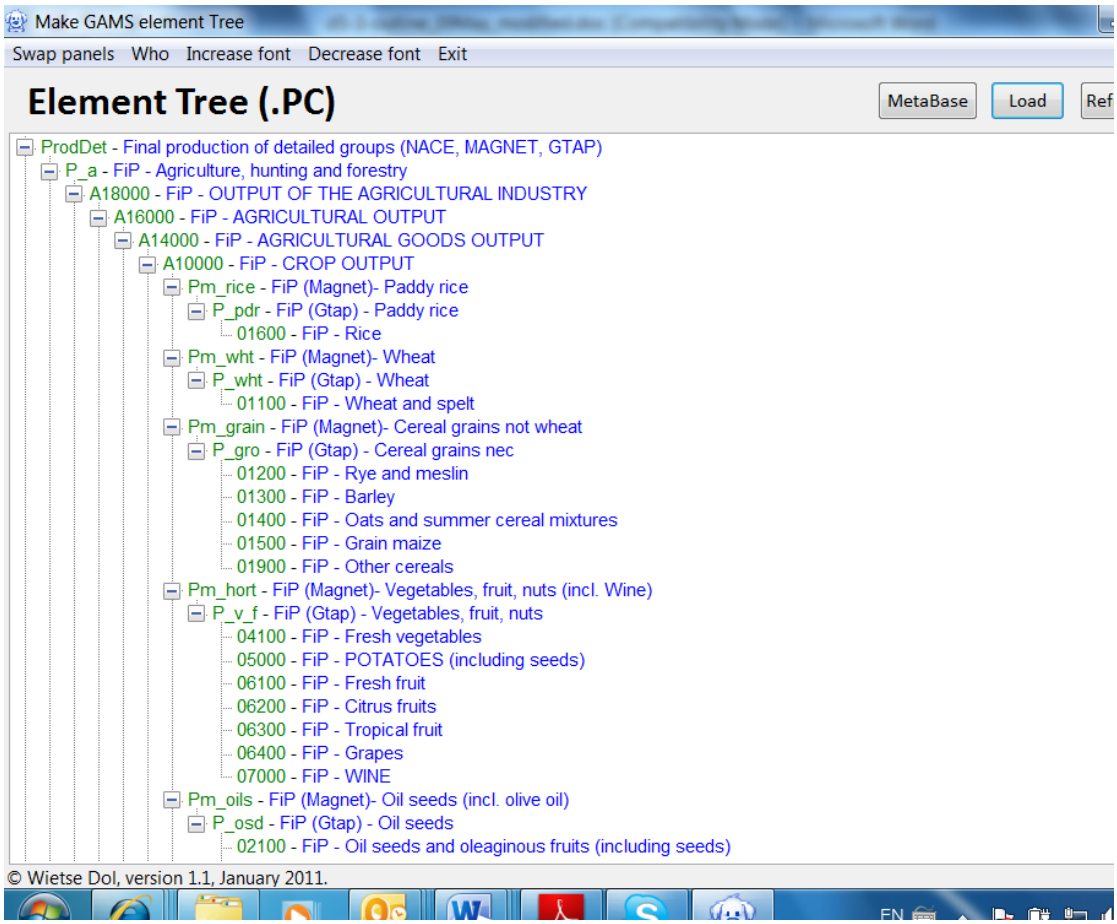


Figure 4 Example of GTAP sectors filled in with Eurostat data (file PrimaVarGtapTree)

The GAMS programme, Prima.gms has two modules, namely, PrimaCalculationsSource.gms and PrimaCalculationsResults.gms. In PrimaCalculationsSource.gms data are selected from external data sources and combined into one parameter (PrimaSource), with reference to original source. Data for NUTS012 territories are copied from PrimaSource to the parameter PrimaSoMBNuts012Base. The module PrimaCalculationsResults.gms runs with data of one selected country from the parameter PrimaSoMBNuts012Base. Data are copied from the external sources into two created "sources" Comb and Harm in the same parameter (PrimaSoMBNuts012Base%%), by using a priority between the

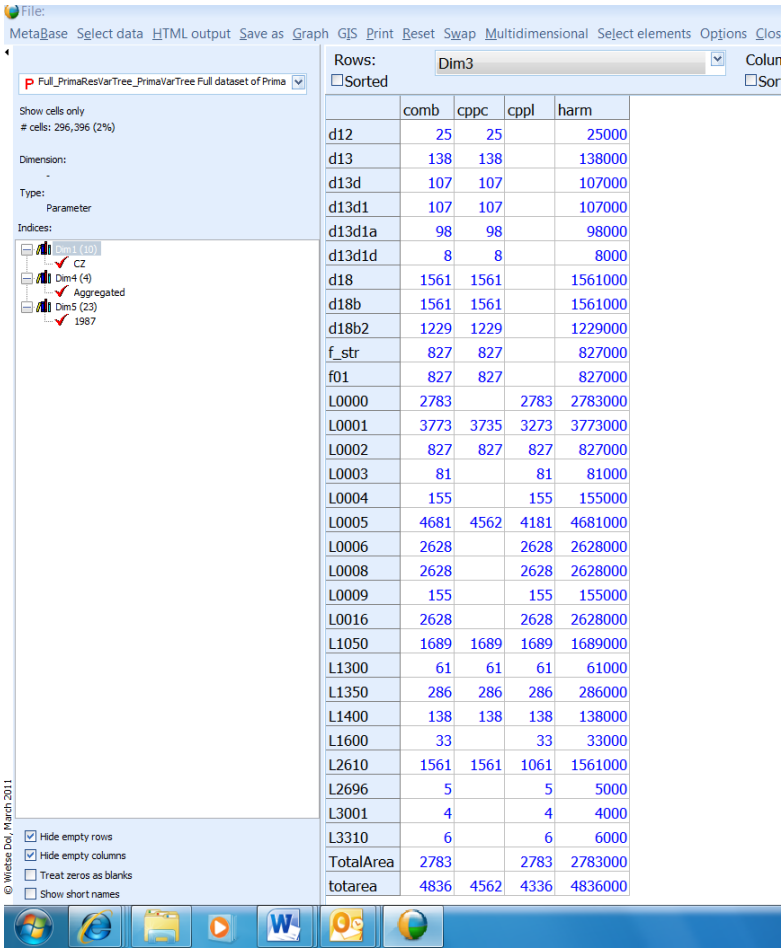
external data. This priority is shown in Table 4. The PrimaVar codes are filled with data from the external data sources with the highest priority.

Table 4 The Priority by which source data are filled up

	Source Parameter	Table Name
1	d3ar	DEMO_R_D3AREA
2	lcvo	LAN_LCV_OVW
3	lcva	LAN_LCV_ART
4	lcvw	LAN_LCV_WOO
5	lcvs	LAN_LCV_SHR
6	lcvg	LAN_LCV_GRS
7	luov	LAN_LU_OVW
8	luag	LAN_LU_AGR
9	luhe	LAN_LU_HEA
10	luin	LAN_LU_INF
11	craa	PEF_LU_OVCROPAA
12	cres	PEF_LU_OVCROPESU
13	rfar	PEF_R_FARM
14	rnut	Pef_r_nuts
15	cppc	PAPRO_CPP_CROP
16	cppl	PAPRO_CPP_LUSE
17	crop	AGR_R_CROPS
18	land	AGR_R_LANDUSE
19	anim	AGR_R_ANIMAL
20	a2an	Pa2animal_Conv
21	amec	Ameco
22	d3av	DEMO_R_D3AVG
23	d3pj	DEMO_R_PJANAGGR3
24	d2pj	DEMO_R_D2JAN
25	miga	MIGR_R_2ARR
26	migd	MIGR_R_2DEP
27	e2va	PREG_E2VABP_Conv
28	acct	AGR_R_ACCTS
29	eaf1	FOR_EAF01
30	e2em	PREG_E2EMPL_Conv
31	e2re	NAMA_R_E2REM
32	e2gf	NAMA_R_E2GFCF
33	prin	PAPRI_PI00_OUTA

Data from various sources is put together into one Datasource (Combined/Comb). Missing data are filled in by aggregation from the lower levels. These missing data are filled in by priority. Then the harmonizing of sources to a table called (Harmonized/Harm) by converting. This ensures that all data have consistent units.

In the created source Comb, data are equal to the external sources while in the created source Harm, data are converted to the same units, 1000 hectares to hectares, persons to 1000 persons, mrd euro to mio euro and if possible animal heads are converted to livestock units (LSU) (see Table 6 in the Annex for the conversion rates from head to lsu). There is aggregation within the PrimaVarTree tree structure for the created source Harm. The PrimaResVarGtapTree is filled in with data from the PrimaResVarTree (see Figure 5) for the created source Harm. Before entering the PrimaResVarTree data into the PrimaResVarGtapTree an intermediate calculation is made for F20000 (GVA forestry) for Harm. Since Eurostat only provides forestry data at country level and Ameco has data at country level, F20000 can also be calculated as (G_a – A20000) which is GVA for Nace 'a' minus GVA agricultural accounts 'A20000'.



	comb	cppc	cppl	harm
d12	25	25		25000
d13	138	138		138000
d13d	107	107		107000
d13d1	107	107		107000
d13d1a	98	98		98000
d13d1d	8	8		8000
d18	1561	1561		1561000
d18b	1561	1561		1561000
d18b2	1229	1229		1229000
f_str	827	827		827000
f01	827	827		827000
L0000	2783		2783	2783000
L0001	3773	3735	3273	3773000
L0002	827	827	827	827000
L0003	81		81	81000
L0004	155		155	155000
L0005	4681	4562	4181	4681000
L0006	2628		2628	2628000
L0008	2628		2628	2628000
L0009	155		155	155000
L0016	2628		2628	2628000
L1050	1689	1689	1689	1689000
L1300	61	61	61	61000
L1350	286	286	286	286000
L1400	138	138	138	138000
L1600	33		33	33000
L2610	1561	1561	1061	1561000
L2696	5		5	5000
L3001	4		4	4000
L3310	6		6	6000
TotalArea	2783		2783	2783000
totarea	4836	4562	4336	4836000

Figure 5 Example of aggregated results (see column 'harm') from PrimaResVarTree

The parameter PrimaResVarGtapSel is filled in with the data from PrimaResVarGtapTree for Harm. Additional calculation for the distribution of grassland, fodder roots and brassicas, green maize and other fodder (= Fodder - Total minus Green maize) to str_ctl and str_rmk.

Also for the territories a tree structure is used; the already available NUTS012 territory structure (combination of NUTS_0 countries, NUTS_1 regions and NUTS_2 sub regions).

Table 5 Country name, Magnet and Eurostat codes

Country	Eurostat code	Magnet code
Austria	AT	AUT
Belgium	BE	BEL
Bulgaria	BG	BGR
Cyprus	CY	CYP
Czech Republic	CZ	CZE
Germany	DE	DEU
Denmark	DK	DNK
Estonia	EE	EST
Spain	ES	ESP
Finland	FI	FIN
France	FR	FRA
Greece	GR	GRC
Hungary	HU	HUN
Ireland	IE	IRL
Italy	IT	ITA
Lithuania	LT	LTU
Luxembourg	LU	LUX
Latvia	LV	LVA
Malta	MT	MLT
Netherlands	NL	NLD
Poland	PL	POL
Portugal	PT	PRT
Romania	RO	ROU
Sweden	SE	SWE
Slovenia	SI	SVN
Slovakia	SK	SVK
United Kingdom of Great Britain and Northern Ireland	UK	GBR

Table 6 Conversion rates from head to livestock units (LSU)

Animal	Head to lsu
Total of cattle population	0
Bovine animals (J/02-J/08)	0
Bovine animals less than 1 year old	0.4
Calves for slaughter	0.4
Other calves	0.4
Other calves : Male	0.4
Other calves : Female	0.4
Bovine animals aged between 1 and 2 years	0.7
Bovine animals aged between 1 and 2 years : Male	0.7
Bovine animals 1 year or over but under 2 years, male	0.7
Bovine animals aged between 1 and 2 years : Female	0.7

Bovine animals 1 year or over but under 2 years, female	0.7
Animals for slaughter	0.7
Other	0.7
Bovines animals of 2 years and over	0
Bovines animals of 2 years and over : Male	1
Bovines animals of 2 years and over : Female	0
Bovine animals 2 year old and over, heifers	0.8
Heifers	0.8
Other	0.8
Cows	0
Dairy cows	1
Dairy cows	1
Other cows	0.8
Buffaloes	0.8
sheep	0.1
Sheep (J/09)	0.1
Total of the goat population	0.1
Goats	0.1
Total of the pig population	0
Piglets with a live weight of less than 20 kg	0.3
Pigs with a live weight of 20 kg and less than 50 kg	0.3
Fattening pigs (including rejected boars and sows) of at least 50 kg	0.3
Fattening pigs between 50 and < 80 kg (1000 heads)	0.3
Fattening pigs between 80 and < 110 kg	0.3
Fattening pigs of at least 110 kg	0.3
Breeding pigs with a live weight of 50 kg and higher	0.3
Boars	0.3
Sows	0.5
Covered sows	0.5
Of which: sows covered for the first time	0.5
Sows not covered - total	0.5
Of which: gilts not yet covered	0.5
Poultry	0
Horses	0.8

4.4 Agricultural sector data

Below we present the definition of variables that form agricultural sectors. Production as well as structure variables like area or number of animals linked to a specific agricultural sector in MAGNET are generated, following the general data assembling procedure as presented above.

Annex A presents the tree structure of Production Accounts for agriculture and forestry, EAA/EAF Rev1.1. This structure has been implemented in the Element-TREE program and is elaborated below.

4.4.1 Agricultural Output Data

'The output of the agricultural sector is the sum of the output of agricultural products and of the goods and services produced in inseparable non-agricultural secondary activities. Output of agricultural products comprises the total value of sales (except trade in animals between agricultural holdings), changes in stocks held by producers, on-farm final consumption (of agricultural products), processing of agricultural products by producers (in the form of separable activities) and the value of intra-unit consumption of crop products used in animal feed.' (Eurostat regional yearbook 2010, 2010)

Sources in Eurostat provide Output values (final production- FIP). FIP values are available for the total agricultural sector. The data are available in unit 'Mio Euro' and are provided for year 1980 to 2009 at NUTS2 level. We can note that no observations are available for the NUTS2 regions of Belgium (BE), Poland (PL) and Slovenia (SI). The agricultural accounts according to EAA for the total agricultural goods output are available at Eurostat table AGR_R_ACCTS (Code: 14000).

Furthermore, Eurostat sources provide Output values for the parts animal output and crop output. On average the total agricultural goods output consists of 55% of crop output and 45% of animal output. (Eurostat regional yearbook 2010, 2010).

Crop Output:

Eurostat source table: AGR_R_ACCTS (Code: 10000). Data for the crop output are provided at NUTS2 level for year 1980 to 2009. For the NUTS2 regions of BE, PL and SI no observations are available.

Animal Output:

Eurostat source table: AGR_R_ACCTS (Code: 13000). For the animal output FIP values are available at NUTS2 level (except for BE, SI, PL) for year 1980 to 2009.

The FIP Output is available in unit 'Mio Euro' for different agriculture products. On the one hand the crop output includes the FIP Output of paddy rice, wheat, cereal grains (not wheat), 'vegetables, fruit, nuts, (incl. wine)', oil seeds (incl. olive oil), 'sugar cane and beet', plant based fibres and other crops. On the other hand the animal output includes the products 'cattle, sheep, goats, horses', other animals and raw milk.

Paddy Rice:

Eurostat source table: [agr_r_accts], Code: 01600. The FIP Output for paddy rice is available at NUTS2 level for year 1995 to 2008 and only for regions: BG, GR, UK, SK, RO, PT, IT, HU. (For abbreviations of NUTS2 regions see: (Eurostat regional yearbook 2010, 2010))

Wheat:

Eurostat source table: [agr_r_accts], Code: 01100. The FIP Output for wheat is available at NUTS2 level only for year 1995 to 2008. No observations are available for NUTS2 regions of BE, ES, MT, PL, SI.

Cereal Grains (not wheat):

Eurostat source table: [agr_r_accts]. The sector Cereal grains includes Grain maize (Code: 01500), Barley (Code: 01300), Rye and meslin (Code: 01200) and oats and summer cereals mixture (Code: 01400).

The FIP values of grain are available for year 1995 to 2008 and for SI, PL, MT, ES, BE no observations are available at NUTS2 level.

Vegetables, fruit, nuts, (incl. wine):

Eurostat source table: [agr_r_accts]. This sector is classified in two main parts: On the one hand side vegetables including fresh vegetables (Code: 04100) and potatoes (Code: 05000) and on the other hand side 'Fruit and nuts' including Fresh fruit (06100), Citrus fruit (06200), Tropical fruit (06300) , Grapes (06500) and Wine (07000).

The final production values of this sector are available for year 1995 to 2008 at NUTS2 level, except the NUTS2 regions of SI, PL, BE.

Oil seeds (incl. olive oil):

The sector 'Oil seeds (incl. olive oil) include products like oil seeds and oleaginous fruit, olives and olive oil. The source table is [agr_r_accts] (Code: 02100).

In this sector FIP values are available for year 1995 to 2008 and are available for several NUTS2-regions, but no values are available for NUTS2 regions of BE, PL, SI.

Sugar cane and beet:

This sector includes the production of plants used for sugar manufacturing. The Eurostat source table is [agr_r_accts], Code: 02400.

The production values are available for year 1995 to 2008 and are available at NUTS2 level. For NUTS2 regions of BE, CY,LU, SI, PL,MT, ES,EE no FIP-values are available.

Plant based fibres:

Plant based fibres are raw vegetable materials used in textiles. Production values of this sector are available for year 1995 to 2008 and for NUTS2 regions of BE, CY, DK, SI, PL, MT and ES no FIP values are available.

The EUROSTAT source table of this sector is [agr_r_accts], Code: 02900.

Other crops:

This sector includes several products. The source table of this sector is [agr_r_accts] with the different codes for the products. The sector 'other crops' comprises plants and flowers (Code: 04200), Raw tobacco (Code: 02300) , Forage plants (Code: 03000), protein crops (incl. seeds) (Code: 02200) and other raw vegetable materials (Code: 09000).

For the total sector 'Other crops' production values are available for year 1995-2008 and are available at NUTS2 level, except the NUTS2 regions of BE, PL, SI.

Cattle, Sheep, Goats, Horses:

This agriculture sector includes cattle, sheep, goats, horses, asses and mules. The Eurostat source table is [agr_r_accts] (Cattle: 11100, Equines: 11300, sheep and goats: 11400).

Final production values are available for year 1995 to 2008 and at NUTS2 level, except for the regions of BE, MT, PL and SI.

Other animals:

Eurostat source table: [agr_r_accts]. The sector 'other animals' includes Pigs (Code: 11200), Poultry (Code: 11500), other animals (Code: 11900), Eggs (Code: 12200) and other animal products (Code: 12930).

Final production values for the sector 'other animals' are available for year 1995 to 2008 and at NUTS2 level, except for the regions of BE, PL and SI.

Raw Milk:

Eurostat source table [agr_r_accts], Code: 12100. Final production values of raw milk are available for year 1995 to 2008 and at NUTS2 level, except for regions of BE, PL and SI.

Conclusion:

All final production values of the different products of the agricultural sector are available at NUTS2 level. For Slovenia (SI) and Poland (PL) no production values are available at NUTS2 level for the different products.

4.4.2 Agricultural Price indices:

Price index deflated of agriculture goods output: The index of producer prices of agricultural products (output index) is based on the sales of the agricultural products. The (annual) price index bases on 2000=100 and is available at NUTS0 level for year 1995 to 2008. The Eurostat source table is [apri_pi00_outa] (Code: 140000).

Price index nominal of agriculture goods output: Eurostat source table: [apri_pi00_outa] (Code: 140000).

4.4.3 Land use in agriculture / Land cover

The land suitable for agricultural production is denoted by 'Agricultural land'. It comprises both animal production and crop production. Agricultural area is the sum of areas under arable land, permanent crops and permanent meadows and pastures. Arable land is the land under temporary agricultural crops, temporary meadows, land under market and kitchen gardens and land temporaily fallow (less than 5 years). Land under permanent crops is defined as land clutivated with long - term crops, land under trees and shrubs producing flowers and land under nurseries. Land under permanent meadows and pastures is defined as land used permanently (>4 years) to grow herbaceous forage crops.

Sources in Eurostat provide agricultural land use data for the total agricultural land use in hectare.

Land use (LU) agriculture:

Eurostat source table: [lan_lu_agr] in square kilometer. The agricultural land use data are available only for year 2009 at NUTS2 level. For the NUTS2 regions of BG, CY, MT, RO no observations of agricultural land use is available.

LU Arable land:

Eurostat source table: [agr_r_landuse] (Code: L0001). Land use data in hectare for arable land is available for year 1980 to 2009 at NUTS2 level.

LU permanent crops:

Eurostat source table: [agr_r_landuse] (Code: L0003). Land use data for land under permanent crops (in hectare) is provided by Eurostat sources for year 1980 to 2009 at NUTS2 level.

Area of production (Structure values):

The area of production of each product of the agricultural sector is available in hectare. The classification of products is equal to the one described for production output values. That means for the production area of crop the products are paddy rice, wheat, cereal grains (not wheat), 'vegetables, fruit, nuts, (incl. wine)', oil seeds (incl. olive oil), 'sugar cane and beet', plant based fibres and other crops. The area of production of animal goods comprises the products 'cattle, sheep, goats, horses', other animals and raw milk.

Paddy Rice:

Eurostat source table: [agr_r_crops] (Code: C1250). Values of the production area (in hectare) of rice are available for year 1980 to 2009 at NUTS2 level, but only for regions of BG, ES, FR, RO, PT, IT, HU and GR.

Wheat:

Eurostat source table: [agr_r_crops] (Code: C1100). The production area of wheat is available for year 1980 to 2009 at NUTS2 level.

Cereals (excluding rice):

Eurostat source table: [agr_r_crops] (Code: C1050). For the category 'cereals' production area values are provided for year 1980 to 2009 at NUTS2 level.

Vegetables, fruit, nuts, (incl. wine):

Eurostat source table: [agr_r_crops] (potatoes: C1360, fruit trees: C2040, vine yards: C2410). The production area of vegetables, fruit, nuts, (incl. wine) is available for year 1980 to 2009 at NUTS2 level.

Oil seeds (incl. olive oil):

Eurostat source table: [agr_r_crops] (oil seeds: Code: C1370; olives: C2450). As well as for the latter product, the production area values of oil seeds are available for year 1980 to 2009 NUTS2 level.

Sugar cane and beet:

Eurostat source table: [agr_r_crops] (Code: C1370). For sugar cane and beet the production area values are available for year 1980 to 2009 at NUTS 2 level, except for the NUTS2 regions of CY and MT.

Plant based fibres:

No Eurostat source table found.

The production area values of plant based fibres are only provided for the year 1990, 1993, 1995 to 2007 and 2009. Observations are available at NUTS2 level only for the regions of Italy, Greece, Spain and Bulgaria.

Other crops:

No Eurostat source table found. Production area values of 'Other crops' are provided for year 1980 to 2009 at NUTS2 level.

Cattle, Sheep, Goats, Horses:

As well as for the latter product the production area for this category is available for year 1980 to 2009 at NUTS2 level.

Other animals:

For this product no production area values are available.

Raw Milk:

Values for the production area of milk are available for year 1980 to 2009 at NUTS2 level. We can note that for Malta no values of this category are available.

Conclusion:

For all products (except for the product 'Other animals') production area values are available at NUTS2 level. We have to note that for Malta only a few values are available for each product.

4.4.4 Wages of agriculture/fishing

Eurostat source table: [nama_r_e2rem] (Code:A_B)

The Eurostat source table provides information about the compensation of employees (at current prices) for NACE activity A_B (agricultural, hunting and forestry and fishing).

'Compensation of employees is defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the accounting period. Compensation of employees consists of wages and salaries, and of employers' social contributions'. (http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/nama_esms.htm)

The values are provided in Mio Euro and are available for year 1995 to 2008 at NUTS2 level.

4.4.5 Capital of agriculture/fishing

Eurostat source table: [nama_r_e2gfcf] (Code: A_B)

The Eurostat source table provides information about the Gross fixed capital formation (GFCF). 'GFCF consists of resident producers' acquisitions, less disposals, of fixed assets during a given period plus certain additions to the value of non-produced assets realized by the productive activity of producer or institutional units.' (http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/nama_esms.htm)

The values of GFCF are available for year 1995 to 2007 at NUTS2 level. No observations are available for NUTS2 regions of BG and LU.

4.4.6 Total intermediate consumption (agriculture)

Eurostat source table: [agr_r_accts] (Code: 19000)

Information about the total intermediate consumption are provided by the Eurostat source table. The total intermediate consumption is defined as 'the value of all goods and services used as inputs in the production process, excluding fixed assets…' (Manual on the economic accounts for agriculture and forestry (Rev. 1.1), 2000).

The values of intermediate consumption are available in Mio Euro for year 1980 to 2009 at NUTS2 level, except for the regions of BE, PL and SI.

4.4.7 Animal population values

Eurostat provides animal population tables for different animals.

As we described in the part 'Agricultural Output Data' we consider three animal categories:

1. Cattle, sheep, goats, horses
2. Other animals
3. Dairy Cows for 'Raw Milk'

Cattle, sheep, goats, horses:

Eurostat source table: [agr_r_animal] (Codes: Cattle: PC0000, sheep: PS0000, goats: PG0000, horses: ?)

Eurostat provides animal population data in unit 'heads' for each animal.

Animal population values for cattle are available for year 1980 to 2009 at NUTS2 level.

For the sheep population values observations are provided for year 1980 to 2005 and for year 2007 at NUTS2 level. Population values for goats are available for year 1980 to 2005 and for year 2007 at NUTS2 level, except for the regions of Germany (DE). The Eurostat source table for animal population of horses provides observations for year 1980 to 2005 at NUTS2 level, except for NUTS2 regions of CY, DK, IE, SE, SI and UK.

Other animals:

Eurostat source table: [agr_r_animal] (Codes: Pig: PP0000, Poultry)

The Eurostat source table for Pig population values provides observations for year 1980 to 2009 at NUTS2 level. For the poultry population observations for year 1980 to 2005 at NUTS2 level, but no observations are provided for regions of CY, DK, MT, SE and SI.

Dairy Cows:

Eurostat source table: [agr_r_animal] (Code: PC3221). Population values for Dairy cows are available for year 1980 to 2005 and for 2007 at NUTS2 level.

4.5 Land use and Land cover data

The second most common type of land use in Europe is forestry. Forests and other wooded land cover 42% of the land area. The most densely forested Member States are Finland, Sweden and Slovenia, whereas the least forested are Malta, Ireland and the Netherlands. Forest data are not sufficiently harmonised across EU countries (Seebach et al., 2011).

Sources of data in EUROSTAT providing land cover and land use data on Forestry / Wooded areas are listed in Table 7. Next we briefly describe the data availability per original source: The source table "FOR_AREA": Total area of forest and other wooded land (FOROWL) is available at NUTS0 level only for 1990, 2000, 2005 and 2010. Table "RAPRO_CPP_LUSE" : Wooded area (l0006) and forestry area (l0016) are available at

NUTS0 level only. Table “LAN_LU_OVW”: Land Use Overview at NUTS2 level for year 2009 only for the following categories of land use: agriculture, forestry, hunting and fishing, heavy environmental impact, services and residential, unused.

Table “LAN_LCV_OVW”: Land Cover Overview at NUTS2 level for year 2009 only for the following categories of land cover: artificial land, cropland, woodland, shrubland, grassland, bare land, water, wetland, agriculture (see also Annex 0, LUCAS Survey). Table “LAN_LCV_WOO”: Land Cover Wooded area at NUTS2 level for year 2009 only for the following categories of land cover: Woodland (LCC), Forest FAO (LCC1), Other wooded land (LCC2), Other wooded land no FAO (LCC3) (LUCAS Survey).

The data at NUTS2 level on forestry (which is often reported as areas of wooded land) are poorly available. For year 2009 the Eurostat provides data on land cover (woodland) and land use (forestry) following the results of a LUCAS survey (Land Use and Cover Area frame Survey). The two concepts (land cover and land use1) are clearly distinguished in the nomenclature of the LUCAS survey. This distinction is particularly worthwhile and allows also the analysis of the interactions between the two (cover and use, (Ewert *et al.*). For example, land cover 'grassland' relates to the actual coverage of the soil while its use can vary from private gardens to public parks to agriculture and others. Grassland with agricultural use is an important component of the Utilized Agricultural Area and can be derived combining the two attribute (land cover and use) referring to the same point. In the LUCAS survey data, compatibility of the adopted definitions with the main international concepts and definitions is guaranteed. This is the reason why the heading "Total woodland" in LUCAS classification includes: 'Forest' and 'other wooded area' as defined according to FAO standards and other areas covered by trees not respecting FAO definition.

The only Table in Eurostat that provides NUTS2 level data over a period 1974-2008 is “AGR_R_LANDUSE”: Wooded area (l0006) in 1000 ha. However, this Table is poorly filled in (see Table 8). Table 8 presents the national level aggregates derived from NUTS2 data and its comparable values from other sources (FOR_AREA, LAN_LCV_OVW).

Common reporting at European level is difficult due to the heterogeneity of national forest definitions and their concepts. Though the current country-level forest area statistics are already reported according to one common forest definition, i.e. that of the Food and Agriculture Organization (FAO) of the United Nations , they cannot be considered as strictly Harmonized (Seebach et al., 2011). According to Seebach et al. (2011) CORINE land cover results had the best accordance with official statistics due to its focus on land use.

For Europe, the Co-ordination of Information on the Environment (CORINE) programme was established in 1985 with the main aim to provide consistent and compatible land/forest cover information for Europe (Bossard, 2000). The CORINE maps are based on a common nomenclature for the land cover/use classes and are mainly derived by visual interpretation of high- resolution Landsat data with a minimum mapping unit (MMU) of 25 ha (Perdigão

[1] As far as the land use is concerned, it is worthwhile to specify that the figures refer specifically to the *use of the land for which any sign is visible in the ground*. Therefore data reported in any table referring to the use has to be interpreted as the '**visible use**'. As an example if a piece of land is regularly used for leisure purposes but no signs are visible on the spot, such a use will not be recorded by the surveyor and will not appear in the figures unless auxiliary data have been used for supporting data collection.

and Annoni, 1997). The underlying CORINE nomenclature includes land cover items but also land use elements and consists in total of 44 land cover/use classes (Bossard, 2000).

The official publication on Forestry annual data (EUROSTAT, 2010) provides figures based on the Food and Agriculture Organisation's (FAO) Forest Resources Assessment (FRA) for 2005, a report of the worldwide survey undertaken by the FAO Forestry Department every 5 years (**Table 8**). Forests are defined as land with a tree canopy cover of more than 10% and an area of more than 0.5 ha. The trees should be able to reach a minimum height of 5 m at maturity in situ. Forests do not include land that is predominantly under agricultural or urban use. Forest formations may be either closed – where trees of various storeys and undergrowth cover a high proportion of the ground – or open – with a continuous vegetation cover, of which tree canopy cover exceeds 10%. Young natural stands and all plantations established for forestry purposes that have yet to reach a canopy cover of 10% or a tree height of 5 m are included under forests. They are stands that normally form part of a forest – albeit temporarily un-stocked because of human intervention or natural causes.

Other wooded land is land of more than 0.5 hectares not classified as a forest. It has a canopy cover of 5-10%, comprising trees able to reach a height of 5 m at maturity in situ. Alternatively, it has a canopy cover of more than 10% comprising trees that will not reach a height of 5 m at maturity in situ (e.g. dwarf or stunted trees) and shrub or bush cover. It does not include land that is predominantly under agricultural or urban use. FOWL is the total of 'Forest' and 'Other wooded land'. Forests available for wood supply (FAWS) are forests where no legal, economic, or environmental restrictions have a bearing on the supply of wood.

Table 7 Sources of Eurostat data on forestry and woodland

Source	Table code	Table Name	Region	Year	Source Parameter	Original unit	Conversion of units
EUROSTAT	FOR_AREA	Area forestry	NUTS0	1990, 2000, 2005, 2010			
EUROSTAT	RAPRO_CPP_LUSE	Land use (annual data)	NUTS0		cppl	1000 ha	ha
EUROSTAT (LUCAS)	LAN_LCV_OVW	Land cover overview, by NUTS 2 regions	NUTS2	2009	lcvo	KM2	Ha
EUROSTAT (LUCAS)	LAN_LCV_WOO	Land covered by woodland, by NUTS 2 regions	NUTS2	2009	lcvw	KM2	Ha
EUROSTAT (LUCAS)	LAN_LU_OVW	Land use overview , by NUTS 2 regions	NUTS2	2009	luov	KM2	Ha
EUROSTAT	PAPRO_CPP_LUSE	Land use (annual data)	NUTS2	1974-2008	cppl	1000 ha	Ha
EUROSTAT	AGR_R_LANDUSE	Land use	NUTS2	1974-2008	Land	1000 ha	Ha
Corine Land Cover			Grid, also NUTS3, NUTS2, NUTS0	2007		ha	

Table 8: Data availability on woodland and forestry (data in Grey are only available at NUTS0 level)

	PAGR_R_LANDUSE, wooded area										FOR-AREA, wooded area			Land Cover, wooded area	Land Use, Forestry area	CORINE, forestry
NUTS	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2000**	**2005**	**2010**	**2009**	**2009**	**2007**
AT	3260	3260	3260	3260	3260	3203	3310	3310	3310	3340	3955	3980	4006	3945	3836	3757
BE	608	607	607	607	607	607			606	606	694	698	706	803	547	611
BG	3697	3698	3698	3703	3695						3480	3678	3927			3492
CY											387	388	387			156
CZ	2635	2637	2639	2643	2644	2646					2637	2647	2657	2975	2643	2556
DE			10531								11076	11076	11076	12051	10257	10391
DK	445	445	473	473	473	486	486	486	486	486	622	636	591	787	518	385
EE	2016	2251	2251	2251		2267					2337	2358	2350	2384	2170	2093
ES	16522	16408	16460	16493	16867			17391			27452	28214	27747	15743	6821	9287
FI	22487	22487	22487	22487	22487	22487	22487	22487	22487	22487	23305	23311	23269	22858	20655	19612
FR	15315	15354	15375	15403	15425	15500	15557	15557	15561		17165	17262	17572	17430	12494	14507
GR	2940	2940									6525	6532	6539	4008	1036	2353
HU	1775	1770	1772	1772	1775	1775	1775	1777	1822	1884	1866	1948	2029	2143	2013	2063
IE											650	710	789	819	620	293
IT	6853	6854	6855	6856	6856	6857	10468	10557	10647		10439	11026	10916	9994	5031	7902
LT	0	1998	1997	1997	2009	2026	2038	2100	2115	2121	2103	2198	2240	2380	2184	1863
LU	88	88	89	89	89	89	90	90			88	88	88	93	87	91
LV	2838	2852	2868	2862	2877	2886	2090	2918			3097	3150	3467	3391	3112	2704
NL	349	350	352	353	349	349	349	349	349	345	360	365	365	457	107	314
PL	8970	9004	9028	9090	9101	9127	9173	9200	9229		9059	9200	9337	10312	8336	9194
PT	3465	3465	3465	3465	3465	3465	3529	3529	3529	3541	3667	3867	3611	4084	3336	2437
RO	6791	6457	6606	6663	6752	6779	6743	6755	6741	6750	6600	6649	6733			6987
SE	22323	22323	22323	22323	22323	23507		23507	23507	23889	30653	30930	31247	29648	24442	25290
SI	1218	1218	1283	1283	1283	1283	1283	1283	1283		1283	1308	1274	1284	1029	1138
SK	1998	2000	2001	2002	2003	2004	2005	2005	2007	2008	1921	1932	1933	2278	1941	1932
UK											2813	2865	2901	3615	2084	1984

5 EMPIRICAL WORK: CLARIFYING REGIONAL DIFFERENCES

5.1 Drivers of regional gross value added

This section deals with establishing drivers of regional gross value added (GVA). Relevant explanatory variables were found by reviewing the literature on economic growth theory.

The Solow model (Solow, 1956) , one of the most influential growth models, considers capital investments and technical progress as key drivers of economic growth. We thus put emphasis on capital investments. The first explanatory variable considered is the change in a region's capital stock from one period to the next. It captures the change or growth in the region's capital stock. The second explanatory variable is defined by the ratio of capital to regional employment, and is a measure of capital deepening (Jorgenson *et al.*, 2000a). Capital deepening is thought to make workers more productive by providing more capital per employee.

The endogenous growth literature (for an overview see Romer, 1994) emphasizes the role of knowledge as a contributor to growth. Factors such as provision of education and R&D, as well as openness and competition can be considered important drivers in this respect. In relation to the endogenous growth theory we consider the size of a region's education sector and public sector and its population size as important explanatory variables. The size of the education sector is measured by the ratio of employees in the education sector to total regional employment, and by the ratio of GVA of the education sector to the region's GVA. Similar variables are developed for the size of the region's public sector. The region's population size may indicate the attractiveness of the region, as well as being a proxy for agglomeration externalities.

We further follow Jorgenson et al. (2000b) and introduce a proxy for labor quality. Jorgenson et al. define labor quality as growth in labor services minus growth in hours worked. This is simply a measure of how much more labor that can be supplied with the same amount of hours worked. We do not have information on hours worked in our dataset. However, we have wage information which works as a proxy for labor quality.

The shift share analysis was originally proposed by Dunn (1960) and explains regional growth by national growth, industry mix, and a region shifter (residual). We follow the shift share approach and consider growth in national GVA and proxies for regional industry mix as relevant explanatory variables for regional growth. Regional industry mix is defined as the ratio of sector specific GVA to the region's total GVA. We define variables for three main aggregate sectors; agriculture, industry, and labor.

In addition to the previous mentioned explanatory variables we also consider the lagged dependent variable, i.e. previous year's growth in GVA, as an explanatory variable. This is often done in the empirical growth theory to test the hypothesis of convergence. That is, to test if slow-growing countries or regions appear to "catch-up" with faster growing regions over time.

5.2 Empirical considerations in the downscaling program

Section 3.2 requires empirical work to quantify differences between regional and national growth developments. In order to estimate the coefficients for employment (2.b) and other variables (y and l), the following specification is proposed:

$$\dot{e}_{cr} = \alpha_{ir}^{e} + (1 - \beta_{ir}^{e})\dot{e}_{in} + u_{ir} \quad (2.a)$$

Where u_{cr} is an error term.

Given that the panel data is available, the equation (2.a) can be estimated with fixed-effects α_{ir}. With t standing for the time index and transforming the dependent variable for convenience into $\dot{e}_{ir} - \dot{e}_{in}$, the estimated regression looks as follows:

$$\dot{e}_{irt} - \dot{e}_{int} = \alpha_{ir} + \beta_{ir}\ \dot{e}_{int} + u_{irt} \qquad (2.b)$$

The following transformation of the equation (2.b) is estimated for each sector i individually with OLS:

$$\left(\text{Log}\, e_{r,t} - \log\ e_{r,t-1}\right) - \left(\log e_{n,t} - \dot{}\log e_{n,t-1}\ \right) = \sum_r Dummy_r\ +$$

$$+ \sum_r \beta_r\ Dummy\ \left(\log e_{n,t} - \dot{}\log e_{n,t-1}\ \right) + u_{rt} \qquad (2.c)$$

This equation tends to catch also short-term business cycle effects, while the scenario analysis is focused on long term developments. In order to filter out the short term effects and focus on long term effects, the following error correction formulation of the equation could be estimated:

$$d\dot{q}_{cr} = \lambda_{cr}[\dot{q}_{cr,-1} - \alpha_{cr}^{q} - \left(1 - \beta_{cr}^{q}\right)\dot{q}_{cn,-1}] + \nu_{cr} d\dot{q}_{cn} + \gamma_{cr} d\dot{q}_{cr,-1} + u_{cr} \qquad (2.d)$$

$$\left(\log e_{r,t} - \log\ e_{r,t-1}\right) - \left(\log e_{n,t} - \dot{}\log e_{n,t-1}\ \right) =$$
$$\sum_r Dummy_r\ + \sum_r \beta_r\ Dummy\ \left(\log e_{n,t} - \dot{}\log e_{n,t-1}\ \right) +$$
$$u_{rt} + \gamma(\log\ e_{r,t-1} - \log\ e_{r,t-2}) + \delta(\log\ e_{n,t-1} - \log\ e_{n,t-2}) \qquad (2.e)$$

The estimation of equation (2.d) was not feasible so the focus has been on estimating the equation 2.c. The easiest representation of the Equation under (2.c) can be presented by the panel data model that takes the form:

$$y_{it} = \alpha + x_{it}\beta + v_i + \varepsilon_{it} \qquad (2.f)$$

y_{it} is the dependent variable, which variation is sought explained by the independent variables, x_{it}. The effects of the independent variables on the dependent variables are captured by the coefficients, β. The model has a composite error term, $v_i + \varepsilon_{it}$. The first error term component captures time invariant region specific effects. They allow us to assess differences across regions which are not accounted for by the explanatory variables.

We apply two specifications of the dependent variable. First, the deviation of the percentage change in a region's in GVA from the percentage change in its county's GVA from one year to the next (percentage change in the nuts2 region – percentage change in nuts0 region) is applied as the dependent variable. This is a measure of the deviation between the region's growth rate and its country's growth rate. We consider this difference as an inflation adjustment and apply nominal GVA when calculating

this dependent variable. Second, the percentage change in a region's GVA from one year to the next is applied as the dependent variable. Since this variable cannot be considered inflation adjusted, we apply price indices to adjust for inflation. Both the inflation adjusted variable and the nominal variable is applied in the regressions, primarily for comparisons.

The specification of independent variables follows our discussion from section 5.1 in the report. The most important independent variables considered in the model specifications are:

- Differences in wages
- Capital growth and differences in capital growth
- Capital deepening
- Labor quality
- Size of educational sector and public sector
- Sizes of industry, services, and agricultural sector
- Lagged dependent variable

We have a large dataset that covers most of the European Union. Hence, differences across countries may result in much heterogeneity and lead to low explanatory power for the models. To reduce this problem, we also consider country specific dummy variables in some of the model specifications. This can be considered as introducing country-specific effects to the models.

Another important feature is that of structural breaks in the time series. One of the perhaps most important breaks is the introduction of EMU in 1999. We generate a dummy variable to account for this change. Our results indicate that it does not seem to have an impact on the differences across regions. We also try to run the regression for only a few years, to see whether the overall result changes. For these tests, we do, in general, find that the coefficients and fit does not change much across the periods considered.

The models are estimated using the fixed-effect estimator. This estimator is robust to correlations between the region specific error-term component and the explanatory variables. We use the random effects Arellano-Bond estimator for all model specification with the lagged dependent variable employed as an independent variable. When the lagged dependent variable is introduced as an independent variable it causes an endogeneity problem because the variable depends upon the region specific error term component. The Arellano-Bond estimator allows us to resolve this problem. All models are estimated using the econometric software STATA.

5.3 Results of regression analysis

5.3.1 Estimates for industry, services, agriculture and the whole economy

Table 9 presents the 16 sectors of economy for which the data at NUTS2 level are available for variables like Gross Value Added and Employment. Values on Wages and Capital are available for 6 sectors only (further aggregated). This section presents the estimation results for the three sectors of economy: agriculture, industry, services.

Our strategy has been to evaluate various model specifications and select the "best model" based on its goodness of fit, i.e. how well the explanatory variables capture the variation of the dependent variable. The models were run both as an aggregate for the whole economy and separately for the three main sectors; industry, services, and agriculture.

There are two main findings from our regression analysis. First, national growth seems to be a key determinant of regional growth in terms of GVA. Second, we find empirical support for the convergence hypothesis.

We report three model estimates to illustrate the impact of national growth on regional growth. The first regression applies the deviation of the percentage change in a region's in GVA from the percent-

age change in its county's GVA from one year to the next as the dependent variable, while the two other regressions apply the percentage change in regional GVA as the dependent variable. The two latter models cover both the case with nominal and inflation adjusted dependent variable. For both models, the percentage change in GVA for the country is applied as an independent variable. In addition, difference in wages and capital stock between the regions and their respective countries is applied as the other independent variables. The results from the three models, along with the R^2 measure of goodness of fit is reported in Table 10. P-values are reported in brackets:

Table 10: The implications of national growth

	Regional growth-National growth	Regional growth (nominal values)	Regional growth (inflation adjusted)
National growth	-	0.979 (0.000)	0.892 (0.000)
Wage difference	0.008 (0.102)	0.008 (0.096)	0.007 (0.057)
Capital difference	0.008 (0.044)	0.008 (0.051)	0.008 (0.122)
Constant	-0.103 (0.065)	0.010 (0.923)	0.248 (0.082)
Overall R2	0.009	0.790	0.344

It is clear from the table that the overall goodness of fit drops substantially when national growth is not employed as an independent variable. This result holds independent of the selection of other independent variables. We interpret this as that national growth is a key driver of regional growth, implying that the explanatory power of the model becomes close to zero when this variable is omitted or enter indirectly in the dependent variable. Notice further that the effect of national growth on regional growth is close to one in both model 2 and 3. The interpretation is that a percentage change in national GVA lead to a percentage change in regional GVA, i.e. the regional growth is determined by the national growth. This raises question as to whether regional policies are important for regional growth, or whether national growth policies should be regarded the key driver.

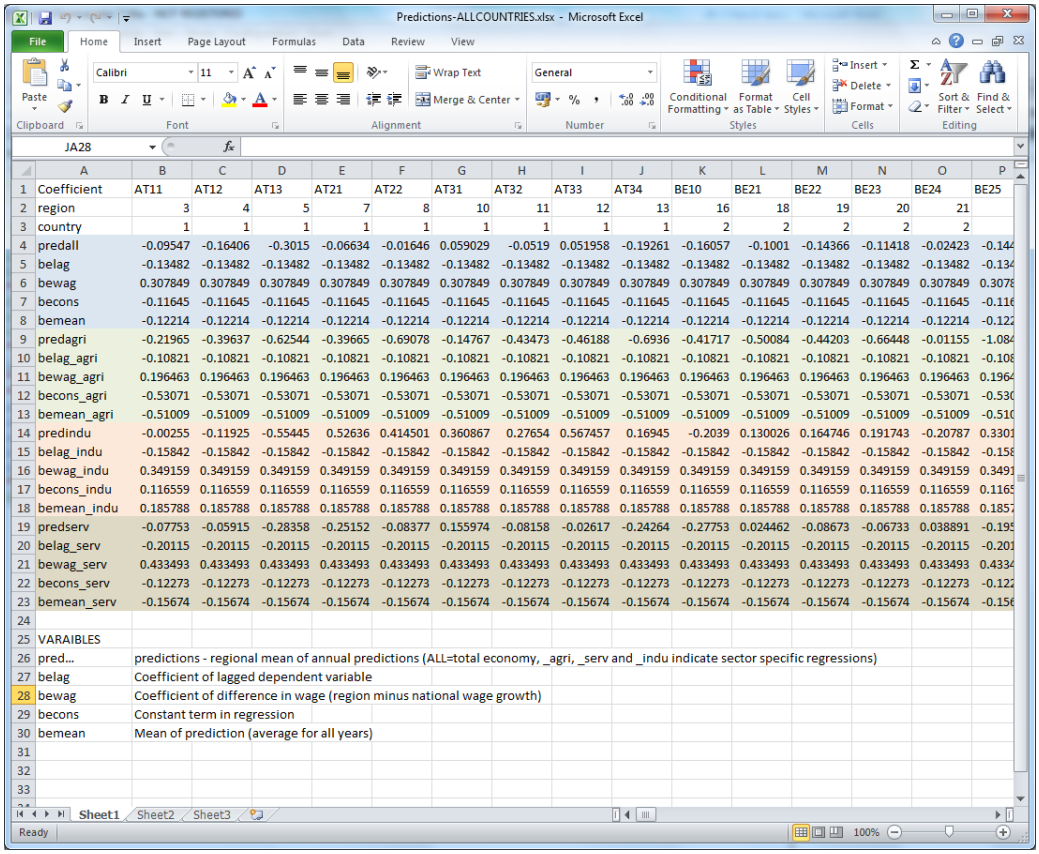
The Arellano-Bond estimations support the convergence hypothesis. That is, slow-growing regions seem to catch up with faster growing regions over time. This is indicated by a negative coefficient for the lagged dependent variable, as seen in Table 11. This is a usual finding in the empirical growth literature.

Table 11: Test of convergence hypothesis

	Regional growth (nominal values)	Regional growth (inflation adjusted)
Lagged variable	-0.053 (0.000)	-0.146 (0.000)
National growth	0. 988 (0.000)	0.950 (0.057)
Wage difference	0.317 (0.000)	0.285 (0.000)
Constant	0.246 (0.033)	0.468 (0.001)

Both models find a negative and significant effect of the lagged dependent variable. In other words, regional growth levels off over time – implying that there will be a catching up of regions over time. The model specifications in Table 11 further illustrate, as pointed out above, that national growth seems to be a key determinant of regional growth.

The predicted values are calculated for the three sectors of economy and for the overall economy as well (see illustration in Figure 6).



Predictions-ALLCOUNTRIES.xlsx - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Coefficient	AT11	AT12	AT13	AT21	AT22	AT31	AT32	AT33	AT34	BE10	BE21	BE22	BE23	BE24	BE25
2	region	3	4	5	7	8	10	11	12	13	16	18	19	20	21	
3	country	1	1	1	1	1	1	1	1	1	2	2	2	2	2	
4	predall	-0.09547	-0.16406	-0.3015	-0.06634	-0.01646	0.059029	-0.0519	0.051958	-0.19261	-0.16057	-0.1001	-0.14366	-0.11418	-0.02423	-0.144
5	belag	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.13482	-0.134
6	bewag	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.307849	0.3078
7	becons	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.11645	-0.116
8	bemean	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.12214	-0.122
9	predagri	-0.21965	-0.39637	-0.62544	-0.39665	-0.69078	-0.14767	-0.43473	-0.46188	-0.6936	-0.41717	-0.50084	-0.44203	-0.66448	-0.01155	-1.084
10	belag_agri	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.10821	-0.108
11	bewag_agri	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.196463	0.1964
12	becons_agri	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.53071	-0.530
13	bemean_agri	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.51009	-0.510
14	predindu	-0.00255	-0.11925	-0.55445	0.52636	0.414501	0.360867	0.27654	0.567457	0.16945	-0.2039	0.130026	0.164746	0.191743	-0.20787	0.3301
15	belag_indu	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.15842	-0.158
16	bewag_indu	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.349159	0.3491
17	becons_indu	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.116559	0.1165
18	bemean_indu	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.185788	0.1857
19	predserv	-0.07753	-0.05915	-0.28358	-0.25152	-0.08377	0.155974	-0.08158	-0.02617	-0.24264	-0.27753	0.024462	-0.08673	-0.06733	0.038891	-0.195
20	belag_serv	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.20115	-0.201
21	bewag_serv	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.433493	0.4334
22	becons_serv	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.12273	-0.122
23	bemean_serv	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.15674	-0.156
24																
25	VARAIBLES															
26	pred...	predictions - regional mean of annual predictions (ALL=total economy, _agri, _serv and _indu indicate sector specific regressions)														
27	belag	Coefficient of lagged dependent variable														
28	bewag	Coefficient of difference in wage (region minus national wage growth)														
29	becons	Constant term in regression														
30	bemean	Mean of prediction (average for all years)														
31																
32																
33																

Sheet1 Sheet2 Sheet3

Ready

Figure 6: Illustration of the predicted value calculation at NUTS2 level for three sectors and the total of economy

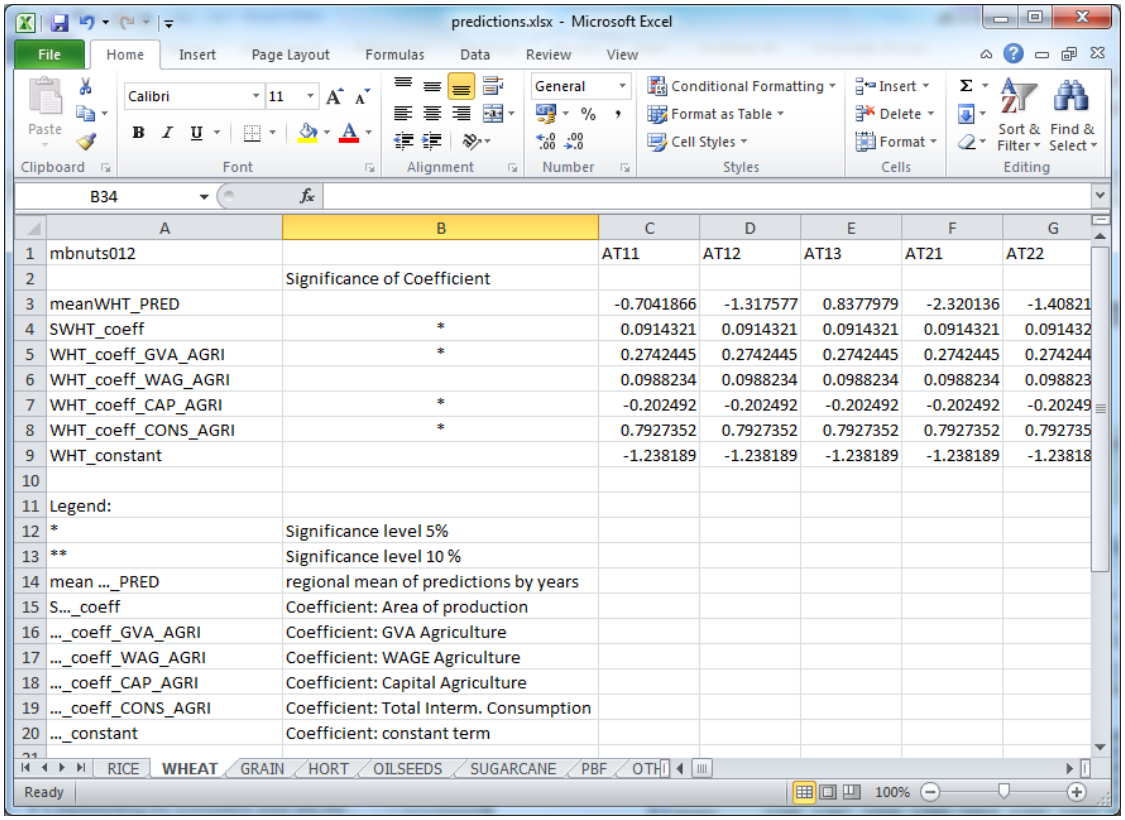
5.3.2 Estimates for agricultural sectors

Total Agricultural sector comprises the crop sector and the animal sector. The first one includes the products Rice, Wheat, Cereal Grains, Horticultural Goods (vegetables, fruit, nuts (incl. wine)), Oil seeds (incl. olive oil), Sugar cane and beet, Plant based fibres and 'other crops'. The animal sector includes the product category Animals (includes sheep, goats, horse and cattle), other animals (includes Pigs, Poultry, other animals, eggs and other animal products) and Raw Milk.

In all agricultural sectors fixed effect regression models are used. In order to obtain robust estimates concerning heteroscedasticity or within panel serial correlation we can use the STATA option 'vce(robust)'. The option 'vce(robust)' is equivalent to the use of 'vce(cluster region)' because we will use fixed effects regression. The variable region is the panel variable which describes the NUTS2 regions and the time variable is year.

Several alternative models have been tested when estimating the difference between regional and national percentage changes, first as 1) a function of the area of production, then 2) with additional variable Wage per worker as a proxy variable for labour quality (following the study of (Jorgenson and Stiroh, 2000)), 3) adding the variable "Capital deepening" ((Jorgenson *et al.*, 2000a)) defined as capital (gross fixed capital formation) per worker and 4) finally extending the model with consumption of agricultural goods (measured as Total intermediate consumption of agriculture).

Four such specifications have been run for all agricultural sectors. The predicted values are generated at NUTS2 level with the results for model 4 and are illustrated in Figure 7.



	A	B	C	D	E	F	G
1	mbnuts012		AT11	AT12	AT13	AT21	AT22
2		Significance of Coefficient					
3	meanWHT_PRED		-0.7041866	-1.317577	0.8377979	-2.320136	-1.40821
4	SWHT_coeff	*	0.0914321	0.0914321	0.0914321	0.0914321	0.091432
5	WHT_coeff_GVA_AGRI	*	0.2742445	0.2742445	0.2742445	0.2742445	0.274244
6	WHT_coeff_WAG_AGRI		0.0988234	0.0988234	0.0988234	0.0988234	0.098823
7	WHT_coeff_CAP_AGRI	*	-0.202492	-0.202492	-0.202492	-0.202492	-0.20249
8	WHT_coeff_CONS_AGRI	*	0.7927352	0.7927352	0.7927352	0.7927352	0.792735
9	WHT_constant		-1.238189	-1.238189	-1.238189	-1.238189	-1.23818
10							
11	Legend:						
12	*	Significance level 5%					
13	**	Significance level 10 %					
14	mean ..._PRED	regional mean of predictions by years					
15	S..._coeff	Coefficient: Area of production					
16	..._coeff_GVA_AGRI	Coefficient: GVA Agriculture					
17	..._coeff_WAG_AGRI	Coefficient: WAGE Agriculture					
18	..._coeff_CAP_AGRI	Coefficient: Capital Agriculture					
19	..._coeff_CONS_AGRI	Coefficient: Total Interm. Consumption					
20	..._constant	Coefficient: constant term					

Figure 7: Illustration of the predicted values calculation at NUTS2 level for nine agricultural sectors (displayed for "Wheat").

5.4 Conclusion

The econometric estimations include mainly variables that will not change over time. Therefore, it is not useful to put the coefficients in the model. The predicted values as documented in Figure 6 and Figure 7 are integrated into the downscaling model as a constant term (see Equation 3.2.a in Chapter 3). When one is able to get significant results also for variables that may change over time, these may be implemented in the model later on.

The use of econometric estimates for the calibration of the model has been illustrated at different sector aggregations, but the econometric results are still far from satisfactory. Regional econometric research is a very labour intensive activity, and was not part of the targets of the PRIMA project. Nevertheless, we have shown that the modelling approach used in the PRIMA downscaling method has ample opportunity to include empirical information from econometric or other sources into the model.

6 SOFTWARE TOOLS ASSISTING IN EXECUTING THE DOWNSCALING PROCEDURE

6.1 Logistics of running downscaling of simulations

We have developed a simulation tool for running the downscaling routine. The general system is called DSS, Dynamic Steering System. For MAGNET procedures to process data and to change model aggregations and to add model components are introduced. But the main part of DSS is running scenarios. The DSS tool for running MAGNET scenarios is not discussed here, but the tool to run the downscaling of these scenarios has been specifically developed for PRIMA and guarantees a smooth coordination between running the downscaling procedures for these scenarios.

When the DSS.bat file is run, the following screen appears (see Figure 8) indicating under the "Downscale" tag the possibility to open New and an Existing scenario (see Figure 9). An alternative scenario that has been run by MAGNET can be selected in its usual way (see (Woltjer, 2009) for further instructions on how to run scenarios in MAGNET) by browsing through available scenarios (Figure 10).

Next to choosing the scenario, the user may choose the countries selectively for which the results will be downscaled. Figure 11 illustrates the selection of all EU countries for which the downscaling has been programmed.

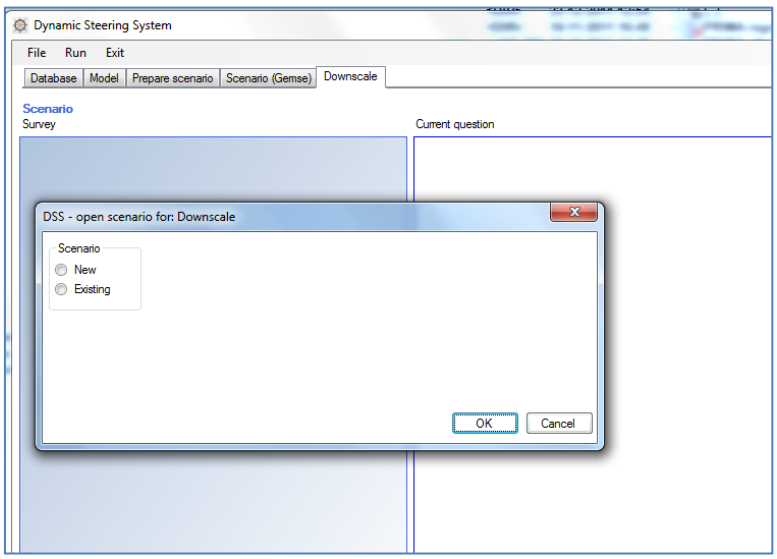


Figure 8: Screen shot of the start up of the DSS system

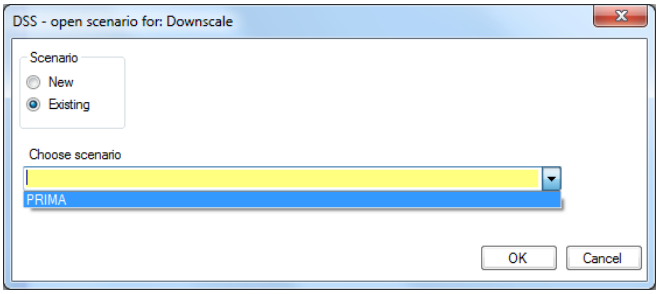


Figure 9: Screen shot of the Existing Scenario choice to be downscaled

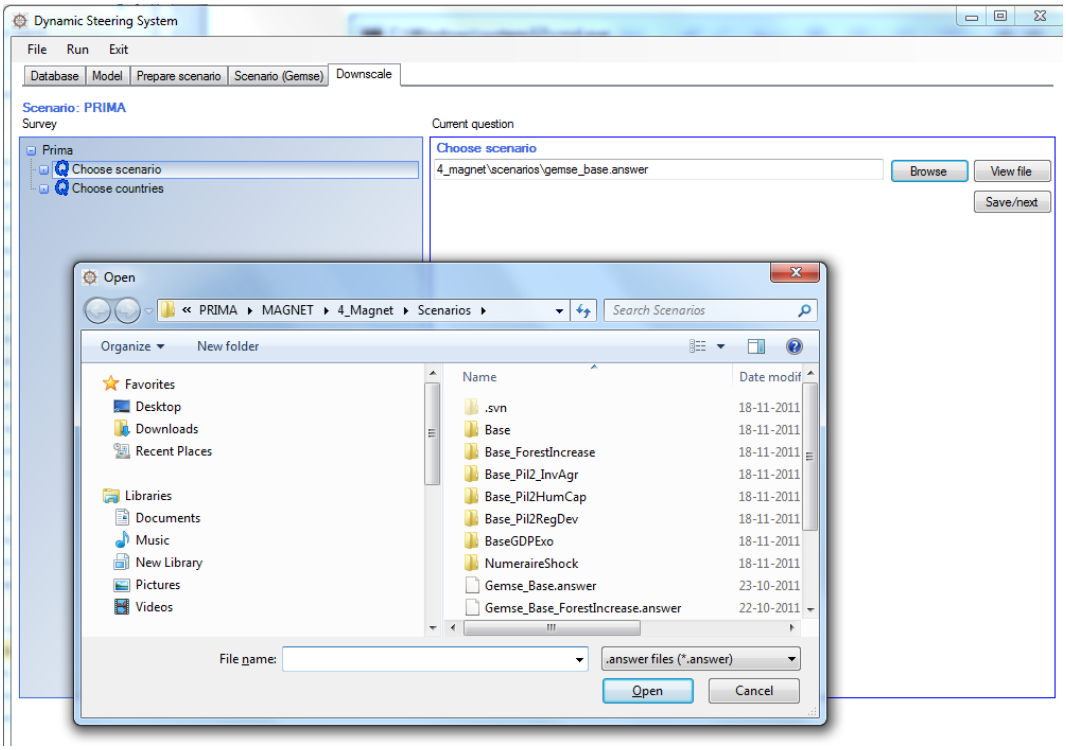


Figure 10: Screen shot of selecting MAGNET scenarios for downscaling

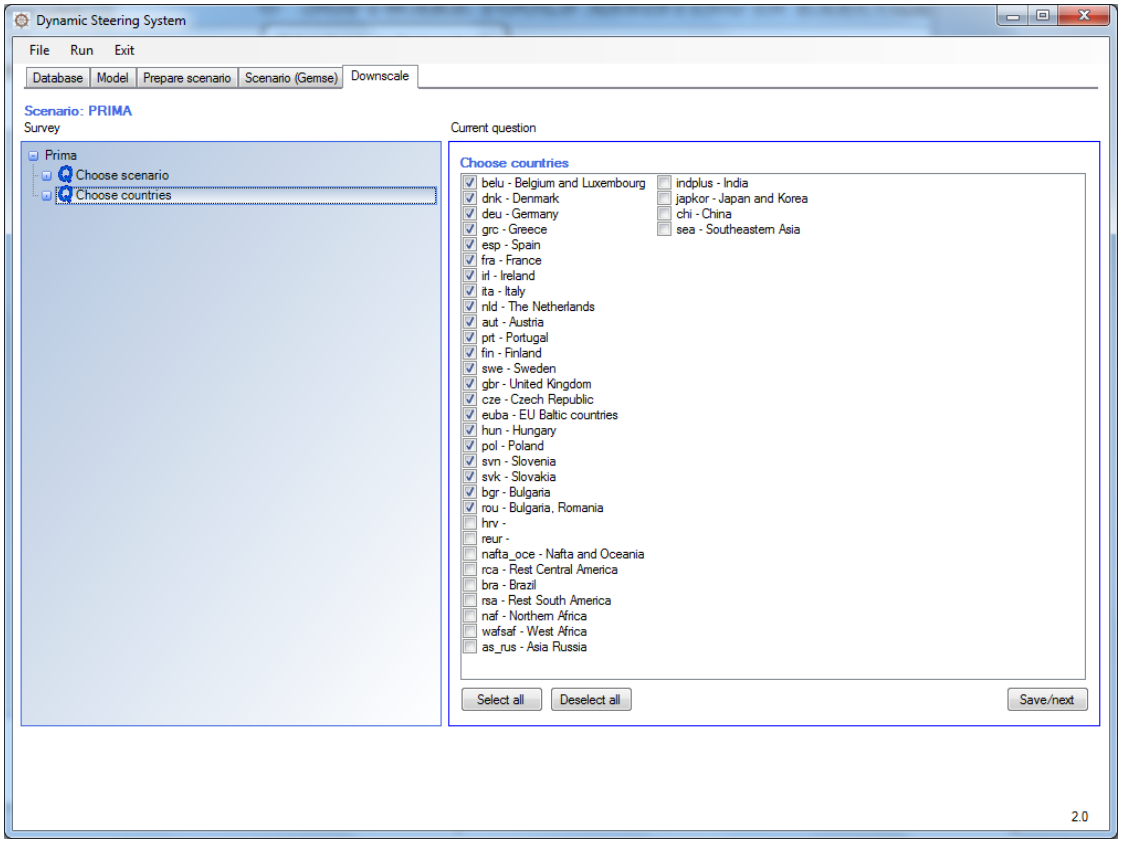


Figure 11: Screen shot of selecting the countries for which the results from MAGNET will be downscaled

Once the selection of the New or Existing scenario from MAGNET as well as the countries of interest has been completed, the running of the downscaling model can be executed by clicking on the "Run" button in the top menu. Then a DOS-environment screen will indicate the process (Figure 12) until it has been successfully completed (Figure 13). The results can now be viewed.

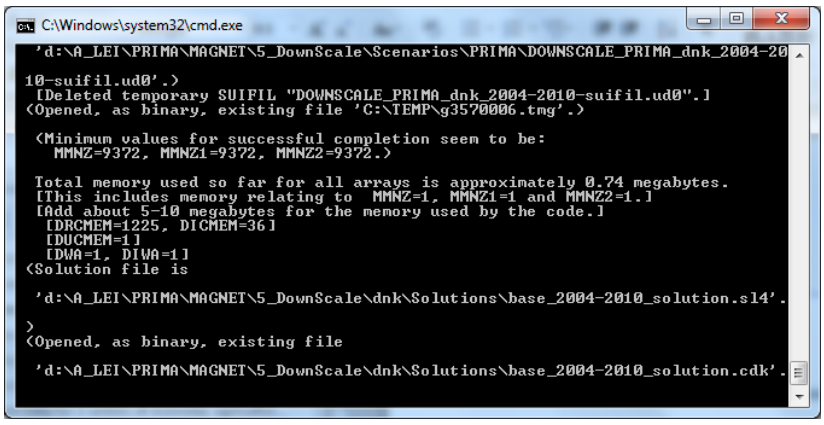


Figure 12: Screen shot of the downscaling model run

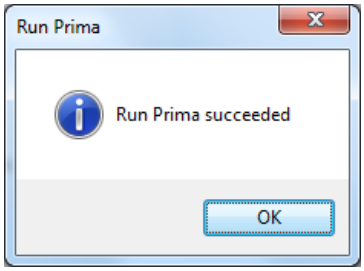


Figure 13: Screen shot of the successful run of the downscaling program

This shows how easy the system works. But be aware of all the complications that are being solved by running such a procedure. First a program has been developed to distribute all required data from general files generated by metabase (as discussed in chapter 5) to country-specific files. Then DSS reads the scenario information from the MAGNET scenario file, and creates runs for each period in the MAGNET scenario file and each country that has been selected for downscaling. DSS generates command files that tell the program where to find all files, both input and output files from MAGNET and data and parameter files for the downscaling procedures. It also defines consistently named output files for all scenarios, periods and regions. Finally, the results that have been generated by country are integrated into big files with all regions. In this way the output is ready to be analyzed by a program specifically designed for MAGNET, the GEMSE_Analist.

6.2 Visualization of results

The visualization of results is similar to what is available to view the MAGNET model results at the aggregated level and is described in Woltjer (2009).

6.2.1 Selecting scenarios to analyse

Those scenarios for which the downscaling has been run can be selected to display the results at the regional level (Figure 14). Often it is desirable to select multiple scenarios for comparative purposes.

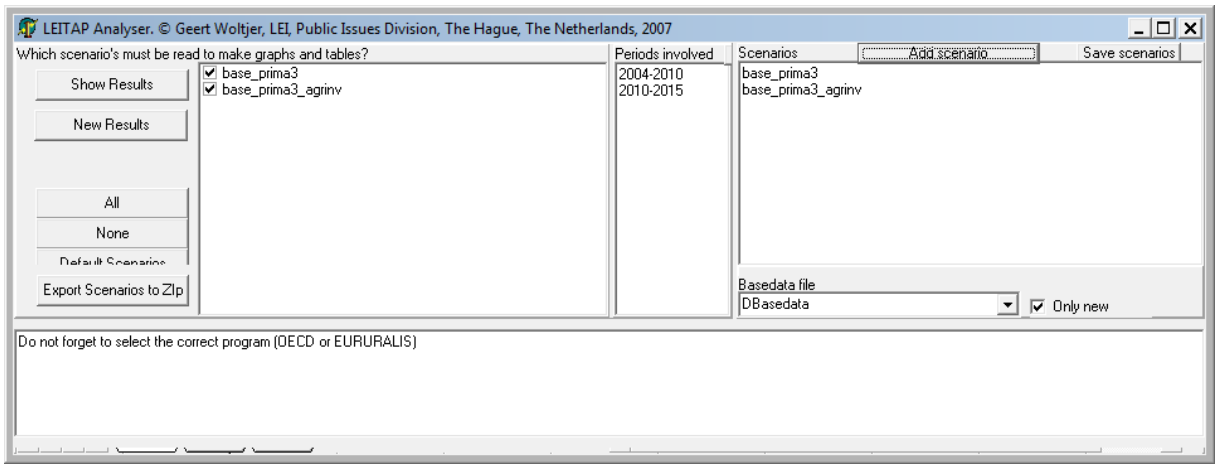


Figure 14: Selecting scenarios for which the results have been downscaled to visualise the results further

In the textbox at the right the user can add the scenarios, where the program automatically selects scenarios that are available for analysis. The name of each scenario to be read is on a new line. If a scenario is based on the updates of another scenario, one need to type a comma after the scenario-

name and type the scenarioname on which it is based. As a help the user can click on the button “Add scenario” on the top of the textbox; it just gives the scenarios that can be added, and is not more than a help to type the scenarios. The textbox is really a textbox, so the user can copy through Ctrl C and paste through Ctrl V. Having done this, click on Save scenarios, and the list of scenarios is moved to the textbox on the left and the scenarios are saved in the file Scenariolst.txt in the root of the directory where the data are stored.

The user needs to be aware to select the correct file with the basedata in the box below the textbox for the scenarios. All scenarios must use the same basedata file. To read in scenarios, all scenarios must have the same list of periods. Those periods are typed in at the textbox in the middle. It is again a textbox the user can edit (in the future the list of periods will be automatically created by the DSS system). If the correct periods are entered, click on Save periods. This saves the period definitions in the file Periodnames.txt in the root of the directory where the data are stored.

From the list of scenarios, in the left textbox the user can choose which ones will be read. With the buttons Select all, or Select one, and clicking on the scenarios it is possible to create the list of scenarios one likes to read. Then click on Show Results. When you read a scenario for the first time, it may require a lot of time. The program shows which variables it is reading, although sometimes this stops while the program continues to read. If the reading of the scenarios is ready, the window “Show results” and a message “Reading information FINISHED; You may view the results now” will be displayed. During reading the scenario the relevant information is stored in an efficient way in the subdirectory Matrixdata (that is what speeds up the second reading). In the main menu one can always choose “Show Results” to go back to the screen where the scenarios are being selected.

6.2.2 Selecting variables, sectors and regions for visualizations

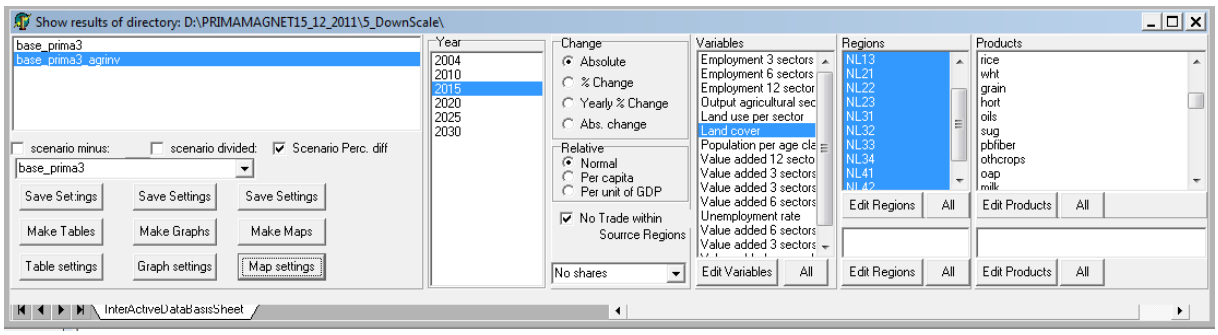


Figure 15: Window to display results in flexible form (Tables, Graphs, Maps) as absolute or % change for selected variables, regions and time periods

When reading is finished, the window appears where one can analyze the scenario results (Figure 15). In the list box at the top left, you see the list of scenarios you read. You can select the scenarios you want to show directly or in case you have a naming system of the scenarios that offers possibilities for systematic selection, by double clicking on the list box with the scenarios.

The periods can be selected in the list box Year. In the radio group Change one can decide to display absolute values, the percentage changes, or the average percentage changes per year. In the radio group below (Relative) it is possible to create relative values by e.g. per inhabitant or unit of GDP.

In the box Variables one can select the variables to be visualized (Figure 16). Use the Control and Shift key for easy selection. But not all available variables are automatically visible in this list box. When clicking on “ Edit Variables” , you see the list of all variables that are available:

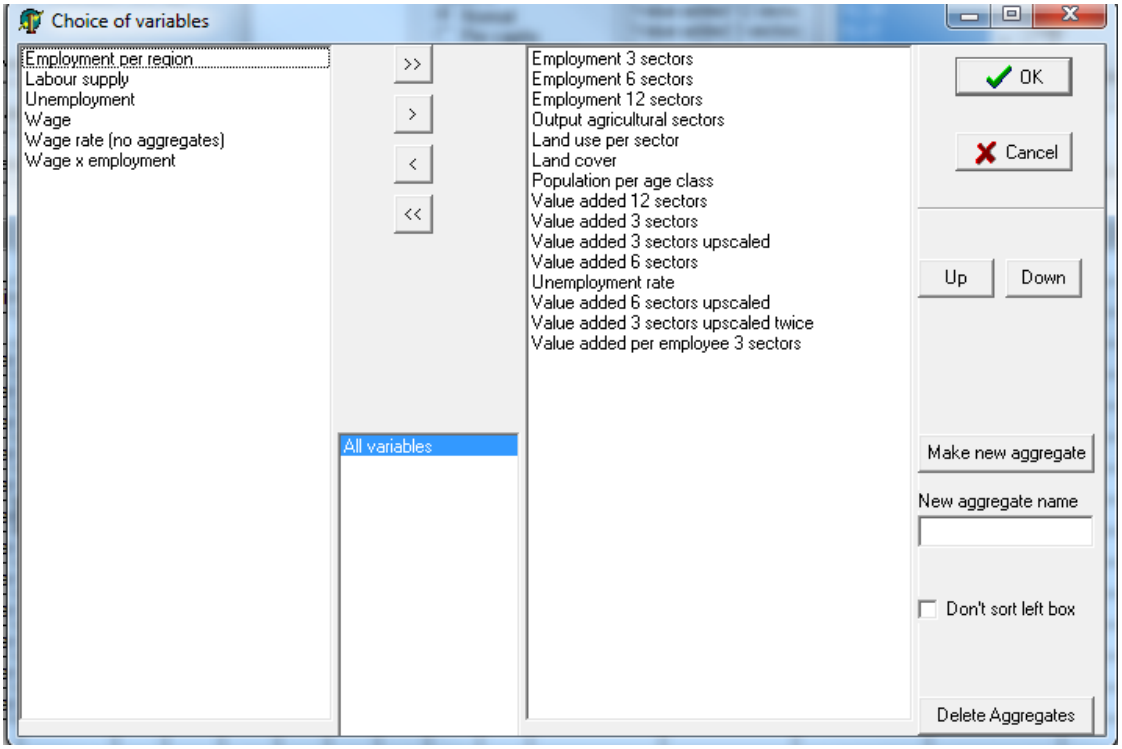


Figure 16: Screen shot for the choice of variables

You may move the variable names with the mouse or buttons in the middle from the left box to the right box to add them to the selected lists. If it is convenient, you may define groups of variables (Aggregates) by typing a name in the edit field “New aggregate name” and then clicking on the button Make new aggregate. If you click on the created name in the middle of list box, you see all variables from the selected list box that are in the left hand list box but not in the right hand list box. If you have long lists of variables, this makes selecting variables easier. If you have selected the variables you want to use, click on OK.

In the same way as you can select variables, you can also select source regions, destination regions, source sectors and destination sectors. The source regions and sectors are the top list boxes, while the destination sectors and regions are in the list boxes below that. The names of these boxes are based on international trade data, where a product from a sector in country is shipped to a sector in another country. But what is in the lists is determined at the moment a variable was defined, as we will see later.

If factor input data are read, then the source sector is probably one of the endowment sectors, while the destination sector is one of the sectors for which it is an input. If you don’t select endowment sectors in this case, nothing relevant can be shown!

The selection of regions or sectors has some extra possibilities compared with variables. Therefore, let us have a look at the window to select the regions by clicking on Edit Regions (Figure 17):

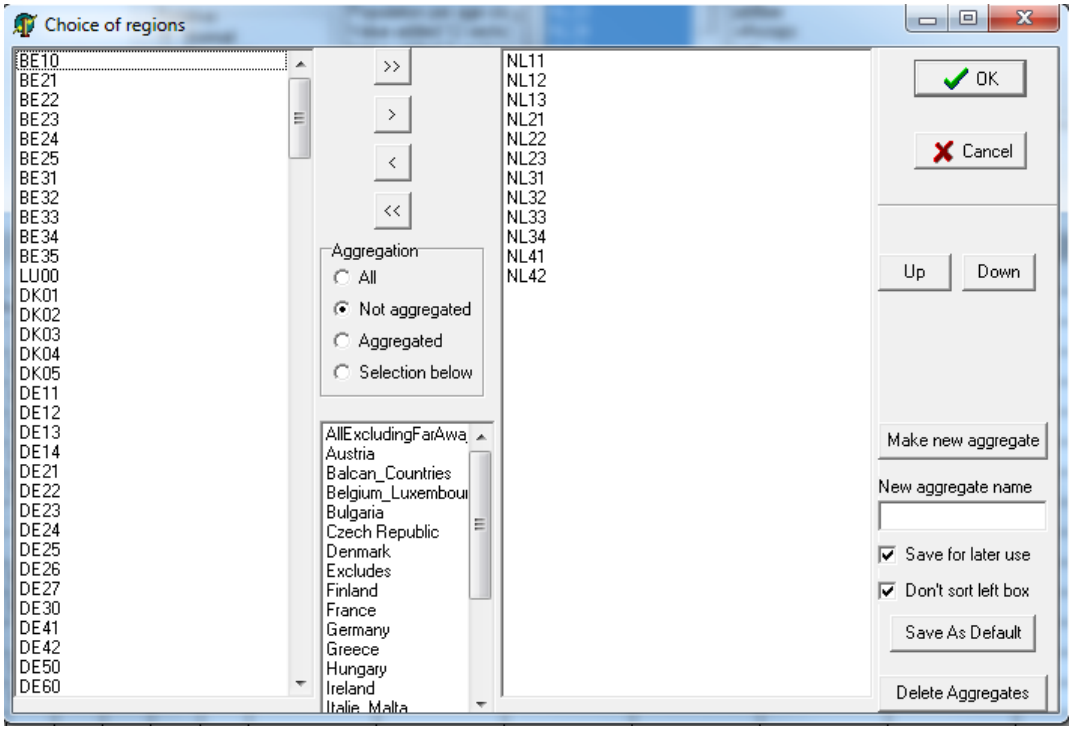


Figure 17: Screen shot for the choice of regions and its options

The box shows all available regions at the left hand side. This box is normally sorted alphabetically, but if you have selected the checkbox on the right "Don't sort left box" then in order in the datafiles is used. You can make a selection of those regions by clicking on a grouped (aggregate) variable in the middle box. In contrast with the Variable selection, you can select also the aggregate variables, like Africa or EU10 by clicking on the variable and moving it to the right hand box.

If you have a selection of countries in the right hand box, you can create a new aggregate variable by typing a name in New aggregate name, selecting Save for later use if you want to use it also when you restart the program later, and click on Make new aggregate to create the new aggregate. The name becomes visible in the list box in the middle.

If you want to delete a defined aggregate, then select the aggregates you want to delete in the middle box, and click on Delete Aggregates. Deleting aggregates can not be undone; you just have to create the aggregate again. If you have selected the regions you like to see then click on OK.

6.2.3 Creating a table

If you have selected the scenarios, variables, years, and sectors you want to see, you can click on Make Tables to create the tables (Figure 18).

In many cases the table you created is not in the lay-out you would like to have. You can click on Table Settings to show a panel where you can change some settings:

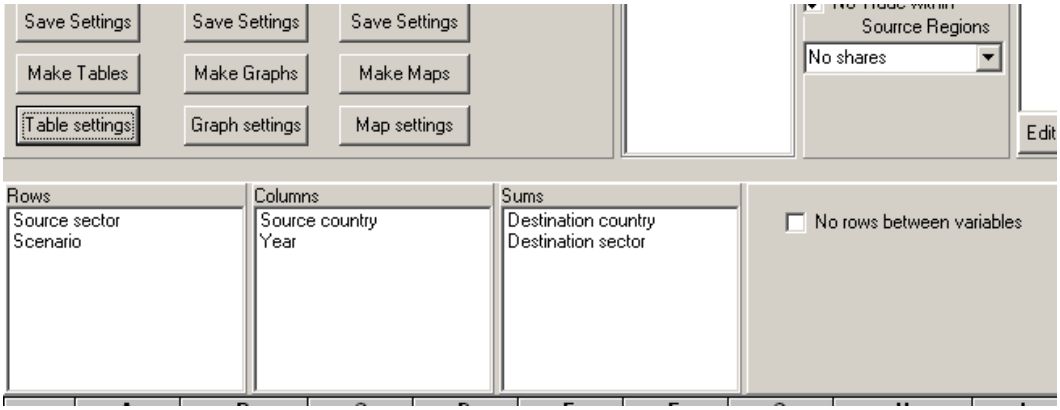
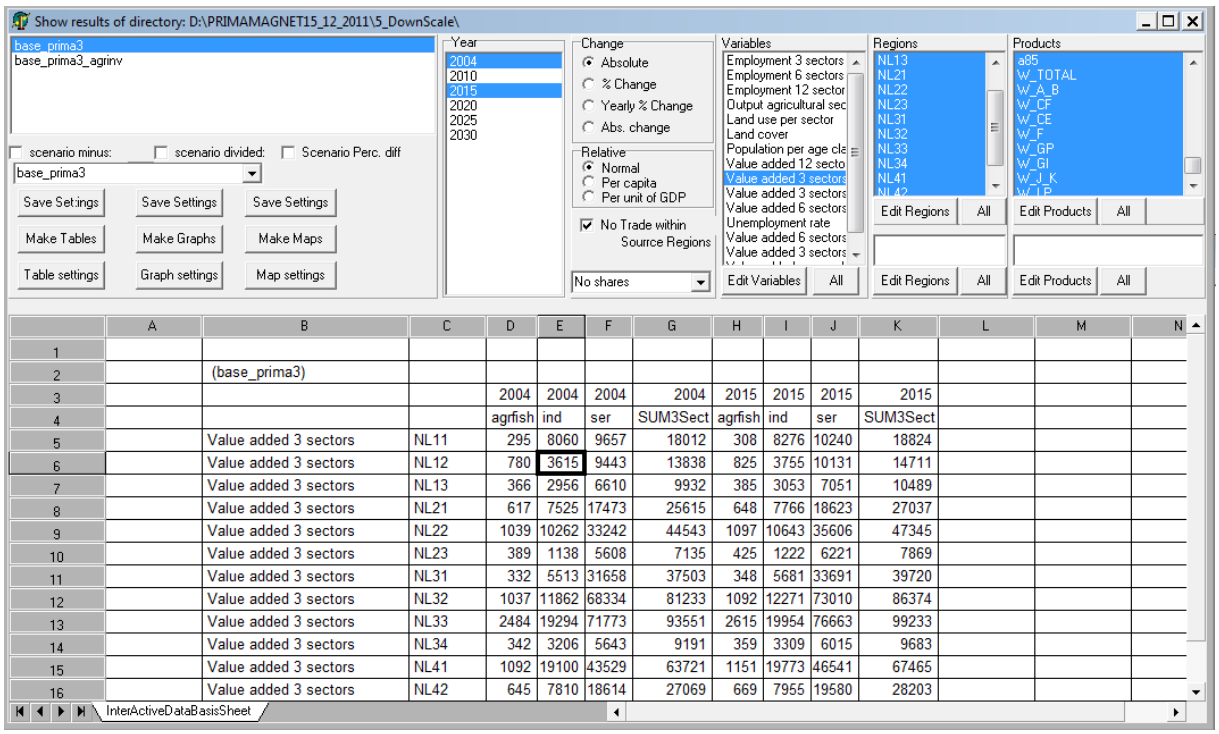


Figure 18: Screen shot for selecting the Table outline (rows, columns and sums)

Boxes where you can select what you would like in the rows, what in columns and what you would like to sum over the selected regions or sectors. You can move the selections with the mouse from one box till the other.

Variables are normally created in separate tables below each other. Sometimes it is useful to create one big table with the variable names in the rows. This you can accomplish by checking the box No rows between variables. Figure 19 illustrates the results of a Tabular view.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2		(base_prima3)												
3				2004	2004	2004	2004	2015	2015	2015	2015			
4				agrfish	ind	ser	SUM3Sect	agrfish	ind	ser	SUM3Sect			
5		Value added 3 sectors	NL11	295	8060	9657	18012	308	8276	10240	18824			
6		Value added 3 sectors	NL12	780	3615	9443	13838	825	3755	10131	14711			
7		Value added 3 sectors	NL13	366	2956	6610	9932	385	3053	7051	10489			
8		Value added 3 sectors	NL21	617	7525	17473	25615	648	7766	18623	27037			
9		Value added 3 sectors	NL22	1039	10262	33242	44543	1097	10643	35606	47345			
10		Value added 3 sectors	NL23	389	1138	5608	7135	425	1222	6221	7869			
11		Value added 3 sectors	NL31	332	5513	31658	37503	348	5681	33691	39720			
12		Value added 3 sectors	NL32	1037	11862	68334	81233	1092	12271	73010	86374			
13		Value added 3 sectors	NL33	2484	19294	71773	93551	2615	19954	76663	99233			
14		Value added 3 sectors	NL34	342	3206	5643	9191	359	3309	6015	9683			
15		Value added 3 sectors	NL41	1092	19100	43529	63721	1151	19773	46541	67465			
16		Value added 3 sectors	NL42	645	7810	18614	27069	669	7955	19580	28203			

Figure 19: Screen shot of a Table output example for the downscaled GVA results in absolute terms for 3 sectors (agriculture, industry, services) for two years

6.2.4 *Creating graphs or maps*

There is an option to create graphs or maps in an easy way, but these options are not very well developed yet. Making graphs or maps works more or less in the same way as creating tables. If you click on Graph Settings, you will see a Graph settings panel (Figure 20):

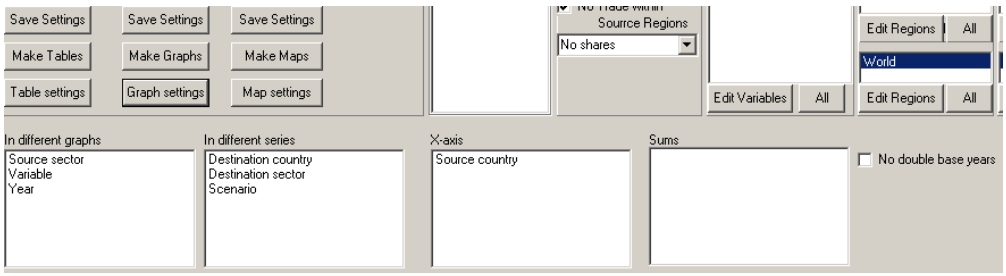


Figure 20: Graphs settings panel

You can define here what is in different graphs, what in different series, and what is on the X-axes. If you click then on Make Graphs, you will get a window with all the graphs you ordered for (Figure 21).

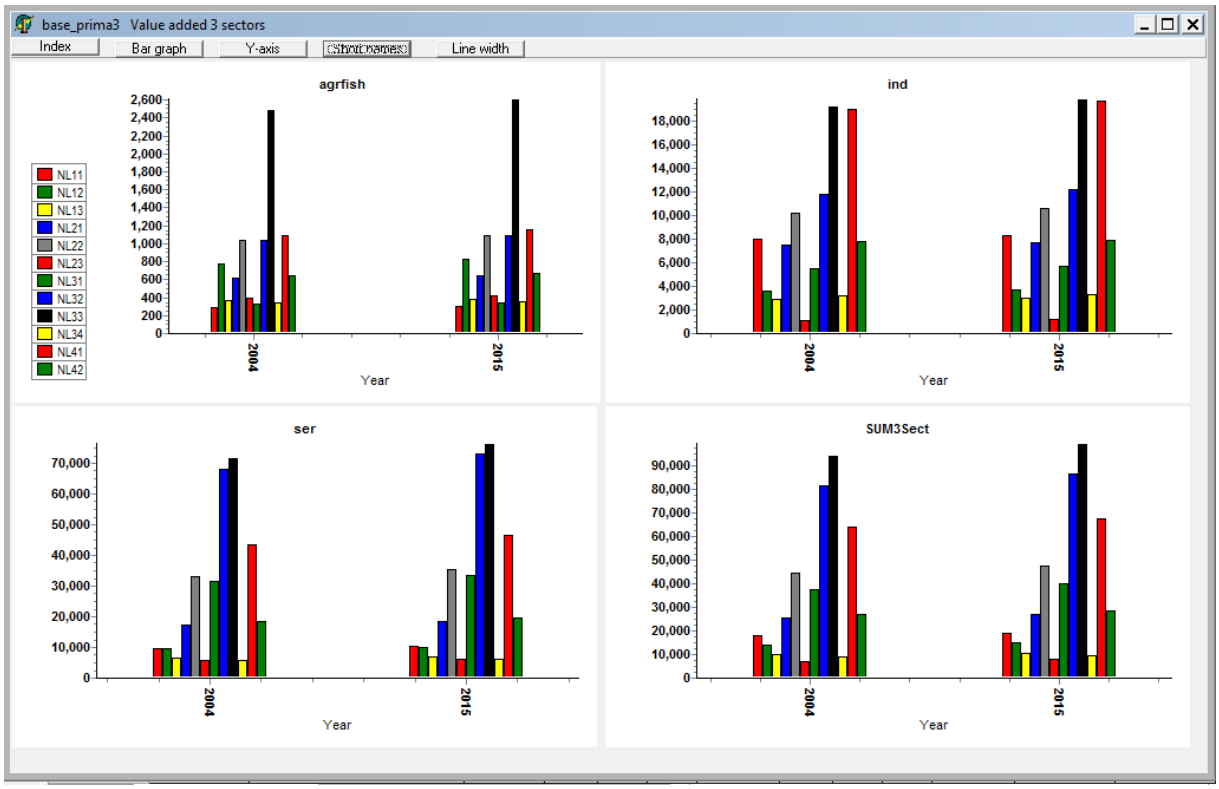


Figure 21: Screen shot of a Graphical representation of the results for GVA in 3 sectors of the economy at NUTS2 level

You can change settings of these graphs by the menu items on the window. You can make index numbers of all your variables, where the first period gets the value 100, you can change the type of graph into a line graph or different types of bar graphs. You can decide that you only want to have a left axes in the graph on the left hand side (where all graphs get the same left axes scaling), and you

can change the names that are presented (you can tell which name is translated in which other name through the main menu option Names).

With the right mouse button you have also some options to change the layout of the graphs. At this moment you can change the colors, where you just click on the color you want to change and will get a selection window to change the color.

The making of maps is quite similar. The results in Figure 22 illustrate the percentage difference in of GVA for 3 sectors and the whole economy between 2010 and 2015.

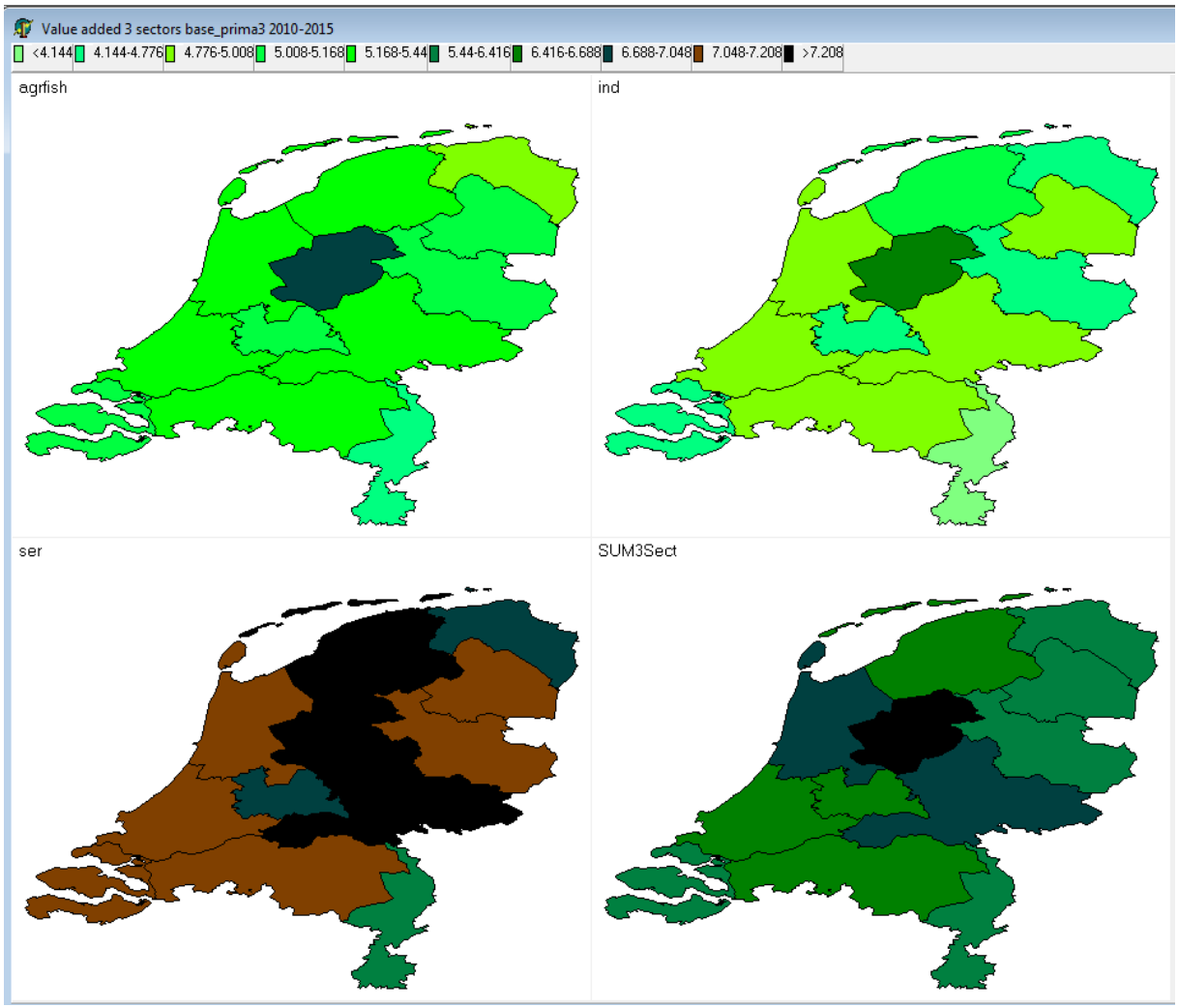


Figure 22: Percentage change of GVA between 2010 and 2015 for the regions in the Netherlands

6.3 Conclusion

A good and easy to use interface to run and analyze scenarios is essential for effective use of a modelling system. The DSS and GEMSE_Analist discussed in this chapter are this type of tool. When model and data are available, it requires only a little bit of effort to run scenarios. Nevertheless, although the system assembles error message during programs very many times, debugging is always required before a system can be run and analyzed in a smooth way. The good interface to analyze the results, as the GEMSE_Analist is, helps to find implausible and surprising results easily. This only partially

makes life easier for the modeller, because a good tool to analyze results also shows inconsistencies, strange data, or implausible results in a lucid way to the modeller. And this may generate a lot of work!

7 CONCLUSIONS AND DISCUSSION

Work package 5 of PRIMA has resulted in an integrated modelling tool where policies and scenarios on a world, European and country level modelled by the general equilibrium model MAGNET (formerly LEITAP) can be downscaled towards NUTS2 level for European countries. The system is integrated with the MAGNET modelling system, implying that downscaling can be accomplished without much extra effort, as long as the data in the base year on a regional level are available. The system has been modelled in such a way that the downscaling can be done on a different sector and land use aggregation than the aggregation used by the MAGNET model. In this case we have implemented the downscaling on a 3, 6 and 12 sector aggregation at regional scale, and an aggregation consistent with the MAGNET primary agricultural sectors for agricultural production. When data are not available for a country, the system generates zeros as outcomes, so it is easy to see when evaluating the outcomes for which regions and sectors useful data were available.

The system has been designed in such a way that it is very easy to extend. Introducing new mechanisms, regional explanatory variables or policy variables is relatively easy because of its modular design, while it is also easy to go to a lower level of aggregation such as a NUTS3 aggregation when data are available.

The approach has been rather ambitions in terms of coverage of the sectors of the whole economy and the variables available for each sector (like employment or gross value added). We targeted at matching and finding the data at NUTS2 level for the initial list of 57 sectors as defined in MAGNET. Due to limited data availability from various sources at NUST2 level, we have matched only 28 sectors of the MAGNET model to the data. But even this is quite laborious to process in terms of econometric work since the goodness of fit would greatly depend on the length of the panel data, which was not always ranging from 1974 to 2009 but for some cases was not longer than one year (2009). Moreover, the limited spatial coverage of data especially for New or pre-accessing Member States is yet another caveat. Nevertheless, the important value added of starting the work very thoroughly on assembling all the possibly available data at NUTS2 level has resulted in a large dataset available to the project which we have also well documented. We should mention that in case we would have proceeded with the 3-sector aggregation only (agriculture and fishery, industry, services) to scale down only two model variables like Employment and Gross Value Added, the data available from Cambridge Econometrics would have been sufficient. However the great limitation of this database is that it does not disentangle the agricultural sector into its activities nor has it data on cropped area or on livestock.

The use of econometric estimates for the calibration of the model has been illustrated at different sector aggregations, but the econometric results are still far from satisfactory. Regional econometric research is a very labour intensive activity, and was not part of the targets of the PRIMA project. Nevertheless, we have shown that the modelling approach used in the PRIMA downscaling method has ample opportunity to include empirical information from econometric or other sources into the model.

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ANNEXES

A. Production Accounts for agriculture and forestry, EAA/EAF Rev1.1

1. Production Account

Item	Code NewCRONOS	Description
01	**01000**	**CEREALS (including seeds)**
01.1	01100	Wheat and spelt
01.1/1	01110	Soft wheat and spelt
01.1/2	01120	Durum wheat
01.2	01200	Rye and meslin
01.3	01300	Barley
01.4	01400	Oats and summer cereal mixtures
01.5	01500	Grain maize
01.6	01600	Rice
01.7	01900	Other cereals
02	**02000**	**INDUSTRIAL CROPS**
02.1	02100	Oil seeds and oleaginous fruits (including seeds)
02.1/1	02110	Rape and turnip rape seed
02.1/2	02120	Sunflower
02.1/3	02130	Soya
02.1/4	02190	Other oleaginous products
02.2	02200	Protein crops (including seeds)
02.3	02300	Raw tobacco
02.4	02400	Sugar beet
02.5	02900	Other industrial crops
02.5/1	02910	Fibre plants
02.5/2	02920	Hops
02.5/3	02930	Other industrial crops: others
03	**03000**	**FORAGE PLANTS**
03.1	03100	Fodder maize
03.2	03200	Fodder root crops (including forage beet)
03.3	03900	Other forage plants

1. Production Account (cont.)

Item	Code NewCRONOS	Description
04	**04000**	**VEGETABLES AND HORTICULTURAL PRODUCTS**
04.1	04100	Fresh vegetables
04.1/1	04110	Cauliflower
04.1/2	04120	Tomatoes
04.1/3	04190	Other fresh vegetables
04.2	04200	Plants and flowers
04.2/1	04210	Nursery plants
04.2/2	04220	Ornamental plants and flowers (including Christmas trees)
04.2/3	04230	Plantations
05	**05000**	**POTATOES (including seeds)**
06	**06000**	**FRUITS**
06.1	06100	Fresh fruit
06.1/1	06110	Dessert apples
06.1/2	06120	Dessert pears
06.1/3	06130	Peaches
06.1/4	06190	Other fresh fruit
06.2	06200	Citrus fruits
06.2/1	06210	Sweet oranges
06.2/2	06220	Mandarins
06.2/3	06230	Lemons
06.2/4	06290	Other citrus fruits
06.3	06300	Tropical fruit
06.4	06400	Grapes
06.4/1	06410	Dessert grapes
06.4/2	06490	Other grapes
06.5	06500	Olives
06.5/1	06510	Table olives
06.5/2	06590	Other olives
07	**07000**	**WINE**
07.1	07100	Table wine
07.2	07200	Quality wine

1. Production Account (cont.)

Item	Code NewCRONOS	Description
08	**08000**	**OLIVE OIL**
09	**09000**	**OTHER CROP PRODUCTS**
09.1	09100	Vegetable materials used primarily for plaiting
09.2	09200	Seeds
09.3	09900	Other crop products: others
10	**10000**	**CROP OUTPUT (01 TO 09)**
11	**11000**	**ANIMALS**
11.1	11100	Cattle
11.2	11200	Pigs
11.3	11300	Equines
11.4	11400	Sheep and goats
11.5	11500	Poultry
11.6	11900	Other animals
12	**12000**	**ANIMAL PRODUCTS**
12.1	12100	Milk
12.2	12200	Eggs
12.3	12900	Other animal products
12.3/1	12910	Raw wool
12.3/2	12920	Silkworm cocoons
12.3/3	12930	Other animal products: others
13	**13000**	**ANIMAL OUTPUT (11+12)**
14	**14000**	**AGRICULTURAL GOODS OUTPUT (10+13)**
15	**15000**	**AGRICULTURAL SERVICES OUTPUT**
15.1	15100	AGRICULTURAL SERVICES
15.2	15200	RENTING OF MILK QUOTA
16	**16000**	**AGRICULTURAL OUTPUT (14+15)**

1. Production Account (cont.)

Item	Code NewCRONOS	Description
17	**17000**	**NON-AGRICULTURAL SECONDARY ACTIVITIES (INSEPARABLE)**
17.1	17100	PROCESSING OF AGRICULTURAL PRODUCTS
17.1/1	17110	- cereals
17.1/2	17120	- vegetables
17.1/3	17130	- fruits
17.1/4	17140	- wine
17.1/5	17150	- animals
17.1/6	17160	- animal products
17.1/6/1	17161	- *milk*
17.1/6/2	17162	- *other animal products*
17.1/7	17190	- other
17.2	17900	OTHER INSEPARABLE SECONDARY ACTIVITIES (GOODS AND SERVICES)
18	**18000**	**OUTPUT OF THE AGRICULTURAL 'INDUSTRY' (16+17)**

1. Production Account (cont.)

Item	Code NewCRONOS	Description
19	**19000**	**TOTAL INTERMEDIATE CONSUMPTION**
19.01	19010	SEEDS AND PLANTING STOCK
19.01/1	19011	- seeds and planting stock supplied by other agricultural holdings
19.01/2	19012	- seeds and planting stock purchased from outside the agricultural 'industry'
19.02	19020	ENERGY; LUBRICANTS
19.02/1	19021	- electricity
19.02/2	19022	- gas
19.02/3	19023	- other fuels and propellants
19.02/4	19029	- other
19.03	19030	FERTILISERS AND SOIL IMPROVERS
19.03/1	19031	- fertilisers supplied by other agricultural holdings
19.03/2	19032	- fertilisers purchased from outside the agricultural 'industry'
19.04	19040	PLANT PROTECTION PRODUCTS AND PESTICIDES
19.05	19050	VETERINARY EXPENSES
19.06	19060	ANIMAL FEEDINGSTUFFS
19.06/1	19061	- feedingstuffs supplied by other agricultural holdings
19.06/2	19062	- feedingstuffs purchased from outside the agricultural 'industry'
19.06/3	19063	- feedingstuffs produced and consumed by the same holding
19.07	19070	MAINTENANCE OF MATERIALS
19.08	19080	MAINTENANCE OF BUILDINGS
19.09	19090	AGRICULTURAL SERVICES
19.10	19900	OTHER GOODS AND SERVICES
20	**20000**	**GROSS VALUE ADDED AT BASIC PRICES (18-19)**
21	**21000**	**FIXED CAPITAL CONSUMPTION**
21.1	21100	EQUIPMENT
21.2	21200	BUILDINGS
21.3	21300	PLANTATIONS
21.4	21900	OTHERS
22	**22000**	**NET VALUE ADDED AT BASIC PRICES (20-21)**

B. LUCAS Land Cover Nomenclature

LC1		LC2		LC3	
LCA	ARTIFICIAL LAND	LCA1	BUILT-UP AREAS	LCA11	Buildings with 1 to 3 floors
				LCA12	Buildings with more than 3 floors
				LCA13	Greenhouses
		LCA2	ARTIFICIAL NON BUILT-UP AREAS	LCA21	Non built-up area features
				LCA22	Non built-up linear features
LCB	CROPLAND	LCB1	CEREALS	LCB11	Common wheat
				LCB12	Durum wheat
				LCB13	Barley
				LCB14	Rye
				LCB15	Oats
				LCB16	Maize
				LCB17	Rice
				LCB18	Triticale
				LCB19	Other cereals*
		LCB2	ROOT CROPS	LCB21	Potatoes
				LCB22	Sugar beet
				LCB23	Other root crops*
		LCB3	NON PERMANENT INDUSTRIAL CROPS	LCB31	Sunflower
				LCB32	Rape and turnip seeds
				LCB33	Soya
				LCB34	Cotton
				LCB35	Other fibre and oleaginous crops*
				LCB36	Tobacco
				LCB37	Other non permanent industrial crops*
		LCB4	DRY PULSES, VEGETABLES AND FLOWERS	LCB41	Dry pulses
				LCB42	Tomatoes
				LCB43	Other fresh vegetables*
				LCB44	Floriculture and ornamental plants
				LCB45	Strawberries
		LCB5	FODDER CROPS	LCB51	Clovers

LC1		LC2		LC3	
			(Mainly Leguminous)	LCB52	Lucerne
				LCB53	Other legumes and mixture for fodder*
				LCB54	Mixed cereals for fodder
				LCB55	Temporary grassland
		LCB7	FRUIT TREES AND BERRIES	LCB71	Apple fruit
				LCB72	Pear fruit
				LCB73	Cherry fruit
				LCB74	Nuts trees
				LCB75	Other fruit trees and berries*
				LCB76	Oranges
				LCB77	Other citrus fruit*
		LCB8	OTHER PERMANENT CROPS	LCB81	Olive groves
				LCB82	Vineyards
				LCB83	Nurseries
				LCB84	Permanent industrial crops*
LCC	WOODLAND	LCC1	Forest FAO	LCC11	Broadleaved and evergreen forest
				LCC12	Coniferous forest
				LCC13	Mixed forest
		LCC2	Other wooded land FAO	LCC21	Broadleaved and evergreen other wooded areas
				LCC22	Coniferous other wooded areas
				LCC23	Mixed other wooded areas
		LCC3	Other wooded land no FAO	LCC31	Broadleaved and evergreen other
				LCC32	Coniferous other
				LCC33	Mixed other
LCD	SHRUBLAND	LCD1	Shrubland with sparse tree cover	LCD10	Shrubland with sparse tree cover
		LCD2	Shrubland without tree cover	LCD20	Shrubland without tree cover
LCE	GRASSLAND	LCE1	Grassland with sparse tree/shrub cover	LCE10	Grassland with sparse tree/shrub cover
		LCE2	Grassland without tree/shrub cover	LCE20	Grassland without tree/shrub cover
		LCE3	Spontaneous vegetation	LCE30	Spontaneous vegetation
LCF	BARE LAND	LCF1	Bare land	LCF10	Bare land
LCG	WATER	LCG1	Inland water bodies	LCG10	Inland water bodies
		LCG2	Inland running water	LCG20	Inland running water
		LCG3	Coastal water bodies	LCG30	Coastal water bodies
		LCG5	Glaciers, permanent snow	LCG50	Glaciers, permanent snow

LC1		LC2		LC3	
LCH	WETLAND	LCH1	INLAND WETLANDS	LCH11	Inland marshes
				LCH12	Peatbogs
		LCH2	COASTAL WETLANDS	LCH21	Salt-marshes
				LCH22	Salines
				LCH23	Intertidal flats

C. LUCAS Land Use nomenclature

LU1		LU2		LU3	
LUA	AGRICUL-TURE	LUA1	AGRICULTURE	LUA11	Agriculture (excluding fallow land, kitchen garden and personal consumption areas)
				LUA12	Fallow land and abonded land in agriculture
				LUA13	Kitchen garden
LUB	FORESTRY	LUB1	FORESTRY	LUB10	Forestry
LUC	HUNTING AND FISHING	LUC1	FISHING	LUC10	Fishing
		LUC2	HUNTING	LUC20	Hunting
LUD	HEAVY EN-VIRONMEN-TAL IMPACT	LUD1	MINING AND QUARRYING	LUD10	Mining and quarryng
		LUD2	ENERGY PRO-DUCTION	LUD20	Energy production
		LUD3	INDUSTRY AND MANUFACTUR-ING	LUD31	Manufacturing of food, beverages and tobacco products
				LUD32	Manufacturing of textile products
				LUD33	Coal, oil and metal processing
				LUD34	Production of non-metal mineral goods
				LUD35	Chemical and allied industries and manu-facturing
				LUD36	Machinery and equipment
				LUD37	Wood based products
		LUD4	WATER AND WASTE TREAT-MENT	LUD41	Water supply and treatment
				LUD42	Waste treatment
		LUD5	CONSTRUCTION	LUD51	Construction

LU1		**LU2**		**LU3**	
		LUD6	TRANSPORT, COMMUNICA-TION NET-WORKS, STORAGE, PRO-TECTIVE WORKS	LUD61	Railways
				LUD62	Roads
				LUD63	Water transport
				LUD64	Air transport
				LUD65	Transport via pipelines
				LUD66	Telecommunication
				LUD67	Storage
				LUD68	Protection infrastructure
LUE	SERVICES AND RESI-DENTIAL	LUE1	COMMERCE, FINANCE, BUSI-NESS	LUE10	Commerce, Finance, Business
		LUE2	COMMUNITY SERVICES	LUE20	Community services
		LUE3	RECREATION, LEISURE, SPORT	LUE31	Amenities, museums, leisure
				LUE32	Sport
				LUE33	Holiday camps
				LUE34	Nature reserves
		LUE4	RESIDENTIAL	LUE40	Residential
LUF	UNUSED	LUF1	UNUSED	LUF10	Unused

D. GTAP sectors and mapping to Eurostat data

Table 12: GSC2 Sectors Defined by Reference to the CPC

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
1	pdr	0113	Rice, not husked	01600	rice	agr_r_accts
		0114	Husked rice			
2	wht	0111	Wheat and mes-lin	01100	Wheat and spelt	agr_r_accts
3	gro	0112	Maize (corn)	01500	Grain maize	Control: 01000 minus 01100 mi-nus01600
		0115	Barley	01300	Barley	agr_r_accts
		0116	Rye, oats	01200 01400	Rye and meslin Oats and sum-mer cereals mix-ture	agr_r_accts
		0119	Other cereals	01900	Other cereals	
4	v_f	012	Vegetables	04100 05000	Fresh veg. potatoes	agr_r_accts
		013	Fruit and nuts	06100 06200 06300 06500 07000	Fresh fruit Citrus fruit Tropical fruit Grapes Wine	agr_r_accts
5	osd	014	Oil seeds and oleaginous fruit	02100 06500 08000	Oil seeds and oleaginous fruit (incl. seeds) Olives Olive oils	agr_r_accts
6	c_b	018	Plants used for	02400	Sugar beet	agr_r_accts

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
			sugar manufacturing			
7	pfb	0192	Raw vegetable materials used in textiles	02900	Other industrial crops	agr_r_accts
8	ocr	015	Live plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	04200	Plants and flowers	agr_r_accts
		016	Beverage and spice crops			
		017	Unmanufactured tobacco	02300	Raw tobacco	agr_r_accts
		0191	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets; swedes, mangolds, fodder roots, hay, lucerne (alfalfa), clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets	03000 02200	Forage plants Protein crops(incl.seeds)	agr_r_accts
		0193	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes			
		0194	Sugar beet seed and seeds of			

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
			forage plants			
		0199	Other raw vegetable materials	09000	Other crop products	agr_r_accts
9	ctl	0211	Bovine cattle, sheep and goats, horses, asses, mules, and hinnies, live	11100 11300 11400	Cattle Equines Sheep and goats	agr_r_accts
		0299	Bovine semen			
10	oap	0212	Swine, poultry and other animals, live	11200 11500 11900	Pigs Poultry Other animals	agr_r_accts
		0292	Eggs, in shell, fresh, preserved or cooked	12200	eggs	agr_r_accts
		0293	Natural honey			
		0294	Snails, live, fresh, chilled, frozen, dried, salted or in brine, except sea snails; frogs' legs, fresh, chilled or frozen			
		0295	Edible products of animal origin n.e.c.	12930	Other animal products	agr_r_accts
		0297	Hides, skins and furskins, raw			
		0298	Insect waxes and spermaceti, whether or not refined or coloured			
11	rmk	0291	Raw milk	12100	milk	agr_r_accts
12	wol	0296	Raw animal materials used in textile	12910	Raw wool	agr_r_accts

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
				12920	Silk cocoons	
13	for	03	Forestry, logging and related service activities	A (agriculture, hunting and forestry) minus 20000 (agriculture and hunting)		reg_e3vabp agr_r_accts
19	**cmt**	**21111**	**Meat of bovine animals, fresh or chilled**	Is part of D		
		21112	Meat of bovine animals, frozen			
		21115	Meat of sheep, fresh or chilled			
		21116	Meat of sheep, frozen			
		21117	Meat of goats, fresh, chilled or frozen			
		21118	Meat of horses, asses, mules or hinnies, fresh, chilled or frozen			
		21119	Edible offal of bovine animals, swine, sheep, goats, horses, asses, mules or hinnies, fresh, chilled or frozen			
		2161	Fats of bovine animals, sheep, goats, pigs and poultry, raw or rendered; wool grease			
20	**omt**	**21113**	Meat of swine, fresh or chilled	Is part of D		

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
		21114	Meat of swine, frozen			
		2112	Meat and edible offal, fresh, chilled or frozen, n.e.c.			
		2113	Preserves and preparations of meat, meat offal or blood			
		2114	Flours, meals and pellets of meat or meat offal, inedible; greaves			
		2162	Animal oils and fats, crude and refined, except fats of bovine animals, sheep, goats, pigs and poultry			
21	vol	2163	Soya-bean, ground-nut, olive, sunflower-seed, safflower, cotton-seed rape, colza and mustard oil, crude	Is part of D		
		2164	Palm, coconut, palm kernel, babassu and linseed oil, crude			
		2165	Soya-bean, ground-nut, olive, sunflower-seed, safflower, cotton-seed, rape, colza and mustard oil and their fractions, refined but not			

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
			chemically modified; other oils obtained solely from olives and sesame oil, and their fractions, whether or not refined, but not chemically modified			
		2166	Maize (corn) oil and its fractions, not chemically modified			
		2167	Palm, coconut, palm kernel, babassu and linseed oil and their fractions, refined but not chemically modified; castor, tung and jojoba oil and fixed vegetable fats and oils (except maize oil) and their fractions n.e.c., whether or not refined, but not chemically modified			
		2168	Margarine and similar preparations			
		2169	Animal or vegetable fats and oils and their fractions, partly or wholly hydrogenated, inter-esterified, re-esterified or elaidinised,			

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
			whether or not refined, but not further prepared			
		217	Cotton linters			
		218	Oil-cake and other solid residues resulting from the extraction of vegetable fats or oils; flours and meals of oil seeds or oleaginous fruits, except those of mustard; vegetable waxes, except triglycerides; degras; residues resulting from the treatment of fatty substances or animal or vegetable waxes			
22	mil	22	Dairy products	Is part of D		
23	pcr	2316	Rice, semi- or wholly milled	Is part of D		
24	sgr	235	Sugar	Is part of D		
25	ofd	212	Prepared and preserved fish	Is part of D		
		213	Prepared and preserved vegetables			
		214	Fruit juices and vegetable juices			
		215	Prepared and preserved fruit and nuts			
		2311	Wheat or meslin flour			
		2312	Cereal flours			

Number	Code GTAP	Code CPC/ISIC	Description	Code EU-ROSTAT	Description EUROSTAT	Source table EU-ROSTAT
			other than of wheat or meslin			
		2313	Groats, meal and pellets of wheat			
		2314	Cereal groats, meal and pellets n.e.c.			
		2315	Other cereal grain products (including corn flakes)			
		2317	Other vegetable flours and meals			
		2318	Mixes and doughs for the preparation of bakers' wares			
		232	Starches and starch products; sugars and sugar syrups n.e.c.			
		233	Preparations used in animal feeding			
		234	Bakery products			
		236	Cocoa, chocolate and sugar con-fectionery			
		237	Macaroni, noo-dles, couscous and similar fari-naceous prod-ucts			
		239	Food products n.e.c.			
26	b_t	24	Beverages	Is part of D		
		25	Tobacco prod-ucts			

Table 13: GSC2 Sectors Defined by Reference to the ISIC, Rev.3

Number	Code GTAP	Code ISIC	Description	Code EUROSTAT	Description EUROSTAT	Source table EUROSTAT
14	fsh	015	Hunting, trapping and game propagation including related service activities	A (agriculture, hunting and forestry) minus 20000 (GVA agriculture and hunting)		reg_e3vabp (colmn A) agr_r_accts (column 20000, incl. hunting)
		05	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	B	Fishing	reg_e3vabp
15	col	101	Mining and agglomeration of hard coal	C	Mining	reg_e3vabp
		102	Mining and agglomeration of lignite			
		103	Mining and agglomeration of peat			
16	oil	111	Extraction of crude petroleum and natural gas (part)	C	Mining and quarrying	reg_e3vabp
		112	Service activities incidental to oil and gas extraction excluding surveying (part)			
17	gas	111	Extraction of crude petroleum and natural gas (part)	C	Mining	reg_e3vabp
		112	Service activities incidental to oil and gas extraction excluding surveying (part)			
18	omn	12	Mining of uranium and thorium ores	C	Mining	reg_e3vabp
		13	Mining of metal ores			
		14	Other mining and			

			quarrying			
27	tex	17	Manufacture of textiles	D	Manufacturing	reg_e3vabp
		243	Manufacture of man-made fibres			
28	wap	18	Manufacture of wearing apparel; dressing and dyeing of fur	D	Manufacturing	reg_e3vabp
29	lea	19	Tan and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear			
30	lum	20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	D	Manufacturing	reg_e3vabp
31	ppp	21	Manufacture of paper and paper products	D	Manufacturing	reg_e3vabp
		22	Publishing, printing and reproduction of record media			
32	p_c	231	Manufacture of coke oven products	D	Manufacturing	reg_e3vabp
		232	Manufacture of refined petroleum products			
		233	Processing of nuclear fuel			
33	crp	241	Manufacture of basic chemicals	D	Manufacturing	reg_e3vabp
		242	Manufacture of other chemical products			
		25	Manufacture of rubber and plastics products			
34	nmm	26	Manufacture of oth-	D	Manufacturing	reg_e3vabp

			er non-metallic mineral products			
35	i_s	271	Manufacture of basic iron and steel	D	Manufacturing	reg_e3vabp
		2731	Casting of iron and steel			
36	nfm	272	Manufacture of basic precious and non-ferrous metals	D	Manufacturing	reg_e3vabp
		2732	Casting of non-ferrous metals			
37	fmp	28	Manufacture of fabricated metal products, except machinery and equipment	D	Manufacturing	reg_e3vabp
38	mvh	34	Manufacture of motor vehicles, trailers and semi-trailers	D	Manufacturing	reg_e3vabp
39	otn	35	Manufacture of other transport equipment	D	Manufacturing	reg_e3vabp
40	ele	30	Manufacture of office, accounting and computing machinery	D	Manufacturing	reg_e3vabp
		32	Manufacture of radio, television and communication equipment and apparatus			
41	ome	29	Manufacture of machinery and equipment n.e.c.	D	Manufacturing	reg_e3vabp
		31	Manufacture of electrical machinery and apparatus n.e.c.			
		33	Manufacture of medical, precision and optical instruments, watches and clocks			
42	omf	36	Manufacturing n.e.c.	D	Manufacturing	reg_e3vabp
		37	Recycling			

43	ely	401	Production, collection and distribution of electricity	E	Electricity, gas and water supply	reg_e3vabp
44	gdt	402	Manufacture of gas; distribution of gaseous fuels through mains	E	Electricity, gas and water supply	reg_e3vabp
		403	Steam and hot water supply			
45	wtr	41	Collection, purification and distribution of water	E	Electricity, gas and water supply	reg_e3vabp
46	cns	45	Construction	F	Construction	reg_e3vabp
47	trd	50	Sales, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	reg_e3vabp
		51	Wholesale trade and commission trade, except of motor vehicles and motorcycles			
		521	Non-specialized retail trade in stores			
		522	Retail sale of food, beverages and tobacco in specialized stores			
		523	Other retail trade of new goods in specialized stores			
		524	Retail sale of second-hand goods in stores			
		525	Retail trade not in stores			
		526	Repair of personal and household goods			
		55	Hotels and restaurants	H	Hotels and restaurants	reg_e3vabp

48	otp	60	Land transport; transport via pipelines	I	Transport, storage and communication	reg_e3vabp
		63	Supporting and auxiliary transport activities; activities of travel agencies			
49	wtp	61	Water transport	I	Transport, storage and communication	reg_e3vabp
50	atp	62	Air transport	I	Transport, storage and communication	reg_e3vabp
51	cmn	64	Post and telecommunications	I	Transport, storage and communication	reg_e3vabp
52	ofi	65	Financial intermediation, except insurance and pension funding	J	Financial intermediation	reg_e3vabp
		67	Activities auxiliary to financial intermediation			
53	isr	66	Insurance and pension funding, except compulsory social security	J	Financial intermediation	reg_e3vabp
54	obs	K	Real estate, renting and business activities	K	Real estate, renting and business activities	reg_e3vabp
55	ros	92	Recreational, cultural and sporting activities	H?	Other community, social, personal service activities	reg_e3vabp
		93	Other service activities			
		95	Private households with employed persons	P	Private households with employed persons	reg_e3vabp
56	osg	75	Public administration and defense;	L	Public administration and	reg_e3vabp

			compulsory social security		defense; compulsory social security	
		80	Education	M	Education	reg_e3vabp
		85	Health and social work	N	Health and social work	reg_e3vabp
		90	Sewage and refuse disposal, sanitation and similar activities	O	Other community, social, personal service activities	reg_e3vabp
		91	Activities of membership organizations n.e.c.		Other community, social, personal service activities	reg_e3vabp
		99	Extra-territorial organizations and bodies		Extra-territorial organizations and bodies	reg_e3vabp
57	dwe	n.a.	n.a.			

E. Correspondence of NUTS0-NUTS1-NUTS2 regions

NUTS_012	NUTS_Name	NUTS_2	NUTS_0	NUTS_1
AT	Austria		AT	
AT1	Ostösterreich			AT1
AT11	BURGENLAND	AT11		
AT12	Niederösterreich	AT12		
AT13	WIEN	AT13		
AT2	Südösterreich			AT2
AT21	Kärnten	AT21		
AT22	STEIERMARK	AT22		
AT3	Westösterreich			AT3
AT31	Oberösterreich	AT31		
AT32	SALZBURG	AT32		
AT33	TIROL	AT33		
AT34	VORARLBERG	AT34		
BE	Belgium		BE	
BE1	Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest			BE1
BE10	Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest	BE10		
BE2	VLAAMS GEWEST			BE2
BE21	Prov. Antwerpen	BE21		
BE22	Prov. Limburg (B)	BE22		
BE23	Prov. Oost-Vlaanderen	BE23		
BE24	Prov. Vlaams Brabant	BE24		
BE25	Prov. West-Vlaanderen	BE25		
BE3	Région Wallonne			BE3
BE31	Prov. Brabant Wallon	BE31		
BE32	Prov. Hainaut	BE32		
BE33	Prov. Liège	BE33		
BE34	Prov. Luxembourg (B)	BE34		
BE35	Prov. Namur	BE35		
BG	Bulgaria		BG	
BG3	Severna i iztochna Bulgaria			BG3
BG31	Severozapaden	BG31		
BG32	Severen tsentralen	BG32		
BG33	Severoiztochen	BG33		
BG34	Yugoiztochen	BG34		
BG4	Yugozapadna i yuzhna centralna Bulgaria			BG4
BG41	Yugozapaden	BG41		

BG42	Yuzhen tsentralen	BG42		
CY	Cyprus		CY	
CY0	Cyprus			CY0
CY00	Cyprus	CY00		
CZ	Czech Republic		CZ	
CZ0	Czech Republic			CZ0
CZ01	Praha	CZ01		
CZ02	Střední Cechy	CZ02		
CZ03	Jihozápad	CZ03		
CZ04	Severozápad	CZ04		
CZ05	Severovýchod	CZ05		
CZ06	Jihovýchod	CZ06		
CZ07	Střední Morava	CZ07		
CZ08	Moravskoslezsko	CZ08		
DE	Germany		DE	
DE1	Baden-Württemberg			DE1
DE11	STUTTGART	DE11		
DE12	KARLSRUHE	DE12		
DE13	FREIBURG	DE13		
DE14	Tübingen	DE14		
DE2	BAYERN			DE2
DE21	OBERBAYERN	DE21		
DE22	NIEDERBAYERN	DE22		
DE23	OBERPFALZ	DE23		
DE24	OBERFRANKEN	DE24		
DE25	MITTELFRANKEN	DE25		
DE26	UNTERFRANKEN	DE26		
DE27	SCHWABEN	DE27		
DE3	BERLIN			DE3
DE30	Berlin	DE30		
DE4	BRANDENBURG			DE4
DE41	Brandenburg - Nordost	DE41		
DE42	Brandenburg - Südwest	DE42		
DE5	BREMEN			DE5
DE50	Bremen	DE50		
DE6	HAMBURG			DE6
DE60	Hamburg	DE60		
DE7	HESSEN			DE7
DE71	DARMSTADT	DE71		
DE72	GIESSEN	DE72		
DE73	KASSEL	DE73		
DE8	MECKLENBURG-VORPOMMERN			DE8

DE80	Mecklenburg-Vorpommern	DE80		
DE9	NIEDERSACHSEN			DE9
DE91	BRAUNSCHWEIG	DE91		
DE92	HANNOVER	DE92		
DE93	Lüneburg	DE93		
DE94	WESER-EMS	DE94		
DEA	NORDRHEIN-WESTFALEN			DEA
DEA1	Düsseldorf	DEA1		
DEA2	Köln	DEA2		
DEA3	Münster	DEA3		
DEA4	DETMOLD	DEA4		
DEA5	ARNSBERG	DEA5		
DEB	RHEINLAND-PFALZ			DEB
DEB1	KOBLENZ	DEB1		
DEB2	TRIER	DEB2		
DEB3	RHEINHESSEN-PFALZ	DEB3		
DEC	SAARLAND			DEC
DEC0	Saarland	DEC0		
DED	SACHSEN			DED
DED1	Chemnitz	DED1		
DED2	Dresden	DED2		
DED3	Leipzig	DED3		
DEE	SACHSEN-ANHALT			DEE
DEE0	Sachsen-Anhalt	DEE0		
DEF	SCHLESWIG-HOLSTEIN			DEF
DEF0	Schleswig-Holstein	DEF0		
DEG	Thüringen			DEG
DEG0	Thüringen	DEG0		
DK	Denmark		DK	
DK0	Denmark			DK0
DK01	Hovedstaden	DK01		
DK02	Sjælland	DK02		
DK03	Syddanmark	DK03		
DK04	Midtjylland	DK04		
DK05	Nordjylland	DK05		
EE	Estonia		EE	
EE0	Estonia			EE0
EE00	Estonia	EE00		
ES	Spain		ES	
ES1	NOROESTE			ES1
ES11	GALICIA	ES11		
ES12	Principado de Asturias	ES12		

ES13	CANTABRIA	ES13		
ES2	NORESTE			ES2
ES21	PAIS VASCO	ES21		
ES22	Comunidad Foral de Navarra	ES22		
ES23	La Rioja	ES23		
ES24	Aragón	ES24		
ES3	Comunidad de Madrid			ES3
ES30	Comunidad de Madrid	ES30		
ES4	Centro (ES)			ES4
ES41	Castilla y León	ES41		
ES42	CASTILLA-LA MANCHA	ES42		
ES43	EXTREMADURA	ES43		
ES5	ESTE			ES5
ES51	Cataluña	ES51		
ES52	COMUNIDAD VALENCIANA	ES52		
ES53	Illes Balears	ES53		
ES6	SUR			ES6
ES61	ANDALUCIA	ES61		
ES62	Región de Murcia	ES62		
ES63	Ciudad Autónoma de Ceuta (ES)	ES63		
ES64	Ciudad Autónoma de Melilla (ES)	ES64		
ES7	Canarias (ES)			ES7
ES70	Canarias (ES)	ES70		
FI	Finland		FI	
FI1	MANNER-SUOMI			FI1
FI13	Itä-Suomi	FI13		
FI18	Etelä-Suomi	FI18		
FI19	Länsi-Suomi	FI19		
FI1A	Pohjois-Suomi	FI1A		
FI2	Åland			FI2
FI20	Åland	FI20		
FR	France		FR	
FR1	Île de France			FR1
FR10	Île de France	FR10		
FR2	BASSIN PARISIEN			FR2
FR21	CHAMPAGNE-ARDENNE	FR21		
FR22	PICARDIE	FR22		
FR23	HAUTE-NORMANDIE	FR23		
FR24	CENTRE	FR24		
FR25	BASSE-NORMANDIE	FR25		
FR26	BOURGOGNE	FR26		
FR3	Nord - Pas-de-Calais			FR3

FR30	Nord - Pas-de-Calais	FR30		
FR4	EST			FR4
FR41	LORRAINE	FR41		
FR42	ALSACE	FR42		
FR43	Franche-Comté	FR43		
FR5	OUEST			FR5
FR51	PAYS DE LA LOIRE	FR51		
FR52	BRETAGNE	FR52		
FR53	POITOU-CHARENTES	FR53		
FR6	SUD-OUEST			FR6
FR61	AQUITAINE	FR61		
FR62	Midi-Pyrénées	FR62		
FR63	LIMOUSIN	FR63		
FR7	CENTRE-EST			FR7
FR71	Rhône-Alpes	FR71		
FR72	AUVERGNE	FR72		
FR8	Méditerranée			FR8
FR81	LANGUEDOC-ROUSSILLON	FR81		
FR82	Provence-Alpes-Côte d'Azur	FR82		
FR83	CORSE	FR83		
fr9	French overseas departments (FR)			fr9
FR91	Guadeloupe (FR)	FR91		
FR92	Martinique (FR)	FR92		
FR93	Guyane (FR)	FR93		
FR94	Reunion (FR)	FR94		
FX	France métropolitaine			
GR	Greece		GR	
GR1	VOREIA ELLADA			GR1
GR11	ANATOLIKI MAKEDONIA, THRAKI	GR11		
GR12	KENTRIKI MAKEDONIA	GR12		
GR13	DYTIKI MAKEDONIA	GR13		
GR14	THESSALIA	GR14		
GR2	KENTRIKI ELLADA			GR2
GR21	IPEIROS	GR21		
GR22	IONIA NISIA	GR22		
GR23	DYTIKI ELLADA	GR23		
GR24	STEREA ELLADA	GR24		
GR25	PELOPONNISOS	GR25		
GR3	ATTIKI			GR3
GR30	Attiki	GR30		
GR4	NISIA AIGAIOU, KRITI			GR4
GR41	VOREIO AIGAIO	GR41		

GR42	NOTIO AIGAIO	GR42		
GR43	KRITI	GR43		
HU	Hungary		HU	
HU1	Közép-Magyarország			HU1
HU10	Közép-Magyarország	HU10		
HU2	Dunántúl			HU2
HU21	Közép-Dunántúl	HU21		
HU22	Nyugat-Dunántúl	HU22		
HU23	Dél-Dunántúl	HU23		
HU3	Alföld és Észak			HU3
HU31	Észak-Magyarország	HU31		
HU32	Észak-Alföld	HU32		
HU33	Dél-Alföld	HU33		
IE	Ireland		IE	
IE0	IRELAND			IE0
IE01	Border, Midlands and Western	IE01		
IE02	Southern and Eastern	IE02		
IT	Italy		IT	
ITC	Nord Ovest			ITC
ITC1	Piemonte	ITC1		
ITC2	Valle d'Aosta/Vallée d'Aoste	ITC2		
ITC3	Liguria	ITC3		
ITC4	Lombardia	ITC4		
ITD	Nord Est			ITD
ITD1	Provincia Autonoma Bolzano-Bozen	ITD1		
ITD2	Provincia Autonoma Trento	ITD2		
ITD3	Veneto	ITD3		
ITD4	Friuli-Venezia Giulia	ITD4		
ITD5	Emilia-Romagna	ITD5		
ITE	Centro (IT)			ITE
ITE1	Toscana	ITE1		
ITE2	Umbria	ITE2		
ITE3	Marche	ITE3		
ITE4	Lazio	ITE4		
ITF	Sud (IT)			ITF
ITF1	Abruzzo	ITF1		
ITF2	Molise	ITF2		
ITF3	Campania	ITF3		
ITF4	Puglia	ITF4		
ITF5	Basilicata	ITF5		
ITF6	Calabria	ITF6		
ITG	Isole (IT)			ITG

ITG1	Sicilia	ITG1		
ITG2	Sardegna	ITG2		
LT	Lithuania		LT	
LT0	Lithuania			LT0
LT00	Lithuania	LT00		
LU	Luxembourg		LU	
LU0	Luxembourg (Grand-Duché)			LU0
LU00	Luxembourg (Grand-Duché)	LU00		
LV	Latvia		LV	
LV0	Latvia			LV0
LV00	Latvia	LV00		
MT	Malta		MT	
MT0	MALTA			MT0
MT00	Malta	MT00		
NL	Netherlands		NL	
NL1	NOORD-NEDERLAND			NL1
NL11	GRONINGEN	NL11		
NL12	FRIESLAND	NL12		
NL13	DRENTHE	NL13		
NL2	OOST-NEDERLAND			NL2
NL21	OVERIJSSEL	NL21		
NL22	GELDERLAND	NL22		
NL23	FLEVOLAND	NL23		
NL3	WEST-NEDERLAND			NL3
NL31	UTRECHT	NL31		
NL32	NOORD-HOLLAND	NL32		
NL33	ZUID-HOLLAND	NL33		
NL34	ZEELAND	NL34		
NL4	ZUID-NEDERLAND			NL4
NL41	NOORD-BRABANT	NL41		
NL42	LIMBURG (NL)	NL42		
PL	Poland		PL	
PL1	CENTRALNY			PL1
PL11	Lódzkie	PL11		
PL12	Mazowieckie	PL12		
PL2	POLUDNIOWY			PL2
PL21	Malopolskie	PL21		
PL22	Slaskie	PL22		
PL3	WSCHODNI			PL3
PL31	Lubelskie	PL31		
PL32	Podkarpackie	PL32		
PL33	Swietokrzyskie	PL33		

PL34	Podlaskie	PL34		
PL4	Pólnocno-Zachodni			PL4
PL41	Wielkopolskie	PL41		
PL42	Zachodniopomorskie	PL42		
PL43	Lubuskie	PL43		
PL5	POLUDNIOWO-ZACHODNI			PL5
PL51	Dolnoslaskie	PL51		
PL52	Opolskie	PL52		
PL6	Pólnocny			PL6
PL61	Kujawsko-Pomorskie	PL61		
PL62	Warminsko-Mazurskie	PL62		
PL63	Pomorskie	PL63		
PT	Portugal		PT	
PT1	Continente (PT)			PT1
PT11	NORTE	PT11		
PT15	ALGARVE	PT15		
PT16	Centro (PT)	PT16		
PT17	Lisboa	PT17		
PT18	Alentejo	PT18		
PT2	Região Autónoma dos Açores (PT)			PT2
PT20	Região Autónoma dos Açores (PT)	PT20		
PT3	Região Autónoma da Madeira (PT)			PT3
PT30	Região Autónoma da Madeira (PT)	PT30		
RO	Romania		RO	
RO1	Macroregiunea unu			RO1
RO11	Nord-Vest	RO11		
RO12	Centru	RO12		
RO2	Macroregiunea doi			RO2
RO21	Nord-Est	RO21		
RO22	Sud-Est	RO22		
RO3	Macroregiunea trei			RO3
RO31	Sud - Muntenia	RO31		
RO32	Bucuresti - Ilfov	RO32		
RO4	Macroregiunea patru			RO4
RO41	Sud-Vest Oltenia	RO41		
RO42	Vest	RO42		
SE	Sweden		SE	
SE1	Östra Sverige			SE1
SE11	Stockholm	SE11		
SE12	Östra Mellansverige	SE12		
SE2	Södra Sverige			SE2
SE21	Småland med öarna	SE21		

SE22	Sydsverige	SE22		
SE23	Västsverige	SE23		
SE3	Norra Sverige			SE3
SE31	Norra Mellansverige	SE31		
SE32	Mellersta Norrland	SE32		
SE33	Övre Norrland	SE33		
SI	Slovenia		SI	
SI0	Slovenia			SI0
SI01	Vzhodna Slovenija	SI01		
SI02	Zahodna Slovenija	SI02		
SK	Slovakia		SK	
SK0	Slovakia			SK0
SK01	Bratislavský kraj	SK01		
SK02	Západné Slovensko	SK02		
SK03	Stredné Slovensko	SK03		
SK04	Východné Slovensko	SK04		
UK	United Kingdom of Great Britain and Northern Ireland		UK	
UKC	North East			UKC
UKC1	Tees Valley and Durham	UKC1		
UKC2	Northumberland, Tyne and Wear	UKC2		
UKD	North West (including Merseyside)			UKD
UKD1	Cumbria	UKD1		
UKD2	Cheshire	UKD2		
UKD3	Greater Manchester	UKD3		
UKD4	Lancashire	UKD4		
UKD5	Merseyside	UKD5		
UKE	Yorkshire and The Humber			UKE
UKE1	East Riding and North Lincolnshire	UKE1		
UKE2	North Yorkshire	UKE2		
UKE3	South Yorkshire	UKE3		
UKE4	West Yorkshire	UKE4		
UKF	East Midlands			UKF
UKF1	Derbyshire and Nottinghamshire	UKF1		
UKF2	Leicestershire, Rutland and North-ants	UKF2		
UKF3	Lincolnshire	UKF3		
UKG	West Midlands			UKG
UKG1	Herefordshire, Worcestershire and Warks	UKG1		
UKG2	Shropshire and Staffordshire	UKG2		
UKG3	West Midlands	UKG3		
UKH	Eastern			UKH

UKH1	East Anglia	UKH1		
UKH2	Bedfordshire, Hertfordshire	UKH2		
UKH3	Essex	UKH3		
UKI	London			UKI
UKI1	Inner London	UKI1		
UKI2	Outer London	UKI2		
UKJ	South East			UKJ
UKJ1	Berkshire, Bucks and Oxfordshire	UKJ1		
UKJ2	Surrey, East and West Sussex	UKJ2		
UKJ3	Hampshire and Isle of Wight	UKJ3		
UKJ4	Kent	UKJ4		
UKK	South West			UKK
UKK1	Gloucestershire, Wiltshire and North Somerset	UKK1		
UKK2	Dorset and Somerset	UKK2		
UKK3	Cornwall and Isles of Scilly	UKK3		
UKK4	Devon	UKK4		
UKL	Wales			UKL
UKL1	West Wales and The Valleys	UKL1		
UKL2	East Wales	UKL2		
UKM	Scotland			UKM
UKM2	Eastern Scotland	UKM2		
UKM3	South Western Scotland	UKM3		
UKM5	North Eastern Scotland	UKM5		
UKM6	Highlands and Islands	UKM6		
UKN	Northern Ireland			UKN
UKN0	Northern Ireland	UKN0		

F. Description of the PRIMA GAMS programme

Programme to analyse regional data of Eurostat (REGIO and FSS) and additional national Eurostat and AMECO data for the PRIMA project.
All gams files (programmes, reference files, variable trees, result files) are located on the MetaBase network drive (I:\MetabaseGAMS\Calculations\). The only exception is I:\Ameco\PrimaAmeco.gms.

The main programme which manages the sub programmes

- **Prima.gms**

The Prima code consists of two parts
- 1: raw data collection and reconcordances to create the parameter PrimaSource
- 2: Prima calculations

Four globals to select which part of the code you want to run
- ReadNewSourceData yes / no
  yes: calculate new combined source data
  no: get data from previous calculated combined source data
- RunCalculations yes / no
  yes: run calculations for analyses on combined source data
  no: keep previous calculated results
- UsePrimaResVarGtapSelComb yes / no
  yes: append content parameter <PrimaResVarGtapSel> to existing version of <PrimaResVarGtapSelComb.gdx>
  no: store content parameter <PrimaResVarGtapSel> in a new version of <PrimaResVarGtapSelComb.gdx>
- PrimaOutliers yes / no
  yes: calculate outliers

no: keep previous calculated outliers

To create new reference files turn all these globals on <yes>.
Result are the files:
- Prima.GREF
- Prima.elements
- Prima.sch
- Prima.template

These reference files contain reference information like labels which are e.g. used when opening gdx files.

The sub programmes which are managed by the main programme Prima.gms
- **PrimaGtreeControl.gms**

Determines the content of the Jumplist (left bottom in Gtree screen of Prima.gms). In the Jumplist you can directly show the result files (by the DataSelector or the DataExplorer) and the variable trees.
See also Annex 2 (in Dutch).

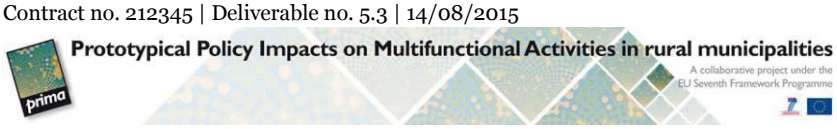
- **PrimaSets.gms**

Contains the declaration of the gams sets (kind of classifications).
In this sub programme you have to choose the country (2 digit code (=NUTS 0 country code)) for which the calculations for analyses on combined source data (sub programme <PrimaCalculationsResult.gms>) will be done.
When chosen for calculate outliers this will be done for the selected country.
The first time a country is chosen, the gams programme < CreateNuts.gms> will create the files
  - MBNuts012%%.tree
  - MBNuts012%%.pc.

These files contain subsets of the classification <MBNuts012>.

- **PrimaParametersSource.gms**

Contains the declaration of the Eurostat source parameters used.



For AMECO see **I:\Ameco\PrimaAmeco.gms**.

- **PrimaCalculationsSource.gms**

Selection of data from all sources and combining it into one parameter (PrimaSource).
This parameter is saved in <PrimaFG_PrimaSource.gdx>.
From parameter < PrimaSource> the data for the NUTS012 territories are written to the parameter <PrimaSoMBNuts012Base>, which is saved in <PrimaFG_PrimaSoMBNuts012Base.gdx>.
This file is used for further calculations.

- **PrimaParametersResult.gms**

Contains the declaration and content of a parameter for the conversion from animal heads to livestock units.

- **PrimaCalculationsResult.gms**

Calculations for analyses on combined source data.

F1. Content of the Prima.GMS

```
*===============================================================================
* File      : Prima.gms
* Author    : Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Version   : 1.0
* Date      : 18-04-2011 15:15:41
* Changed   : 12-05-2011 21:13:25
* Changed by: Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Remarks   :
*!  Programme to analyse regional data of Eurostat (REGIO and FSS)
*!  and AMECO for the PRIMA project.
*===============================================================================
*! <%GTREE 1 Initialization %>
*===============================================================================

*! <%GTREE 1.1 Gtree control statements %>
$include "PrimaGtreeControl.gms"
*===============================================================================

*! <%GTREE 1.2 Globals %>
*The Prima code consists of two parts
*1: raw data collection and reconcordances to create the parameter PrimaSource
*2: Prima calculations
*Below you have two globals to select which part of the code you want to run
$SetGlobal ReadNewSourceData          no
$setglobal RunCalculations            yes
$setglobal UsePrimaResVarGtapSelComb  yes
$setglobal PrimaOutliers              no
*===============================================================================
*use "WLOG YES" to display progress/information in a seperate window
$setglobal WLOG              no
* with "DomainCheck no" the %Reconcordance% funtion will not check if the new sets
already exist
$SetGlobal DomainCheck       no
*===============================================================================

*! <%GTREE 1.3 MetaBase & GAMS code/functions %>
$include "initialization.gms"

*===============================================================================
*! <%GTREE 2 Sets and Parameters for analyses %>
*===============================================================================
***loop MS start

$include "PrimaSets.gms"

$include "PrimaParametersResult.gms"

*===============================================================================
*! <%GTREE 3 Reading all possible classification concordances %>
*===============================================================================
%GetLinks%

*===============================================================================
*! <%GTREE 4 Additional concordances %>
*===============================================================================
*add additional Classification linkage by calling them

*===============================================================================
$ifi "%ReadNewSourceData%"=="no" $goto RunCodeResult

$label ReadNewSourceData
*===============================================================================
*! <%GTREE 5 Sets and Parameters for combining external source data %>
```


```
*===============================================================================
$include "PrimaParametersSource.gms"

$include "%MetaBase%Ameco\PrimaAmeco.gms"

*===============================================================================
*! <%GTREE 6 Calculations for combining external source data %>
*===============================================================================
$include "PrimaCalculationsSource.gms"

*===============================================================================
*<%GTREE 7 Save new calculated combined source data %>
*execute_unload "PrimaFG_PrimaSourceData.gdx",PrimaSource;

$ifi "%RunCalculations%"=="no" $goto EndPrima

$label RunCodeResult
*<%GTREE 8 Get data from previous calculated combined source data %>
$if defined PrimaSoMBNuts012Base $goto SkipData
Parameter PrimaSoMBNuts012Base(MBNuts012,PrSource,PrimaVar,UserMBTime);

$gdxin "PrimaFG_PrimaSoMBNuts012Base.gdx"
$load PrimaSoMBNuts012Base
$gdxin

$label SkipData
*===============================================================================

*===============================================================================
*! <%GTREE 9 Calculations for analyses on combined source data %>
*===============================================================================
$include "PrimaCalculationsResult.gms"
***end loop MS
*===============================================================================
*! <%GTREE 10 End Prima%>
$label EndPrima
*============================   End Of File   ================================
```

F2. Content of the PrimaGtreeControl.gms

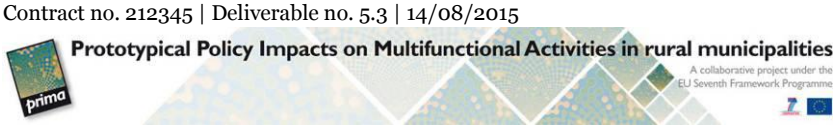
```
*===============================================================================
* File      : PrimaGtreeControl.gms
* Author    : Wietse Dol (w.dol@wur.nl)
* Version   : 1.0
* Date      : 18-Nov-10 10:37:12
* Changed   : 18-04-2011 17:43:04
* Changed by: Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Remarks   :
$ontext

$offtext
*===============================================================================
*! <%GTREECONTROL IGNORE IGNORE,JUMPLIST,CLOSEWLOG,GDXversion%>
*! <%GTREECONTROL GDXversion V7C%>
*_ -------------------------------------------------------------------------
*_ Root elements
*! <%GTREECONTROL JUMPLIST "<color=clred>GDX with DataExplorer",0,0,"","",1,-1,1 %>
*! <%GTREECONTROL JUMPLIST "<color=clblue>GDX with DataSelector",0,0,"","",2,-1,2
%>
*! <%GTREECONTROL JUMPLIST "<color=clgreen>Show Tree",0,0,"","",3,-1,3 %>
*! <%GTREECONTROL JUMPLIST "primafg.lst",0,0,"","GAMS LST file",4,-1,4%>
*_ Level 1 elements
*! <%GTREECONTROL JUMPLIST
"dataexplorer.exe",0,0,"@pathname@PrimaFG_PrimaSo@SelNuts@.gdx
Prima.gref","<color=clred>PrimaSo@SelNuts@",5,1,1%>
*! <%GTREECONTROL JUMPLIST "dataexplorer.exe",0,0,"@pathname@PrimaFG_PrimaSoGeo.gdx
Prima.gref","<color=clred>PrimaSoGeo",7,1,3%>
*! <%GTREECONTROL JUMPLIST
"dataexplorer.exe",0,0,"@pathname@PrimaFG_PrimaSource.gdx
Prima.gref","<color=clred>PrimaSource",9,1,5%>

*! <%GTREECONTROL JUMPLIST
"dataexplorer.exe",0,0,"@pathname@PrimaFG_PrimaResVarGtapSel@SelMS@.gdx
Prima.gref","<color=clred>PrimaResVarGtapSel@SelMS@ (GTAP sectors)",10,1,6%>
*! <%GTREECONTROL JUMPLIST
"dataselector.exe",0,0,"@pathname@PrimaFG_PrimaResVarGtapSel@SelMS@.gdx
PrimaResVarGtapSel Prima.gref /nometabase /GAMSTABS
/sets=MBNuts012,PrSource,PrimaVarGtapSel,UserMBTime","<color=clblue>PrimaResVarGtap
Sel@SelMS@ GDX with Tree (GTAP sectors)",11,2,1%>

*! <%GTREECONTROL JUMPLIST
"dataexplorer.exe",0,0,"@pathname@PrimaFG_PrimaResVarGtapTree@SelMS@.gdx
Prima.gref","<color=clred>PrimaResVarGtapTree@SelMS@",13,1,7%>
*! <%GTREECONTROL JUMPLIST
"dataselector.exe",0,0,"@pathname@PrimaFG_PrimaResVarGtapTree@SelMS@.gdx
PrimaResVarGtapTree Prima.gref /nometabase /GAMSTABS
/sets=MBNuts012,PrSource,PrimaVarGtapTree,UserMBTime","<color=clblue>PrimaResVarGta
pTree@SelMS@ GDX with Tree",14,2,2%>
*! <%GTREECONTROL JUMPLIST
"elementtree.exe",0,0,"@pathname@PrimaVarGtapTree.tree","<color=clgreen>PrimaVarGta
pTree Tree",15,3,1%>

*! <%GTREECONTROL JUMPLIST
"dataexplorer.exe",0,0,"@pathname@PrimaFG_PrimaResVarTree@SelMS@.gdx
Prima.gref","<color=clred>PrimaResVarTree@SelMS@",16,1,8%>
*! <%GTREECONTROL JUMPLIST
"dataselector.exe",0,0,"@pathname@PrimaFG_PrimaResVarTree@SelMS@.gdx
PrimaResVarTree Prima.gref /nometabase /GAMSTABS
/sets=MBNuts012,PrSource,PrimaVarTree,UserMBTime","<color=clblue>PrimaResVarTree@Se
lMS@ GDX with Tree",18,2,3%>
*! <%GTREECONTROL JUMPLIST
"elementtree.exe",0,0,"@pathname@PrimaVarTree.tree","<color=clgreen>PrimaVarTree
Tree",19,3,2%>
```




```
*! <%GTREECONTROL JUMPLIST
"@metabase@outliers\PrimaSO@SelNuts@.pdf",0,0,"@pathname@PrimaVarTree.tree","<color
=clgreen>Outliers PDF",20,-1,0%>
*_ ------------------------------------------------------------------------------
*! <%GTREECONTROL CLOSEWLOG%>
*============================   End Of File   ================================
```

F3. Content of the PrimaSets.gms

```
*===============================================================================
* File      : PrimaSets.gms
* Author    : Wietse Dol (W.Dol@wur.nl)
* Version   : 1.0
* Date      : 03-Feb-11 13:03:31
* Changed   : 12-05-2011 21:55:11
* Changed by: Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Remarks   :
$ontext

$offtext
*===============================================================================
*! <%GTREE 1 MetaBase Sets%>
%GetSet% MBTerritories
%GetSet% MBtime
%GetSet% MBNuts012
%GetSet% time
%GetSet% wstatus
%GetSet% nace
%GetSet% currency
%GetSet% animals
%GetSet% unit

*! <%GTREE 2 The sets from which you selects elements for the calculations... %>
$include ShowSets.gms

*! <%GTREE 3 User defined Sets%>
*! <%GTREE 3.1 UserMBtime %>
set UserMBTime(MBTime)/1980*2009/;

set landcover
/
LCA     'LC - ARTIFICIAL LAND'
LCA11   'LC - Buildings with 1 to 3 floors'
LCA12   'LC - Buildings with more than 3 floors'
LCA13   'LC - Greenhouses'
LCA21   'LC - Non built-up area features'
LCA22   'LC - Non built-up linear features'
LCB     'LC - CROPLAND'
LCC     'LC - WOODLAND'
LCC1    'LC - FOREST FAO'
LCC2    'LC - OTHER WOODED LAND FAO'
LCC3    'LC - OTHER WOODED LAND NO FAO'
LCD     'LC - SHRUBLAND'
LCD1    'LC - Shrubland with sparse tree cover'
LCD2    'LC - Shrubland without tree cover'
LCE     'LC - GRASSLAND'
LCE1    'LC - Grassland with sparse tree/shrub cover'
LCE2    'LC - Grassland without tree/shrub cover'
LCE3    'LC - Spontaneous vegetation'
LCF     'LC - BARE LAND'
LCG     'LC - WATER'
LCH     'LC - WETLAND'
/;

*! <%GTREE 3.2 MBNuts012%SelectedCountry% %>
** keuze wordt waarde loop
$Setglobal SelectedCountry  CZ
$Setglobal SelNuts MBNuts012%SelectedCountry%
$Setglobal SelMS %SelectedCountry%

$ifthen not exist "%system.fp%MBNuts012%SelectedCountry%.pc"
$call '=gams.exe CreateNuts.gms  --SelectedCountry=%SelectedCountry%'
```

```
$endif

set MBNuts012%SelectedCountry%(MBNuts012)
/
$include "MBNuts012%SelectedCountry%.tree"
/;

parameter
PC_MBNuts012%SelectedCountry%(PClevels,MBNuts012%SelectedCountry%,MBNuts012%Selecte
dCountry%)
/
$include "MBNuts012%SelectedCountry%.pc"
/;

*! <%GTREE 3.3 PrSource %>
set PrSource
/
d3ar  'DEMO_R_D3AREA'
lcvo  'LAN_LCV_OVW'
lcva  'LAN_LCV_ART'
lcvw  'LAN_LCV_WOO'
lcvs  'LAN_LCV_SHR'
lcvg  'LAN_LCV_GRS'
luov  'LAN_LU_OVW'
luag  'LAN_LU_AGR'
luhe  'LAN_LU_HEA'
luin  'LAN_LU_INF'
craa  'PEF_LU_OVCROPAA'
cres  'PEF_LU_OVCROPESU'
rfar  'PEF_R_FARM'
rnut  'Pef_r_nuts'
cppc  'PAPRO_CPP_CROP'
cppl  'PAPRO_CPP_LUSE'
crop  'AGR_R_CROPS'
land  'AGR_R_LANDUSE'
anim  'AGR_R_ANIMAL'
a2an  'Pa2animal_Conv'
amec  'Ameco'
d3av  'DEMO_R_D3AVG'
d3pj  'DEMO_R_PJANAGGR3'
d2pj  'DEMO_R_D2JAN'
miga  'MIGR_R_2ARR'
migd  'MIGR_R_2DEP'
e2va  'PREG_E2VABP_Conv'
acct  'AGR_R_ACCTS'
eaf1  'FOR_EAF01'
e2em  'PREG_E2EMPL_Conv'
e2re  'NAMA_R_E2REM'
e2gf  'NAMA_R_E2GFCF'
prin  'PAPRI_PI00_OUTA'
* TO BE ADDED: CAPRI CoCo
comb  'Combined'
harm  'Harmonised'
/;

**********************************
* Source parameters
*
***
* d3ar: DEMO_R_D3AREA      [unit,landuse,geo,MBTime]              "Area of the
regions"
*       unit    = KM2 (Square kilometer)
*       landuse = L0008 (Land area - Total)
***
* lcvo: LAN_LCV_OVW        [unit,landcover,MBTime,geo]            "Land cover
overview, by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
```

```
* lcva: LAN_LCV_ART        [unit,landcover,MBTime,geo]            "Land covered by
artificial land, by NUTS 1 regions"
*       unit: KM2 (Square kilometer)
***
* lcvw: LAN_LCV_WOO        [unit,landcover,MBTime,geo]            "Land covered by
woodland, by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
* lcvs: LAN_LCV_SHR        [unit,landcover,MBTime,geo]            "Land covered by
shrubland, by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
* lcvg: LAN_LCV_GRS        [unit,landcover,MBTime,geo]            "Land covered by
grassland, by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
* luov: LAN_LU_OVW         [landuse,unit,MBTime,geo]              "Land use
overview , by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
* luag: LAN_LU_AGR         [landuse,unit,MBTime,geo]              "Land use in
agriculture, by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
* luhe: LAN_LU_HEA         [landuse,unit,MBTime,geo]              "Land use with
heavy environmental impact, by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
* luin: LAN_LU_INF         [landuse,unit,MBTime,geo]              "Land use in
services and residential, by NUTS 2 regions"
*       unit: KM2 (Square kilometer)
***
* craa: PEF_LU_OVCROPAA    [agrarea,VariableName,unit,geo,MBTime] "Farmland: Number
of farms and areas by size of farm (UAA) and region"
*       agrarea = total (AA classes)
*       unit = ha
***
* cres: PEF_LU_OVCROPESU   [ecsize,VariableName,unit,geo,MBTime]  "Farmland: Number
of farms and areas by economic size of farm (ESU) and region"
*       ecsize = total (ESU classes)
*       unit = ha
***
* rfar: PEF_R_FARM         [ind_farm,geo,MBTime]                  "Structure of
agricultural holdings by region, main indicators"
***
* rnut: Pef_r_nuts         [ind_farm,geo,MBTime]                  "Structure of
agricultural holdings by NUTS region, main indicators"
***
* cppc: PAPRO_CPP_CROP     [crop_pro,strucpro,geo,MBTime]         "Crops products
(excluding fruits and vegetables) (annual data)"
*       strucpro = AR (Area of production (1000 ha))
***
* cppl: PAPRO_CPP_LUSE     [landuse,geo,MBTime]                   "Land use (annual
data)"
***
* crop: AGR_R_CROPS        [crop_pro,strucpro,geo,MBTime]         "Areas harvested,
yields, production"
*       strucpro = ha
***
* land: AGR_R_LANDUSE      [landuse,strucpro,geo,MBTime]          "Land use"
*       strucpro = ha (1 000 ha)
***
* anim: AGR_R_ANIMAL       [livstock,unit,geo,MBTime]             "Animal
populations (December)"
*       unit = 1000 head
* AGR_R_ANIMAL is excluding LSU
***
```

```
* a2an: Pa2animal_Conv    [animals,unit,geo,MBTime]              "Animal
populations (December) (A2ANIMAL)"
*       unit = 1000lsu
***
* amec: Ameco             [SelectedSerie,SelectedCountry,
*                            SelectedUnit,SelectedYear]          "Ameco database"
***
* d3av: DEMO_R_D3AVG       [sex,geo,MBTime]                      "Annual average
population by sex"
*       sex  = T (Total)
***
* d3pj: DEMO_R_PJANAGGR3   [sex,age,geo,MBTime]                  "Population by
sex and age groups on 1 January - NUTS level 3 regions"
*       sex  = T (Total)
*       age  = TOTAL   (Total)
*       age  = UNK     (Unknown)
*       age  = Y0_14   (Less than 15 years)
*       age  = Y15_64  (Between 15 and 64 years)
*       age  = Y65_MAX (65 years and over)
***
* d2pj: DEMO_R_D2JAN       [sex,age,geo,MBTime]                  "Population at
1st January by sex and age from 1990 onwards"
*       sex  = T (Total)
*       age  = TOTAL   (Total)
*       age  = UNK     (Unknown)
*       age  = Y0_4    (Less than 5 years)
*       age  = Y5_9    (Between 5 and 9 years)
*       age  = Y10_14  (Between 10 and 14 years)
*       age  = Y15_19  (Between 15 and 19 years)
*       age  = Y20_24  (Between 20 and 24 years)
*       age  = Y25_29  (Between 25 and 29 years)
*       age  = Y30_34  (Between 30 and 34 years)
*       age  = Y35_39  (Between 35 and 39 years)
*       age  = Y40_44  (Between 40 and 44 years)
*       age  = Y45_49  (Between 45 and 49 years)
*       age  = Y50_54  (Between 50 and 54 years)
*       age  = Y55_59  (Between 55 and 59 years)
*       age  = Y60_64  (Between 60 and 64 years)
*       age  = Y65_69  (Between 65 and 69 years)
*       age  = Y70_MAX (70 years and over)
***
* miga: MIGR_R_2ARR        [age,sex,geo,MBTime]                  "Arrivals due to
internal migration (excluding intra-regional migration) by sex and age, NUTS2"
*       age  = TOTAL   (Total)
*       sex  = T (Total)
***
* migd: MIGR_R_2DEP        [age,sex,geo,MBTime]                  "Departures due
to internal migration (excluding intra-regional migration) by sex and age, NUTS2"
*       age  = TOTAL   (Total)
*       sex  = T (Total)
***
* e2va: PREG_E2VABP_Conv  [currency,nace,geo,MBTime]             "Gross value added
at basic prices at NUTS level 2 (REG_E2VABP)"
*       currency = mio_eur
***
* acct: AGR_R_ACCTS       [indic_ag,itm_newa,unit,geo,MBTime]    "Agricultural
accounts according to EAA 97 Rev.1.1"
*       indic_ag = PROD_BP
*       unit =  mio_eur
***
* eaf1: FOR_EAF01         [itm_newf,value,unit,geo,MBTime]       "Economic accounts
for forestry - values at current prices"
*       value = 01 (Value at basic price)
*       unit  = mio_eur
***
* e2em: PREG_E2EMPL_Conv  [wstatus,nace,geo,MBTime]              "Employment at
NUTS level 2 (REG_E2EMPL)"
*       wstatus = emp (Employment)
```

```
***
* e2re: NAMA_R_E2REM      [currency,nace_r1,geo,MBTime]          "Compensation of
employees at NUTS level 2"
*       currency = MIO_EUR (Millions of euro (from 1.1.1999)/Millions of ECU (up to
31.12.1998))
***
* e2gf: NAMA_R_E2GFCF     [currency,nace_r1,geo,MBTime]          "Gross fixed
capital formation at NUTS level 2"
*       currency = MIO_EUR (Millions of euro (from 1.1.1999)/Millions of ECU (up to
31.12.1998))
***
* prin: PAPRI_PI00_OUTA   [in_out,p_adj,unit,product,geo,MBTime] "Price indices of
agricultural products,output: base 2000=100 (annual)"
*       in_out  = out (Output)
*       p_adj   = deflated (Deflated)
*       p_adj   = nominal (Nominal value)
*       unit    = i2000 (Index, 2000=100)
*       product = 140000 (AGRICULTURAL GOODS OUTPUT (100000+130000), including
fruits (060000) and vegetables (040000))
***
* TO BE ADDED: CAPRI CoCo
***
**********************************

*! <%GTREE 3.4 PrimaVar %>
Set PrimaVar
/
* dummy variable to give for all combinations of the other indices at least a value
for this dummy variable (value = -99)
dummy    'dummy'
* GTAP
* structure land use and livestock population
str_pdr  'Str - Paddy rice'
str_wht  'Str - Wheat'
str_gro  'Str - Cereal grains nec'
str_v_f  'Str - Vegetables, fruit, nuts'
str_osd  'Str - Oil seeds'
str_c_b  'Str - Sugar cane, sugar beet'
str_pfb  'Str - Plant-based fibers'
str_ocr  'Str - Crops nec'
str_ctl  'Str - Cattle,sheep,goats,horses'
str_oap  'Str - Animal products nec'
str_rmk  'Str - Raw milk'
str_wol  'Str - Wool, silk-worm cocoons'
str_frs  'Str - Forestry'
str_fsh  'Str - Fishing'
str_cmt  'Str - Meat: cattle,sheep,goats,horse'
str_omt  'Str - Meat products nec'
str_vol  'Str - Vegetable oils and fats'
str_mil  'Str - Dairy products'
str_pcr  'Str - Processed rice'
str_sgr  'Str - Sugar'
str_ofd  'Str - Food products nec'
str_b_t  'Str - Beverages and tobacco products'
*
* economic accounts
* employment
E_h_p     'Emp - Grouping of NACE H and P'
E_j_to_o  'Emp - Grouping of NACE J, K, L, M, N and O'
*
* gross value added
G_h_p    'GVA - Grouping of NACE H and P'
G_j_to_o 'GVA - Grouping of NACE J, K, L, M, N and O'
G_frs    'GVA (Gtap) - Forestry'
G_fsh    'GVA (Gtap) - Fishing'
*
* final production
* in Eurostat
```

```
P_a      'FiP - Agriculture, hunting and forestry'
P_b      'FiP - Fishing'
P_c      'FiP - Mining and quarrying'
P_d      'FiP - Manufacturing'
P_e      'FiP - Electricity, gas and water supply'
P_f      'FiP - Construction'
P_g      'FiP - Wholesale and retail trade; repair of motor vehicles, motorcycles
and personal and household goods'
P_i      'FiP - Transport, storage and communication'
P_h_p    'FiP - Grouping of NACE H and P'
P_h      'FiP - Hotels and restaurants'
P_p      'FiP - Activities of households'
P_j_to_o 'FiP - Grouping of NACE J, K, L, M, N and O'
P_j      'FiP - Financial intermediation'
P_k      'FiP - Real estate, renting and business activities'
P_l      'FiP - Public administration and defence; compulsory social security'
P_m      'FiP - Education'
P_n      'FiP - Health and social work'
P_o      'FiP - Other community, social, personal service activities'
*
* in MAGNET
Pm_rice       'FiP (Magnet)- Paddy rice'
Pm_wht        'FiP (Magnet)- Wheat'
Pm_grain      'FiP (Magnet)- Cereal grains not wheat'
Pm_hort       'FiP (Magnet)- Vegetables, fruit, nuts (incl. Wine)'
Pm_oils       'FiP (Magnet)- Oil seeds (incl. olive oil)'
Pm_sug        'FiP (Magnet)- Sugar cane and beet'
Pm_pbfiber    'FiP (Magnet)- Plant based fibres'
Pm_othcrops   'FiP (Magnet)- Other crops'
Pm_cattle     'FiP (Magnet)- Cattle,sheep,goats,horses'
Pm_oap        'FiP (Magnet)- Other animals'
Pm_milk       'FiP (Magnet)- Raw milk'
Pm_frs        'FiP (Magnet)- Forestry'
Pm_fish       'FiP (Magnet)- Other agr-food products'
Pm_c_oil      'FiP (Magnet)- Crude Oil'
Pm_mining     'FiP (Magnet)- Mining'
Pm_petro      'FiP (Magnet)- Petroleum'
Pm_manuf      'FiP (Magnet)- Manufacturing'
Pm_utilities  'FiP (Magnet)- Electricity, gas, water supply'
Pm_construct  'FiP (Magnet)- Construction'
Pm_trade      'FiP (Magnet)- Trading sector'
Pm_transport  'FiP (Magnet)- Transport services'
Pm_recreatio  'FiP (Magnet)- Recreation plus more (plus hotels and restaurants)'
Pm_ser        'FiP (Magnet)- Services'
*
* in GTAP
*
P_pdr      'FiP (Gtap) - Paddy rice'
P_wht      'FiP (Gtap) - Wheat'
P_gro      'FiP (Gtap) - Cereal grains nec'
P_v_f      'FiP (Gtap) - Vegetables, fruit, nuts'
P_osd      'FiP (Gtap) - Oil seeds'
P_c_b      'FiP (Gtap) - Sugar cane, sugar beet'
P_pfb      'FiP (Gtap) - Plant-based fibers'
P_ocr      'FiP (Gtap) - Crops nec'
P_ctl      'FiP (Gtap) - Cattle,sheep,goats,horses'
P_wol      'FiP (Gtap) - Wool, silk-worm cocoons'
P_oap      'FiP (Gtap) - Animal products nec'
P_rmk      'FiP (Gtap) - Raw milk'
P_frs      'FiP (Gtap) - Forestry'
P_fsh      'FiP (Gtap) - Fishing'
P_oil      'FiP (Gtap) - Oil'
P_coa      'FiP (Gtap) - Coal'
P_gas      'FiP (Gtap) - Gas'
P_omn      'FiP (Gtap) - Minerals nec'
P_p_c      'FiP (Gtap) - Petroleum, coal products'
P_cmt      'FiP (Gtap) - Meat: cattle,sheep,goats,horse'
P_omt      'FiP (Gtap) - Meat products nec'
```

```
P_vol       'FiP (Gtap) - Vegetable oils and fats'
P_mil       'FiP (Gtap) - Dairy products'
P_pcr       'FiP (Gtap) - Processed rice'
P_sgr       'FiP (Gtap) - Sugar'
P_ofd       'FiP (Gtap) - Food products nec'
P_b_t       'FiP (Gtap) - Beverages and tobacco products'
P_tex       'FiP (Gtap) - Textiles'
P_wap       'FiP (Gtap) - Wearing apparel'
P_lea       'FiP (Gtap) - Leather products'
P_lum       'FiP (Gtap) - Wood products'
P_ppp       'FiP (Gtap) - Paper products, publishing'
P_crp       'FiP (Gtap) - Chemical,rubber,plastic prods'
P_nmm       'FiP (Gtap) - Mineral products nec'
P_i_s       'FiP (Gtap) - Ferrous metals'
P_nfm       'FiP (Gtap) - Metals nec'
P_fmp       'FiP (Gtap) - Metal products'
P_mvh       'FiP (Gtap) - Motor vehicles and parts'
P_otn       'FiP (Gtap) - Transport equipment nec'
P_ele       'FiP (Gtap) - Electronic equipment'
P_ome       'FiP (Gtap) - Machinery and equipment nec'
P_omf       'FiP (Gtap) - Manufactures nec'
P_ely       'FiP (Gtap) - Electricity'
P_gdt       'FiP (Gtap) - Gas manufacture, distribution'
P_wtr       'FiP (Gtap) - Water'
P_cns       'FiP (Gtap) - Construction'
P_trd       'FiP (Gtap) - Trade'
P_otp       'FiP (Gtap) - Transport nec'
P_wtp       'FiP (Gtap) - Sea transport'
P_atp       'FiP (Gtap) - Air transport'
P_cmn       'FiP (Gtap) - Communication'
P_ros       'FiP (Gtap) - Recreation and other services'
P_ofi       'FiP (Gtap) - Financial services nec'
P_isr       'FiP (Gtap) - Insurance'
P_obs       'FiP (Gtap) - Business services nec'
P_osg       'FiP (Gtap) - PubAdmin/Defence/Health/Educat'
P_dwe       'FiP (Gtap) - Dwellings'
P_j_to_o_Gta  'FiP (Gtap) - Grouping of GTAP ofi, isr, obs, osg, dwe'
*
* Land cover
LCA     'LC - ARTIFICIAL LAND'
LCA11   'LC - Buildings with 1 to 3 floors'
LCA12   'LC - Buildings with more than 3 floors'
LCA13   'LC - Greenhouses'
LCA21   'LC - Non built-up area features'
LCA22   'LC - Non built-up linear features'
LCB     'LC - CROPLAND'
LCC     'LC - WOODLAND'
LCC1    'LC - FOREST FAO'
LCC2    'LC - OTHER WOODED LAND FAO'
LCC3    'LC - OTHER WOODED LAND NO FAO'
LCD     'LC - SHRUBLAND'
LCD1    'LC - Shrubland with sparse tree cover'
LCD2    'LC - Shrubland without tree cover'
LCE     'LC - GRASSLAND'
LCE1    'LC - Grassland with sparse tree/shrub cover'
LCE2    'LC - Grassland without tree/shrub cover'
LCE3    'LC - Spontaneous vegetation'
LCF     'LC - BARE LAND'
LCG     'LC - WATER'
LCH     'LC - WETLAND'
*
* Land use
LUA     'LU - AGRICULTURE'
LUA11   'LU - Agriculture (excluding fallow land, kitchen garden and personal
consumption areas)'
LUA12   'LU - Fallow land and abonded land in agriculture'
LUA13   'LU - Kitchen garden'
LUB     'LU - FORESTRY'
```

```
LUC      'LU - HUNTING AND FISHING'
LUD      'LU - HEAVY ENVIRONMENTAL IMPACT'
LUD1     'LU - MINING AND QUARRYING'
LUD2     'LU - ENERGY PRODUCTION'
LUD3     'LU - INDUSTRY AND MANUFACTURING'
LUD4     'LU - WATER AND WASTE TREATMENT'
LUD5     'LU - CONSTRUCTION'
LUD6     'LU - TRANSPORT, COMMUNICATION NETWORKS, STORAGE, PROTECTIVE WORKS'
LUE      'LU - SERVICES AND RESIDENTIAL'
LUE1     'LU - COMMERCE, FINANCE, BUSINESS'
LUE2     'LU - COMMUNITY SERVICES'
LUE3     'LU - RECREATION, LEISURE, SPORT'
LUE4     'LU - REISDENTIAL'
LUF      'LU - NO VISIBLE USE'
*
* Land use and Harvested crops and FSS area
TotalArea 'Dem - Total area'
L0000     'LU - Area - Total (1 000 ha)'
L0007     'LU - Other area'
L0008     'LU - Land area - Total'
L0009     'LU - Inland waters'
L0016     'LU - Forest area'
totarea   'FSS - Total area (ha)'
037       'FSS - Total area (D,E,F,G,H) in ha'
L0005     'LU - Usable agricultural area (UAA) (1 000 ha)'
agrarea   'FSS - Utilised agricultural area (ha)'
002       'FSS - Total Agricultural area (AA)'
L0001     'LU - Arable land (1 000 ha)'
d_str     'FSS - Arable land (ha)'
039       'FSS - Arable land (in ha)'
c1040     'CrP - Cereals (including rice) (1 000 ha)'
d01_08    'FSS - Cereals (ha)'
042       'FSS - Cereals (D/01-D/08) (in ha)'
L1050     'LU - Cereals excluding rice'
c1050     'CrP - Cereals (excluding rice) (1 000 ha)'
c1100     'CrP - Wheat (1 000 ha)'
c1120     'CrP - Common wheat and spelt (1 000 ha)'
d01       'FSS - Common wheat and spelt (ha)'
044       'FSS - Common wheat and spelt (in ha)'
c1130     'CrP - Durum wheat (1 000 ha)'
d02       'FSS - Durum wheat (ha)'
046       'FSS - Durum wheat (D/02) (in ha)'
C1140     'CrP - Rye and maslin'
c1150     'CrP - Rye (1 000 ha)'
d03       'FSS - Rye (ha)'
048       'FSS - Rye (D/03) (in ha)'
C1155     'CrP - Maslin'
c1160     'CrP - Barley (1 000 ha)'
d04       'FSS - Barley (ha)'
050       'FSS - Barley (D/04) (in ha)'
C1170     'CrP - Oats and mixed grain other than maslin'
C1180     'CrP - Oats'
d05       'FSS - Oats (ha)'
052       'FSS - Oats (D/05) (in ha)'
C1185     'CrP - Mixed grain other than maslin'
c1200     'CrP - Grain maize (1 000 ha)'
d06       'FSS - Grain maize (ha)'
054       'FSS - Grain maize (D/06) (in ha)'
C1201     'CrP - Grain maize and corn cob mix'
C1211     'CrP - Sorghum'
C1212     'CrP - Triticale'
C1213     'CrP - Winter triticale'
C1219     'CrP - Buckwheat, millet, canary seed (other cereals)'
L1250     'LU - Rice'
c1250     'CrP - Rice (1 000 ha)'
d07       'FSS - Rice (ha)'
056       'FSS - Rice (D/07) (in ha)'
d08       'FSS - Other cereals (ha)'
```

```
058       'FSS - Other cereal (D/08) (in ha)'
L1300     'LU - Dried pulses, in grain equivalent'
c1300     'CrP - Dried pulses, in grain equivalent (1 000 ha)'
d09       'FSS - Pulses - total (ha)'
d09c      'FSS - Pulses - fodder peas (ha)'
d09d      'FSS - Pulses - fodder field beans (ha)'
060       'FSS - Dried vegetables (D/09 (in ha)'
C1310     'CrP - Peas'
C1311     'CrP - Peas other than field peas (including chick peas)'
C1320     'CrP - Field peas'
C1330     'CrP - Beans, broad, fields beans'
C1331     'CrP - Kidney beans'
C1335     'CrP - Broad and field beans - Total'
C1338     'CrP - Broad and field beans - Human consumption'
C1340     'CrP - Other dried pulses'
C1341     'CrP - Lentils'
C1342     'CrP - Vetches'
C1343     'CrP - Lupins'
C1349     'CrP - Other dried pulses (lathyrus, etc...)'
L1350     'LU - Root crops'
C1350     'CrP - Root crops'
062       'FSS - Root crops (D/10-D/12) (in ha)'
c1360     'CrP - Potatoes (1 000 ha)'
d10       'FSS - Potatoes (ha)'
064       'FSS - Potatoes (D/10) (in ha)'
c1370     'CrP - Sugar beet (1 000 ha)'
d11       'FSS - Sugar beet (ha)'
066       'FSS - Sugar-beet (D/11) (in ha)'
d12       'FSS - Fodder roots and brassicas (ha)'
068       'FSS - fodder roots and brassica (D/12) (in ha)'
C1381     'CrP - Fodder beet'
C1382     'CrP - Other root crops'
C1383     'CrP - Fodder kale'
C1384     'CrP - Swedes'
C1385     'CrP - Carrots for stockfeeding'
C1386     'CrP - Turnips for stockfeeding'
C1390     'CrP - Other root crops (topinambour, sweet potatoes, fodder parsnips,
yams, cassava, etc...)'
L1400     'LU - Industrial crops'
C1400     'CrP - Industrial crops'
d13       'FSS - Industrial plants (ha)'
070       'FSS - Industrial plants (D/13) (in ha)'
C1500     'CrP - Textile crops'
C1510     'CrP - Other fibre crops'
C1520     'CrP - Flax (straw)'
C1530     'CrP - Hemp (straw)'
c1550     'CrP - Tobacco raw (including seedlings enclosures) (1 000 ha)'
d13a      'FSS - Tobacco (ha)'
C1560     'CrP - Hops'
d13b      'FSS - Hops (ha)'
c1490     'CrP - Cotton seed (1 000 ha)'
C1540     'CrP - Cotton (deseeded)'
d13c      'FSS - Cotton (ha)'
d13d      'FSS - Other industrial plants (ha)'
d13d1     'FSS - Total:Other oil-seed or fibre plants (ha)'
c1410     'CrP - Oilseeds (1 000 ha)'
C1430     'CrP - Rape'
c1420     'CrP - Rape - turnip rape (1 000 ha)'
d13d1a    'FSS - Rape and turnip:Other oil-seed or fibre plants (ha)'
C1480     'CrP - Other oil seeds (poppy, mustard, sunfflower, cotton, earth almond,
sesame, groundnut, etc...)'
c1450     'CrP - Sunflower seed (1 000 ha)'
d13d1b    'FSS - Sunflower:Other oil-seed or fibre plants (ha)'
c1470     'CrP - Soya bean (1 000 ha)'
d13d1c    'FSS - Soya:Other oil-seed or fibre plants (ha)'
C1570     'CrP - Other industrial crops'
d13d1d    'FSS - Others:Other oil-seed or fibre plants (ha)'
C1571     'CrP - Chicorey'
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C1572     'CrP - Chicory for inulin'
C1580     'CrP - Officinal herbs, aromatic plants, plants for seasoning (thyme,
etc. .... )'
C1582     'CrP - Caraway'
C1589     'CrP - Industrial crops (rye-straw, fullers teasel, lavender, (hybrid
lavender, etc...)'
d13d2     'FSS - Aromatic-, medicinal and culinary plants (ha)'
d13d3     'FSS - Industrial plants - Others (ha)'
c1460     'CrP - Oil flax (1 000 ha)'
L1600     'LU - Vegetables'
d14_15    'FSS - Fresh vegetables, melons, strawberries (ha)'
072       'FSS - Fresh vegetables, melons and strawberries (D/14 + D/15) (in ha)'
d14       'FSS - Outdoor:Fresh vegetables, melons, strawberries (ha)'
d14a      'FSS - Open field:Outdoor:Fresh vegetables, melons, strawberries (ha)'
d14b      'FSS - Market gardening:Outdoor:Fresh vegetables, melons, strawberries
(ha)'
L1112     'LU - Fresh vegetables under glass'
d15       'FSS - Under glass:Fresh vegetables, melons, strawberries (ha)'
074       'FSS - flowers and ornamental plants (D/16 + D/17) (in ha)'
d16       'FSS - Outdoor:Flowers and ornemental plants (ha)'
L1113     'LU - Flowers and ornamental plants under glass'
d17       'FSS - Under glass:Flowers and ornemental plants (ha)'
L0900     'LU - Crops under glass'
C2600     'CrP - Fodder - Total'
C2610     'CrP - CrP - Fodder from arable land'
L2610     'LU - Fodder from arable land (1 000 ha)'
C2611     'CrP - Annual green fodder'
C2612     'CrP - Other annual green fodder'
C2670     'CrP - Perennial green fodder'
C2671     'CrP - Clover and mixtures'
C2672     'CrP - Lucerne'
C2673     'CrP - Other legumes (sainfoin, sweet clover)'
d18       'FSS - Forage plants - total (ha)'
076       'FSS - Forage plants (D/18 (in ha)'
d18a      'FSS - Forage plants - temporary grass (ha)'
C2680     'CrP - Temporary grasses and grazings'
d18b      'FSS - Total:Other green fodder:Forage plants (ha)'
c2625     'CrP - Green maize (1 000 ha)'
d18b1     'FSS - Green maize:Other green fodder:Forage plants (ha)'
d18b2     'FSS - Leguminous plants:Other green fodder:Forage plants (ha)'
d19       'FSS - Seeds and seedlings (ha)'
d20       'FSS - Other crops (ha)'
L2696     'LU - Fallow and green manures (1 000 ha)'
d21       'FSS - Fallow land without subsidies (ha)'
L0002     'LU - Permanent grassland (1 000 ha)'
f_str     'FSS - Total:Permanent grassland and meadow (ha)'
078       'FSS - permanent pasture and meadows (F) (in ha)'
f01       'FSS - Pasture and meadow:Permanent grassland and meadow (ha)'
C0002     'CrP - Total of permanent grassland (pastures and meadows)'
C2710     'CrP - Permanent meadows'
C2720     'CrP - Permanent pasture'
C2721     'CrP - Grassland'
f02       'FSS - Rough grazings:Permanent grassland and meadow (ha)'
C2722     'CrP - Common pasture, heathland, rough grazings'
C2971     'CrP - Carobs'
C2980     'CrP - Other permanent crops n.e.s. (carob-tree, mulberry-tree, tea,
coffee, etc...)'
L0003     'LU - Land under permanent crops (1 000 ha)'
g_str     'FSS - Permanent crops (ha)'
080       'FSS - Permanent crops (G) (in ha)'
c2040     'CrP - Fruit trees (excluding olives and citrus fruit) (1 000 ha)'
g01       'FSS - Fruit and berry plantations - total (ha)'
g01a      'FSS - Temperate climate:Fruit and berry plantations (ha)'
g01b      'FSS - Subtropical climate:Fruit and berry plantations (ha)'
g01c      'FSS - Nuts:Fruit and berry plantations (ha)'
c2270     'CrP - Soft fruit (1 000 ha)'
g02       'FSS - Citrus plantations (ha)'
L2450     'LU - Olives (1 000 ha)'
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c2450     'CrP - Total olives (1 000 ha)'
g03       'FSS - Olive plantations - total (ha)'
g03a      'FSS - Olive plantations - table olives (ha)'
g03b      'FSS - Olive plantations - oil production (ha)'
L2410     'LU - Vineyards (1 000 ha)'
c2410     'CrP - Vineyards (1 000 ha)'
g04       'FSS - Vineyards - total (ha)'
082       'FSS - Vineyards (G/04) (in ha)'
g04a      'FSS - Vineyards - quality wine (ha)'
g04b      'FSS - Vineyards - other wines (ha)'
g04c      'FSS - Vineyards - table grapes (ha)'
g04d      'FSS - Vineyards - raisins (ha)'
g05       'FSS - Nurseries (ha)'
g06       'FSS - Other permanent crops (ha)'
L1114     'LU - Permanent crops under glass'
g07       'FSS - Permanent crops under glass (ha)'
L0004     'LU - Kitchen gardens (1 000 ha)'
e_str     'FSS - Kitchen gardens (ha)'
h_str     'FSS - Other land (ha)'
L0006     'LU - Wooded area (1 000 ha)'
h0103     'FSS - Unutilised land and other areas (ha)'
h02       'FSS - Wooded area (ha)'
084       'FSS - Woodland (H/02) (in ha)'
h02f      'FSS - Wooded area - for selling wood (ha)'
h02g      'FSS - Wooded area - with short rotation (ha)'
i02       'FSS - Mushrooms (ha)'
i05       'FSS - Combined crops (ha)'
i05a      'FSS - Combined:Agricultural crops - forestry (ha)'
i05b      'FSS - Combined:Permanent - annual crops (ha)'
i05c      'FSS - Combined:Permanent - permanent crops (ha)'
i05d      'FSS - Combined crops:Others (ha)'
i08       'FSS - Set-aside areas under incentive schemes - total (ha)'
i08ad22   'FSS - Fallow land with no economic use: Set-aside areas under incentive
schemes (ha)'
L2002     'LU - Total of fruit crops (including wine and olives)'
L2695     'LU - Other field products n.e.s.'
L2810     'LU - Hardy nursery stocks (including vine stocks)'
L2960     'LU - Weaving plants (osier willows, bamboo, rush, ratta, Canada poplar)'
L2980     'LU - Other land under permanent crops'
L3001     'LU - Flowers and ornemental plants (including seets)'
L3310     'LU - Seeds (vegetable, fodder, root and industrial crops other than oil
seeds)'
*
total_lsu    'AnD - Total LSU (1000lsu)'
PC0000       'AnD - Total of cattle population (1000 heads)'
cattle       'AnD - Cattle (total) (1000lsu)'
087          'FSS - Bovine animals (J/02-J/08), number'
PC1000       'AnD - Bovine animals less than 1 year old (1000 heads)'
calf         'AnD - Total cattle under one year (1000lsu)'
089          'FSS - Bovine animals under 1 year old (J/02), number'
PC1100       'AnD - Calves for slaughter (1000 heads)'
calf_sl      'AnD - Slaughter calves (<1 year) (1000lsu)'
PC1200       'AnD - Other calves (1000 heads)'
PC1210       'AnD - Other calves : Male (1000 heads)'
calf_br_m    'AnD - Other male breeding calves (<1 year) (1000lsu)'
PC1220       'AnD - Other calves : Female (1000 heads)'
calf_br_f    'AnD - Other female breeding calves (<1 year) (1000lsu)'
PC2000       'AnD - Bovine animals aged between 1 and 2 years (1000 heads)'
PC2100       'AnD - Bovine animals aged between 1 and 2 years : Male (1000 heads)'
bull1_2y     'AnD - Male cattle (1-2 years) (1000lsu)'
091          'FSS - Bovine animals 1 year or over but under 2 years, male (J/03),
number'
PC2200       'AnD - Bovine animals aged between 1 and 2 years : Female (1000
heads)'
heif1_2y_br  'AnD - Other female cattle (1-2 years) (1000lsu)'
heif1_2y_sl  'AnD - Female slaughter heifers (1-2 years) (1000lsu)'
093          'FSS - Bovine animals 1 year or over but under 2 years, female (J/04),
number'
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PC2210       'AnD - Animals for slaughter (1000 heads)'
PC2220       'AnD - Other (1000 heads)'
PC3000       'AnD - Bovines animals of 2 years and over (1000 heads)'
PC3100       'AnD - Bovines animals of 2 years and over : Male (1000 heads)'
bull2y       'AnD - Male cattle (2 years and above) (1000lsu)'
095          'FSS - Bovine animals 2 year old and over, male (J/05), number'
PC3200       'AnD - Bovines animals of 2 years and over : Female (1000 heads)'
097          'FSS - Bovine animals 2 year old and over, heifers (J/06)'
PC3210       'AnD - Heifers (1000 heads)'
PC3211       'AnD - Heifers for slaughter (1000 heads)'
heif2y_sl    'AnD - Slaughter heifers (2 years and above) (1000lsu)'
PC3212       'AnD - Other (1000 heads)'
heif2y_br    'AnD - Other breeding heifers (2 years and above) (1000lsu)'
PC3220       'AnD - Cows (1000 heads)'
cow          'AnD - Cows (total) (1000lsu)'
PC3221       'AnD - Dairy cows (1000 heads)'
cow_dai      'AnD - Dairy cows (1000lsu)'
099          'FSS - Dairy cows (J/07), number'
PC3222       'AnD - Other cows (1000 heads)'
cow_oth      'AnD - Other cows (1000lsu)'
101          'FSS - Other cows (J/08), number'
PC4000       'AnD - Buffaloes (1000 heads)'
buffalo      'AnD - Buffaloes (total) (1000lsu)'
equid        'AnD - Equidae (total) (1000lsu)'
PS0000       'AnD - Sheep total (1000 heads)'
sheep        'AnD - Sheep (total)  (1000lsu)'
103          'FSS - Sheep (J/09), number'
PG0000       'AnD - Total of the goat population (1000 heads)'
goat         'AnD - Goats (total) (1000lsu)'
105          'FSS - Goats (J/10), number'
PP0000       'AnD - Total of the pig population (1000 heads)'
pig          'AnD - Total pigs (total) (1000lsu)'
107          'FSS - Pigs (J/11-J/13), number'
PP1000       'AnD - Piglets with a live weight of less than 20 kg (1000 heads)'
piglet20kg   'AnD - Piglets under 20 kg (1000lsu)'
PP2000       'AnD - Pigs with a live weight of 20 kg and less than 50 kg (1000
heads)'
pig20_50kg   'AnD - Fattening pigs from 20 kg to under 50 kg (1000lsu)'
PP3000       'AnD - Fattening pigs (including rejected boars and sows) of at least
50 kg (1000 heads)'
pig50kg      'AnD - Fattening pigs from 50 kg and above (1000lsu)'
PP3100       'AnD - Fattening pigs between 50 and < 80 kg (1000 heads)'
pig50_80kg   'AnD - Fattening pigs from 50 kg to under 80 kg (1000lsu)'
PP3200       'AnD - Fattening pigs between 80 and < 110 kg (1000 heads)'
pig80_110kg  'AnD - Fattening pigs from 80 kg to under 110 kg (1000lsu)'
PP3300       'AnD - Fattening pigs of at least 110 kg (1000 heads)'
pig110kg     'AnD - Fattening pigs from 110 kg and above (1000lsu)'
PP4000       'AnD - Breeding pigs with a live weight of 50 kg and higher (1000
heads)'
PP4100       'AnD - Boars (1000 heads)'
boars        'AnD - Breeding boars (1000lsu)'
PP4200       'AnD - Sows - total (1000 heads)'
sow_br       'AnD - Total breeding sows (1000lsu)'
PP4210       'AnD - Covered sows (1000 heads)'
PP4211       'AnD - Of which: sows covered for the first time (1000 heads)'
sow_far1     'AnD - Sows having farrowed for the first time (1000lsu)'
sow_far2     'AnD - Sows having farrowed (1000lsu)'
PP4220       'AnD - Sows not covered - total (1000 heads)'
PP4221       'AnD - Of which: gilts not yet covered (1000 heads)'
sow_nfar1    'AnD - Maiden gilts not yet farrowed (1000lsu)'
sow_nfar2    'AnD - Other sows (1000lsu)'
poultry      'AnD - Poultry (total) (1000lsu)'
109          'FSS - Poultry (J/14-J/16), number'
*
* Population
AnAvPop       'Dem - Annual average population by sex'
PopJanTot     'Dem - Total population on 1 January'
PopJanUnKnown 'Dem - Population on 1 January, Unknown age'
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PopJanLT15Yr  'Dem - Population on 1 January, Less than 15 years'
PopJanLT5Yr   'Dem - Population on 1 January, Less than 5 years'
PopJan5To10   'Dem - Population on 1 January, Between 5 and 9 years'
PopJan10To15  'Dem - Population on 1 January, Between 10 and 14 years'
PopJan15To65  'Dem - Population on 1 January, Between 15 and 64 years'
PopJan15To20  'Dem - Population on 1 January, Between 15 and 19 years'
PopJan20To25  'Dem - Population on 1 January, Between 20 and 24 years'
PopJan25To30  'Dem - Population on 1 January, Between 25 and 29 years'
PopJan30To35  'Dem - Population on 1 January, Between 30 and 34 years'
PopJan35To40  'Dem - Population on 1 January, Between 35 and 39 years'
PopJan40To45  'Dem - Population on 1 January, Between 40 and 44 years'
PopJan45To50  'Dem - Population on 1 January, Between 45 and 49 years'
PopJan50To55  'Dem - Population on 1 January, Between 50 and 54 years'
PopJan55To60  'Dem - Population on 1 January, Between 55 and 59 years'
PopJan60To65  'Dem - Population on 1 January, Between 60 and 64 years'
PopJanGE65Yr  'Dem - Population on 1 January, 65 years and over'
PopJan65To70  'Dem - Population on 1 January, Between 65 and 69 years'
PopJanGE70Yr  'Dem - Population on 1 January, Between 65 and 69 years'
MigrArr       'Dem - Arrivals due to internal migration (excluding intra-regional
migration)'
MigrDep       'Dem - Departures due to internal migration (excluding intra-regional
migration)'
*
* Ameco
NPTD 'Ame - POPULATION - Total (national accounts) (NPTD)'
NPTN 'Ame - POPULATION - Total (demographic statistics) (NPTN)'
NPCN 'Ame - POPULATION - 0 to 14 years (NPCN)'
NPAN 'Ame - POPULATION - 15 to 64 years (NPAN)'
NPON 'Ame - POPULATION - 65 years and over (NPON)'
NETN 'Ame - EMPLOYMENT, PERSONS (NATIONAL ACCOUNTS) - Total economy, national
(NETN)'
NETD 'Ame - EMPLOYMENT, PERSONS (NATIONAL ACCOUNTS) - Total economy, domestic
(NETD)'
UVGD 'Ame - GROSS DOMESTIC PRODUCT - At current prices (UVGD)'
PVGD 'Ame - GROSS DOMESTIC PRODUCT - Price deflator (PVGD)'
UVGE 'Ame - GROSS VALUE ADDED, TOTAL ECONOMY - At current basic prices (UVGE)'
UVG0 'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Total of branches
(UVG0)'
UVG1 'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Agriculture,
forestry and fishery products (UVG1)'
UVG2 'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Industry,
including energy (ISIC C_E) (UVG2)'
UVG4 'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Construction (ISIC
F) (UVG4)'
UVG5 'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Services (ISIC
G_P) (UVG5)'
UVGM 'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Manufacturing
(ISIC D) (UVGM)'
PVG1 'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Agriculture, forestry
and fishing (ISIC A_B) (PVG1)'
PVG2 'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Industry, including
energy (ISIC C_E) (PVG2)'
PVG4 'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Construction (ISIC F)
(PVG4)'
PVG5 'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Services (ISIC G_P)
(PVG5)'
PVGM 'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Manufacturing (ISIC
D) (PVGM)'
*
* GVA
* Regional economic acounts (PREG_E2VABP_Conv (NACE))
* and Regional agricultural accounts (AGR_R_ACCTS) and National forestry accounts
(FOR_EAF01))
*
G_total   'GVA - NACE - Total'
G_a_to_p  'GVA - All NACE branches - Total (excluding extra-territorial
organizations and bodies)'
G_a_b     'GVA - Agriculture, hunting, forestry and fishing'
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G_a       'GVA - Agriculture, hunting and forestry'
A20000  'GVA - GROSS VALUE ADDED AT BASIC PRICES (AGRI)'
F20000  'GVA - GROSS VALUE ADDED AT BASIC PRICES (FORES)'
G_b       'GVA - Fishing'
G_c_to_f  'GVA - Industry'
G_c_d_e   'GVA - Total industry (excluding construction)'
G_c       'GVA - Mining and quarrying'
G_d       'GVA - Manufacturing'
G_e       'GVA - Electricity, gas and water supply'
G_f       'GVA - Construction'
G_g_to_p  'GVA - Services (excluding extra-territorial organizations and bodies)'
G_g_h_i   'GVA - Wholesale and retail trade, repair of motor vehicles, motorcycles
and personal and household goods; hotels and restaurants; transport, storage and
communication'
G_g       'GVA - Wholesale and retail trade; repair of motor vehicles, motorcycles
and personal and household goods'
G_h       'GVA - Hotels and restaurants'
G_i       'GVA - Transport, storage and communication'
G_j_k     'GVA - Financial intermediation; real estate, renting and business
activities'
G_j       'GVA - Financial intermediation'
G_k       'GVA - Real estate, renting and business activities'
G_l_to_p  'GVA - Public administration and defence, compulsory social security;
education; health and social work; other community, social and personal service
activities; private households with employed persons'
G_l       'GVA - Public administration and defence; compulsory social security'
G_m       'GVA - Education'
G_n       'GVA - Health and social work'
G_o       'GVA - Other community, social, personal service activities'
G_p       'GVA - Activities of households'
*
* Final production of main groups (including Intermediate consumption and gross
value added)
* Regional agricultural accounts (AGR_R_ACCTS) and National forestry accounts
(FOR_EAF01))
*
ProdGrp 'Final production of main groups'
A18000  'FiP - OUTPUT OF THE AGRICULTURAL INDUSTRY'
A19000  'InC - TOTAL INTERMEDIATE CONSUMPTION (AGRI)'
*A20000  'GVA - GROSS VALUE ADDED AT BASIC PRICES (AGRI)'
*
F18000  'FiP - OUTPUT OF THE FORESTRY INDUSTRY'
F19000  'InC - TOTAL INTERMEDIATE CONSUMPTION (FORES)'
*F20000  'GVA - GROSS VALUE ADDED AT BASIC PRICES (FORES)'
*
* Final production of detailed groups
* Regional agricultural accounts (AGR_R_ACCTS) and National forestry accounts
(FOR_EAF01))
ProdDet 'Final production of detailed groups'
*A18000  'FiP - OUTPUT OF THE AGRICULTURAL INDUSTRY'
A16000  'FiP - AGRICULTURAL OUTPUT'
A14000  'FiP - AGRICULTURAL GOODS OUTPUT'
A10000  'FiP - CROP OUTPUT'
01000   'FiP - CEREALS (including seeds)'
01100   'FiP - Wheat and spelt'
01110   'FiP - Soft wheat and spelt'
01120   'FiP - Durum wheat'
01200   'FiP - Rye and meslin'
01300   'FiP - Barley'
01400   'FiP - Oats and summer cereal mixtures'
01500   'FiP - Grain maize'
01600   'FiP - Rice'
01900   'FiP - Other cereals'
02000   'FiP - INDUSTRIAL CROPS'
02100   'FiP - Oil seeds and oleaginous fruits (including seeds)'
02110   'FiP - Rape and turnip rape seed'
02120   'FiP - Sunflower'
02130   'FiP - Soya'
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02190   'FiP - Other oleaginous products'
02200   'FiP - Protein crops (including seeds)'
02300   'FiP - Raw tobacco'
02400   'FiP - Sugar beet'
02900   'FiP - Other industrial crops'
03000   'FiP - FORAGE PLANTS'
03100   'FiP - Fodder maize'
03200   'FiP - Fodder root crops (including forage beet)'
03900   'FiP - Other forage plants'
04000   'FiP - VEGETABLES AND HORTICULTURAL PRODUCTS'
04100   'FiP - Fresh vegetables'
04200   'FiP - Plants and flowers'
05000   'FiP - POTATOES (including seeds)'
06000   'FiP - FRUITS'
06100   'FiP - Fresh fruit'
06200   'FiP - Citrus fruits'
06300   'FiP - Tropical fruit'
06400   'FiP - Grapes'
06500   'FiP - Olives'
07000   'FiP - WINE'
08000   'FiP - OLIVE OIL'
09000   'FiP - OTHER CROP PRODUCTS'
A13000  'FiP - ANIMAL OUTPUT'
11000   'FiP - ANIMALS'
11100   'FiP - Cattle'
11200   'FiP - Pigs'
11300   'FiP - Equines'
11400   'FiP - Sheep and goats'
11500   'FiP - Poultry'
11900   'FiP - Other animals'
12000   'FiP - ANIMAL PRODUCTS'
12100   'FiP - Milk'
12200   'FiP - Eggs'
12900   'FiP - Other animal products'
12910   'FiP - Raw wool'
12920   'FiP - Silkworm cocoons'
12930   'FiP - Other animal products: others'
A15000  'FiP - AGRICULTURAL SERVICES OUTPUT'
A17000  'FiP - SECONDARY ACTIVITIES (INSEPARABLE) (AGRI)'
17100   'FiP - TRANSFORMATION OF AGRICULTURAL PRODUCTS'
17900   'FiP - OTHER NON-SEPARABLE SECONDARY ACTIVITIES (GOODS AND SERVICES)'
*
*F18000  'FiP - OUTPUT OF THE FORESTRY INDUSTRY'
F16000  'FiP - FORESTRY OUTPUT'
F14000  'FiP - FORESTRY GOODS OUTPUT'
F15000  'FiP - FORESTRY SERVICES OUTPUT'
F17000  'FiP - NON-FORESTRY SECONDARY ACTIVITIES (INSEPARABLE) (FORES)'
*
* Price indices
* AGRICULTURAL GOODS OUTPUT (100000+130000), including fruits (060000) and
vegetables (040000)'
D140000 'Price index Deflated of AGRICULTURAL GOODS OUTPUT'
N140000 'Price index Nominal of  AGRICULTURAL GOODS OUTPUT'
*
* Employment
* Regional economic acounts (PREG_E2EMPL_Conv (NACE))
E_total   'Emp - NACE - Total'
E_a_to_p  'Emp - All NACE branches - Total (excluding extra-territorial
organizations and bodies)'
E_a_b     'Emp - Agriculture, hunting, forestry and fishing'
E_a       'Emp - Agriculture, hunting and forestry'
E_b       'Emp - Fishing'
E_c_to_f  'Emp - Industry'
E_c_d_e   'Emp - Total industry (excluding construction)'
E_c       'Emp - Mining and quarrying'
E_d       'Emp - Manufacturing'
E_e       'Emp - Electricity, gas and water supply'
E_f       'Emp - Construction'
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E_g_to_p  'Emp - Services (excluding extra-territorial organizations and bodies)'
E_g_h_i   'Emp - Wholesale and retail trade, repair of motor vehicles, motorcycles
and personal and household goods; hotels and restaurants; transport, storage and
communication'
E_g       'Emp - Wholesale and retail trade; repair of motor vehicles, motorcycles
and personal and household goods'
E_h       'Emp - Hotels and restaurants'
E_i       'Emp - Transport, storage and communication'
E_j_k     'Emp - Financial intermediation; real estate, renting and business
activities'
E_j       'Emp - Financial intermediation'
E_k       'Emp - Real estate, renting and business activities'
E_l_to_p  'Emp - Public administration and defence, compulsory social security;
education; health and social work; other community, social and personal service
activities; private households with employed persons'
E_l       'Emp - Public administration and defence; compulsory social security'
E_m       'Emp - Education'
E_n       'Emp - Health and social work'
E_o       'Emp - Other community, social, personal service activities'
E_p       'Emp - Activities of households'
*
* Wages
W_TOTAL  'Wag - Total - all NACE activities'
W_A_B    'Wag - Agriculture; fishing'
W_C-F    'Wag - Industry'
W_C-E    'Wag - Industry (except construction)'
W_F      'Wag - Construction'
W_G-P    'Wag - Services (except extra-territorial organizations)'
W_G-I    'Wag - Wholesale and retail trade; hotels and restaurants; transport'
W_J_K    'Wag - Financial intermediation; real estate'
W_L-P    'Wag - public administration and community services; activities of
households'
*
*Capital
K_TOTAL  'Cap - Total - all NACE activities'
K_A_B    'Cap - Agriculture; fishing'
K_C-F    'Cap - Industry'
K_C-E    'Cap - Industry (except construction)'
K_F      'Cap - Construction'
K_G-P    'Cap - Services (except extra-territorial organizations)'
K_G-I    'Cap - Wholesale and retail trade; hotels and restaurants; transport'
K_J_K    'Cap - Financial intermediation; real estate'
K_L-P    'Cap - public administration and community services; activities of
households'
/;

*! <%GTREE 3.6 PrimaVarTree %>
Set PrimaVarTree(PrimaVar)
/
$include "PrimaVarTree.tree"
/;

parameter PC_PrimaVarTree(PClevels,PrimaVarTree,PrimaVarTree)
/
$include "PrimaVarTree.PC"
/;

*! <%GTREE 3.5 PrimaVarGtapTree %>
Set PrimaVarGtapTree(PrimaVarTree)
/
$include "PrimaVarGtapTree.tree"
/;

parameter PC_PrimaVarGtapTree(PClevels,PrimaVarGtapTree,PrimaVarGtapTree)
/
$include "PrimaVarGtapTree.PC"
/;
```

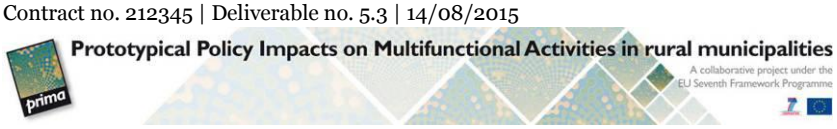
```
*! <%GTREE 3.7 PrimaVarGtapSel %>
Set PrimaVarGtapSel(PrimaVarGtapTree)
/
* dummy variable to give for all combinations of the other indices at least a value
for this dummy variable (value = -99)
dummy     'dummy'
*
* GTAP
* structure land use (and livestock population)
str_pdr   'Str - Paddy rice'
str_wht   'Str - Wheat'
str_gro   'Str - Cereal grains nec'
str_v_f   'Str - Vegetables, fruit, nuts'
str_osd   'Str - Oil seeds'
str_c_b   'Str - Sugar cane, sugar beet'
str_pfb   'Str - Plant-based fibers'
str_ocr   'Str - Crops nec'
str_ctl   'Str - Cattle,sheep,goats,horses'
str_oap   'Str - Animal products nec'
str_rmk   'Str - Raw milk'
str_wol   'Str - Wool, silk-worm cocoons'
str_frs   'Str - Forestry'
str_fsh   'Str - Fishing'
str_cmt   'Str - Meat: cattle,sheep,goats,horse'
str_omt   'Str - Meat products nec'
str_vol   'Str - Vegetable oils and fats'
str_mil   'Str - Dairy products'
str_pcr   'Str - Processed rice'
str_sgr   'Str - Sugar'
str_ofd   'Str - Food products nec'
str_b_t   'Str - Beverages and tobacco products'
*
* Land cover
LCA       'LC - ARTIFICIAL LAND'
LCB       'LC - CROPLAND'
LCC       'LC - WOODLAND'
LCD       'LC - SHRUBLAND'
LCE       'LC - GRASSLAND'
LCF       'LC - BARE LAND'
LCG       'LC - WATER'
LCH       'LC - WETLAND'
*
* Land use
LUA       'LU - AGRICULTURE'
LUA11     'LU - Agriculture (excluding fallow land, kitchen garden and personal
consumption areas)'
LUA12     'LU - Fallow land and abonded land in agriculture'
LUA13     'LU - Kitchen garden'
LUB       'LU - FORESTRY'
LUC       'LU - HUNTING AND FISHING'
LUD       'LU - HEAVY ENVIRONMENTAL IMPACT'
LUE       'LU - SERVICES AND RESIDENTIAL'
LUF       'LU - NO VISIBLE USE'
*
* Land use and Harvested crops and FSS area
TotalArea 'Dem - Total area'
L0000     'LU - Area - Total (1 000 ha)'
L0009     'LU - Inland waters'
L0008     'LU - Land area - Total'
L0005     'LU - Usable agricultural area (UAA) (1 000 ha)'
L0001     'LU - Arable land (1 000 ha)'
L0002     'LU - Permanent grassland (1 000 ha)'
f01       'FSS - Pasture and meadow:Permanent grassland and meadow (ha)'
f02       'FSS - Rough grazings:Permanent grassland and meadow (ha)'
L0003     'LU - Land under permanent crops (1 000 ha)'
L0004     'LU - Kitchen gardens (1 000 ha)'
L0006     'LU - Wooded area (1 000 ha)'
L0016     'LU - Forest area'
```

```
L0007     'LU - Other area'
d12       'FSS - Fodder roots and brassicas (ha)'
L2610     'LU - Fodder from arable land (1 000 ha)'
c2625     'CrP - Green maize (1 000 ha)'
*
* Livestock population
total_lsu 'AnD - Total LSU (1000lsu)'
PC0000    'AnD - Total of cattle population (1000 heads)'
cattle    'AnD - Cattle (total) (1000lsu)'
PC3221    'AnD - Dairy cows (1000 heads)'
cow_dai   'AnD - Dairy cows (1000lsu)'
equid     'AnD - Equidae (total) (1000lsu)'
PS0000    'AnD - Sheep total (1000 heads)'
sheep     'AnD - Sheep (total)  (1000lsu)'
PG0000    'AnD - Total of the goat population (1000 heads)'
goat      'AnD - Goats (total) (1000lsu)'
PP0000    'AnD - Total of the pig population (1000 heads)'
pig       'AnD - Total pigs (total) (1000lsu)'
poultry   'AnD - Poultry (total) (1000lsu)'
109       'FSS - Poultry (J/14-J/16), number'
*
* Population
* Regional population statistics Eurostat and AMECO
NPTD      'Ame - POPULATION - Total (national accounts) (NPTD)'
NPTN      'Ame - POPULATION - Total (demographic statistics) (NPTN)'
NPCN      'Ame - POPULATION - 0 to 14 years (NPCN)'
NPAN      'Ame - POPULATION - 15 to 64 years (NPAN)'
NPON      'Ame - POPULATION - 65 years and over (NPON)'
MigrArr   'Dem - Arrivals due to internal migration (excluding intra-regional
migration)'
MigrDep   'Dem - Departures due to internal migration (excluding intra-regional
migration)'
*
* Employment
* Regional economic acounts (PREG_E2EMPL_Conv (NACE)) and AMECO
NETN      'Ame - EMPLOYMENT, PERSONS (NATIONAL ACCOUNTS) - Total economy, national
(NETN)'
E_total   'Emp - NACE - Total'
NETD      'Ame - EMPLOYMENT, PERSONS (NATIONAL ACCOUNTS) - Total economy, domestic
(NETD)'
E_a_to_p  'Emp - All NACE branches - Total (excluding extra-territorial
organizations and bodies)'
E_a_b     'Emp - Agriculture, hunting, forestry and fishing'
E_a       'Emp - Agriculture, hunting and forestry'
E_b       'Emp - Fishing'
E_c_to_f  'Emp - Industry'
E_c_d_e   'Emp - Total industry (excluding construction)'
E_c       'Emp - Mining and quarrying'
E_d       'Emp - Manufacturing'
E_e       'Emp - Electricity, gas and water supply'
E_f       'Emp - Construction'
E_g_to_p  'Emp - Services (excluding extra-territorial organizations and bodies)'
E_g_h_i   'Emp - Wholesale and retail trade, repair of motor vehicles, motorcycles
and personal and household goods; hotels and restaurants; transport, storage and
communication'
E_g       'Emp - Wholesale and retail trade; repair of motor vehicles, motorcycles
and personal and household goods'
E_h       'Emp - Hotels and restaurants'
E_i       'Emp - Transport, storage and communication'
E_j_k     'Emp - Financial intermediation; real estate, renting and business
activities'
E_j       'Emp - Financial intermediation'
E_k       'Emp - Real estate, renting and business activities'
E_l_to_p  'Emp - Public administration and defence, compulsory social security;
education; health and social work; other community, social and personal service
activities; private households with employed persons'
E_l       'Emp - Public administration and defence; compulsory social security'
E_m       'Emp - Education'
```

```
E_n       'Emp - Health and social work'
E_o       'Emp - Other community, social, personal service activities'
E_p       'Emp - Activities of households'
E_h_p     'Emp - Grouping of NACE H and P'
E_j_to_o  'Emp - Grouping of NACE J, K, L, M, N and O'
*
* GVA
* Regional economic acounts (PREG_E2VABP_Conv (NACE)) and AMECO
UVG0      'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Total of
branches (UVG0)'
UVG1      'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Agriculture,
forestry and fishery products (UVG1)'
UVG2      'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Industry,
including energy (ISIC C_E) (UVG2)'
UVGM      'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Manufacturing
(ISIC D) (UVGM)'
UVG4      'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Construction
(ISIC F) (UVG4)'
UVG5      'Ame - GROSS VALUE ADDED BY MAIN BRANCH AT CURRENT PRICES - Services
(ISIC G_P) (UVG5)'
UVGE      'Ame - GROSS VALUE ADDED, TOTAL ECONOMY - At current basic prices (UVGE)'
G_total   'GVA - NACE - Total'
G_a_to_p  'GVA - All NACE branches - Total (excluding extra-territorial
organizations and bodies)'
G_a_b     'GVA - Agriculture, hunting, forestry and fishing'
G_a       'GVA - Agriculture, hunting and forestry'
A20000    'GVA - GROSS VALUE ADDED AT BASIC PRICES (AGRI)'
G_frs     'GVA (Gtap) - Forestry'
F20000    'GVA - GROSS VALUE ADDED AT BASIC PRICES (FORES)'
G_fsh     'GVA (Gtap) - Fishing'
G_b       'GVA - Fishing'
G_c_to_f  'GVA - Industry'
G_c_d_e   'GVA - Total industry (excluding construction)'
G_c       'GVA - Mining and quarrying'
G_d       'GVA - Manufacturing'
G_e       'GVA - Electricity, gas and water supply'
G_f       'GVA - Construction'
G_g_to_p  'GVA - Services (excluding extra-territorial organizations and bodies)'
G_g_h_i   'GVA - Wholesale and retail trade, repair of motor vehicles, motorcycles
and personal and household goods; hotels and restaurants; transport, storage and
communication'
G_g       'GVA - Wholesale and retail trade; repair of motor vehicles, motorcycles
and personal and household goods'
G_h       'GVA - Hotels and restaurants'
G_i       'GVA - Transport, storage and communication'
G_j_k     'GVA - Financial intermediation; real estate, renting and business
activities'
G_j       'GVA - Financial intermediation'
G_k       'GVA - Real estate, renting and business activities'
G_l_to_p  'GVA - Public administration and defence, compulsory social security;
education; health and social work; other community, social and personal service
activities; private households with employed persons'
G_l       'GVA - Public administration and defence; compulsory social security'
G_m       'GVA - Education'
G_n       'GVA - Health and social work'
G_o       'GVA - Other community, social, personal service activities'
G_p       'GVA - Activities of households'
G_h_p     'GVA - Grouping of NACE H and P'
G_j_to_o  'GVA - Grouping of NACE J, K, L, M, N and O'
*
* Economic accounts and GTAP
*
* Final production of main groups (including Intermediate consumption and gross
value added)
* Regional agricultural accounts (AGR_R_ACCTS) and National forestry accounts
(FOR_EAF01))
UVGD      'Ame - GROSS DOMESTIC PRODUCT - At current prices (UVGD)'
ProdGrp   'Final production of main groups'
```

```
*! A18000    'FiP - OUTPUT OF THE AGRICULTURAL INDUSTRY'
A19000    'InC - TOTAL INTERMEDIATE CONSUMPTION (AGRI)'
*! A20000    'GVA - GROSS VALUE ADDED AT BASIC PRICES (AGRI)'
*! F18000    'FiP - OUTPUT OF THE FORESTRY INDUSTRY'
F19000    'InC - TOTAL INTERMEDIATE CONSUMPTION (FORES)'
*! G_frs    'GVA (Gtap) - Forestry'
*! F20000    'GVA - GROSS VALUE ADDED AT BASIC PRICES (FORES)'
*
* Final production of detailed groups
* Regional agricultural accounts (AGR_R_ACCTS) and National forestry accounts
(FOR_EAF01))
ProdDet       'Final production of detailed groups (NACE, MAGNET, GTAP)'
P_a           'FiP - Agriculture, hunting and forestry'
A18000        'FiP - OUTPUT OF THE AGRICULTURAL INDUSTRY'
A16000        'FiP - AGRICULTURAL OUTPUT'
A14000        'FiP - AGRICULTURAL GOODS OUTPUT'
A10000        'FiP - CROP OUTPUT'
Pm_rice       'FiP (Magnet)- Paddy rice'
P_pdr         'FiP (Gtap) - Paddy rice'
Pm_wht        'FiP (Magnet)- Wheat'
P_wht         'FiP (Gtap) - Wheat'
Pm_grain      'FiP (Magnet)- Cereal grains not wheat'
P_gro         'FiP (Gtap) - Cereal grains nec'
Pm_hort       'FiP (Magnet)- Vegetables, fruit, nuts (incl. Wine)'
P_v_f         'FiP (Gtap) - Vegetables, fruit, nuts'
Pm_oils       'FiP (Magnet)- Oil seeds (incl. olive oil)'
P_osd         'FiP (Gtap) - Oil seeds'
Pm_sug        'FiP (Magnet)- Sugar cane and beet'
P_c_b         'FiP (Gtap) - Sugar cane, sugar beet'
Pm_pbfiber    'FiP (Magnet)- Plant based fibres'
P_pfb         'FiP (Gtap) - Plant-based fibers'
Pm_othcrops   'FiP (Magnet)- Other crops'
P_ocr         'FiP (Gtap) - Crops nec'
A13000        'FiP - ANIMAL OUTPUT'
Pm_cattle     'FiP (Magnet)- Cattle,sheep,goats,horses'
P_ctl         'FiP (Gtap) - Cattle,sheep,goats,horses'
P_wol         'FiP (Gtap) - Wool, silk-worm cocoons'
Pm_oap        'FiP (Magnet)- Other animals'
P_oap         'FiP (Gtap) - Animal products nec'
Pm_milk       'FiP (Magnet)- Raw milk'
P_rmk         'FiP (Gtap) - Raw milk'
A15000        'FiP - AGRICULTURAL SERVICES OUTPUT'
A17000        'FiP - SECONDARY ACTIVITIES (INSEPARABLE) (AGRI)'
17100         'FiP - TRANSFORMATION OF AGRICULTURAL PRODUCTS'
17900         'FiP - OTHER NON-SEPARABLE SECONDARY ACTIVITIES (GOODS AND SERVICES)'
F18000        'FiP - OUTPUT OF THE FORESTRY INDUSTRY'
F16000        'FiP - FORESTRY OUTPUT'
Pm_frs        'FiP (Magnet)- Forestry'
P_frs         'FiP (Gtap) - Forestry'
F14000        'FiP - FORESTRY GOODS OUTPUT'
F15000        'FiP - FORESTRY SERVICES OUTPUT'
F17000         'FiP - NON-FORESTRY SECONDARY ACTIVITIES (INSEPARABLE) (FORES)'
Pm_fish       'FiP (Magnet)- Other agr-food products'
P_fsh         'FiP (Gtap) - Fishing'
P_b           'FiP - Fishing'
P_c           'FiP - Mining and quarrying'
Pm_c_oil      'FiP (Magnet)- Crude Oil'
P_oil         'FiP (Gtap) - Oil'
Pm_mining     'FiP (Magnet)- Mining'
P_coa         'FiP (Gtap) - Coal'
P_gas         'FiP (Gtap) - Gas'
P_omn         'FiP (Gtap) - Minerals nec'
Pm_petro      'FiP (Magnet)- Petroleum'
P_p_c         'FiP (Gtap) - Petroleum, coal products'
P_d           'FiP - Manufacturing'
Pm_manuf      'FiP (Magnet)- Manufacturing'
P_cmt         'FiP (Gtap) - Meat: cattle,sheep,goats,horse'
P_omt         'FiP (Gtap) - Meat products nec'
```

```
P_vol          'FiP (Gtap) - Vegetable oils and fats'
P_mil          'FiP (Gtap) - Dairy products'
P_pcr          'FiP (Gtap) - Processed rice'
P_sgr          'FiP (Gtap) - Sugar'
P_ofd          'FiP (Gtap) - Food products nec'
P_b_t          'FiP (Gtap) - Beverages and tobacco products'
P_tex          'FiP (Gtap) - Textiles'
P_wap          'FiP (Gtap) - Wearing apparel'
P_lea          'FiP (Gtap) - Leather products'
P_lum          'FiP (Gtap) - Wood products'
P_ppp          'FiP (Gtap) - Paper products, publishing'
P_crp          'FiP (Gtap) - Chemical,rubber,plastic prods'
P_nmm          'FiP (Gtap) - Mineral products nec'
P_i_s          'FiP (Gtap) - Ferrous metals'
P_nfm          'FiP (Gtap) - Metals nec'
P_fmp          'FiP (Gtap) - Metal products'
P_mvh          'FiP (Gtap) - Motor vehicles and parts'
P_otn          'FiP (Gtap) - Transport equipment nec'
P_ele          'FiP (Gtap) - Electronic equipment'
P_ome          'FiP (Gtap) - Machinery and equipment nec'
P_omf          'FiP (Gtap) - Manufactures nec'
P_e            'FiP - Electricity, gas and water supply'
Pm_utilities   'FiP (Magnet)- Electricity, gas, water supply'
P_ely          'FiP (Gtap) - Electricity'
P_gdt          'FiP (Gtap) - Gas manufacture, distribution'
P_wtr          'FiP (Gtap) - Water'
P_f            'FiP - Construction'
Pm_construct   'FiP (Magnet)- Construction'
P_cns          'FiP (Gtap) - Construction'
P_g            'FiP - Wholesale and retail trade; repair of motor vehicles,
motorcycles and personal and household goods'
Pm_trade       'FiP (Magnet)- Trading sector'
P_trd          'FiP (Gtap) - Trade'
P_i            'FiP - Transport, storage and communication'
Pm_transport   'FiP (Magnet)- Transport services'
P_otp          'FiP (Gtap) - Transport nec'
P_wtp          'FiP (Gtap) - Sea transport'
P_atp          'FiP (Gtap) - Air transport'
P_cmn          'FiP (Gtap) - Communication'
Pm_recreatio   'FiP (Magnet) - Recreation plus more (plus hotels and restaurants)'
P_ros          'FiP (Gtap)- Recreation and other services'
P_h_p          'FiP - Grouping of NACE H and P'
P_h            'FiP - Hotels and restaurants'
P_p            'FiP - Activities of households'
Pm_ser         'FiP (Magnet)- Services'
P_j_to_o_Gta   'FiP (Gtap) - Grouping of GTAP ofi, isr, obs, osg, dwe'
P_ofi          'FiP (Gtap) - Financial services nec'
P_isr          'FiP (Gtap) - Insurance'
P_obs          'FiP (Gtap) - Business services nec'
P_osg          'FiP (Gtap) - PubAdmin/Defence/Health/Educat'
P_dwe          'FiP (Gtap) - Dwellings'
P_j_to_o       'FiP - Grouping of NACE J, K, L, M, N and O'
P_j            'FiP - Financial intermediation'
P_k            'FiP - Real estate, renting and business activities'
P_l            'FiP - Public administration and defence; compulsory social security'
P_m            'FiP - Education'
P_n            'FiP - Health and social work'
P_o            'FiP - Other community, social, personal service activities'
*
* Price indices
* AGRICULTURAL GOODS OUTPUT (100000+130000), including fruits (060000) and
vegetables (040000)'
* and deflators
* Eurostat and AMECO
PVGD       'Ame - GROSS DOMESTIC PRODUCT - Price deflator (PVGD)'
PVG1       'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Agriculture,
forestry and fishing (ISIC A_B) (PVG1)'
```




```
PVG2      'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Industry,
including energy (ISIC C_E) (PVG2)'
PVGM      'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Manufacturing
(ISIC D) (PVGM)'
PVG4      'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Construction
(ISIC F) (PVG4)'
PVG5      'Ame - PRICE DEFLATOR GROSS VALUE ADDED BY MAIN BRANCH - Services (ISIC
G_P) (PVG5)'
D140000   'Price index Deflated of AGRICULTURAL GOODS OUTPUT'
N140000   'Price index Nominal of  AGRICULTURAL GOODS OUTPUT'
*
* Wages
W_TOTAL   'Wag - Total - all NACE activities'
W_A_B     'Wag - Agriculture; fishing'
W_C-F     'Wag - Industry'
W_C-E     'Wag - Industry (except construction)'
W_F       'Wag - Construction'
W_G-P     'Wag - Services (except extra-territorial organizations)'
W_G-I     'Wag - Wholesale and retail trade; hotels and restaurants; transport'
W_J_K     'Wag - Financial intermediation; real estate'
W_L-P     'Wag - public administration and community services; activities of
households'
*
*Capital
K_TOTAL   'Cap - Total - all NACE activities'
K_A_B     'Cap - Agriculture; fishing'
K_C-F     'Cap - Industry'
K_C-E     'Cap - Industry (except construction)'
K_F       'Cap - Construction'
K_G-P     'Cap - Services (except extra-territorial organizations)'
K_G-I     'Cap - Wholesale and retail trade; hotels and restaurants; transport'
K_J_K     'Cap - Financial intermediation; real estate'
K_L-P     'Cap - public administration and community services; activities of
households'
/;

*============================   End Of File   ================================
```

F4. Content of the PrimaParametersSource.gms

```
*===============================================================================
* File      : PrimaParametersSource.gms
* Author    : Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Version   : 1.0
* Date      : 08-02-2011 19:32:34
* Changed   : 10-05-2011 20:25:59
* Changed by: Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Remarks   :
$ontext
$offtext
*===============================================================================
*! <%GTREE Get parameters and sets from MetaBase%>
*================================================
* Parameters
*================================================
* Selection of Eurostat tables from MetaBase
*================================================
%GetParameter% PEF_LU_OVCROPAA    [agrarea,VariableName,unit,geo,MBTime] "Farmland: Number of farms and areas by size of farm (UAA)
and region"
%GetParameter% PEF_LU_OVCROPESU   [ecsize,VariableName,unit,geo,MBTime]  "Farmland: Number of farms and areas by economic size of
farm (ESU) and region"
%GetParameter% PEF_R_FARM         [ind_farm,geo,MBTime]                  "Structure of agricultural holdings by region, main
indicators"
%GetParameter% Pef_r_nuts         [ind_farm,geo,MBTime]                  "Structure of agricultural holdings by NUTS region, main
indicators"
%GetParameter% PAPRO_CPP_CROP     [crop_pro,strucpro,geo,MBTime]         "Crops products (excluding fruits and vegetables) (annual
data)"
%GetParameter% PAPRO_CPP_LUSE     [landuse,geo,MBTime]                   "Land use (annual data)"
%GetParameter% AGR_R_CROPS        [crop_pro,strucpro,geo,MBTime]         "Areas harvested, yields, production"
%GetParameter% AGR_R_LANDUSE      [landuse,strucpro,geo,MBTime]          "Land use"
%GetParameter% AGR_R_ANIMAL       [livstock,unit,geo,MBTime]             "Animal populations (December)"
%GetParameter% AGR_R_ACCTS        [indic_ag,itm_newa,unit,geo,MBTime]    "Agricultural accounts according to EAA 97 Rev.1.1"
%GetParameter% FOR_EAF01          [itm_newf,value,unit,geo,MBTime]       "Economic accounts for forestry - values at current
prices"
%GetParameter% PAPRI_PI00_OUTA    [in_out,p_adj,unit,product,geo,MBTime] "Price indices of agricultural products,output: base
2000=100 (annual)"
%GetParameter% DEMO_R_D3AVG       [sex,geo,MBTime]                       "Annual average population by sex"
%GetParameter% DEMO_R_D3AREA      [unit,landuse,geo,MBTime]              "Area of the regions"
```


```
%GetParameter% DEMO_R_PJANAGGR3   [sex,age,geo,MBTime]                  "Population by sex and age groups on 1 January - NUTS
level 3 regions"
%GetParameter% DEMO_R_D2JAN       [sex,age,geo,MBTime]                  "Population at 1st January by sex and age from 1990
onwards"
%GetParameter% MIGR_R_2ARR        [age,sex,geo,MBTime]                  "Arrivals due to internal migration (excluding intra-
regional migration) by sex and age, NUTS2"
%GetParameter% MIGR_R_2DEP        [age,sex,geo,MBTime]                  "Departures due to internal migration (excluding intra-
regional migration) by sex and age, NUTS2"
%GetParameter% NAMA_R_E2REM       [currency,nace_r1,geo,MBTime]         "Compensation of employees at NUTS level 2"
%GetParameter% NAMA_R_E2GFCF      [currency,nace_r1,geo,MBTime]         "Gross fixed capital formation at NUTS level 2"
%GetParameter% LAN_LU_OVW         [landuse,unit,MBTime,geo]             "Land use overview , by NUTS 2 regions"
%GetParameter% LAN_LU_AGR         [landuse,unit,MBTime,geo]             "Land use in agriculture, by NUTS 2 regions"
%GetParameter% LAN_LU_HEA         [landuse,unit,MBTime,geo]             "Land use with heavy environmental impact, by NUTS 2
regions"
%GetParameter% LAN_LU_INF         [landuse,unit,MBTime,geo]             "Land use in services and residential, by NUTS 2 regions"
%GetParameter% LAN_LCV_OVW        [unit,landcover,MBTime,geo]           "Land cover overview, by NUTS 2 regions"
%GetParameter% LAN_LCV_ART        [unit,landcover,MBTime,geo]           "Land covered by artificial land, by NUTS 1 regions"
%GetParameter% LAN_LCV_GRS        [unit,landcover,MBTime,geo]           "Land covered by grassland, by NUTS 2 regions"
%GetParameter% LAN_LCV_SHR        [unit,landcover,MBTime,geo]           "Land covered by shrubland, by NUTS 2 regions"
%GetParameter% LAN_LCV_WOO        [unit,landcover,MBTime,geo]           "Land covered by woodland, by NUTS 2 regions"

*! <%GTREE Prima parameters not in MetaBase (anymore)%>
*Load old Eurostat data file (not in MetaBase presentation tree anymore)
parameter PREG_E2EMPL(wstatus,nace,geo,time) "Employment at NUTS level 2 (REG_E2EMPL)";
$gdxin "%MetaBase%Eurostat\REG_E2EMPL.GDX"
$load PREG_E2EMPL
$gdxin
*** ipv: reg_e2empl    [nace,geo,wstatus,time]

*Load old Eurostat data file (not in MetaBase presentation tree anymore)
parameter PREG_E2VABP(currency,nace,geo,time) "Gross value added at basic prices at NUTS level 2 (REG_E2VABP)";
$gdxin "%MetaBase%Eurostat\REG_E2VABP.GDX"
$load PREG_E2VABP
$gdxin
*** ipv: reg_e2vabp    [nace,geo,currency,time]

*Load old Eurostat data file (not in MetaBase presentation tree anymore)
parameter Pa2animal(animals,unit,geo,time) "Animal populations (December) (a2animal)";
$gdxin "%MetaBase%Eurostat\a2animal.GDX"
$load Pa2animal
$gdxin
*============================   End Of File   ================================
```

F5. Content of the PrimaCalculationsSource.gms

```
*===============================================================================
* File      : PrimaCalculationsSource.gms
* Author    : Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Version   : 1.0
* Date      : 08-02-2011 18:07:02
* Changed   : 11-05-2011 20:00:34
* Changed by: Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Remarks   :
$ontext

$offtext
*===============================================================================
*! <%GTREE 1 Recalculated timeToMBtime tuple (fast)%>
%rundisplay% 'Recalculated tuples'

******************
* PREG_E2EMPL
******************
%ReConcordance% time mbtime PREG_E2EMPL _rc
*the sets time_rc mbtime_rc and timetombtime_rc are created and calculated

*usage
parameter PREG_E2EMPL_Conv(wstatus,nace,geo,MBTime) "Employment at NUTS level 2 (REG_E2EMPL)";
PREG_E2EMPL_Conv(wstatus,nace,geo,MBTime_rc)=sum((TIME_rc),PREG_E2EMPL(wstatus,nace,geo,time_rc)$TimeToMBtime_rc(TIME_rc,MBtime_rc)
);

******************
* PREG_E2VABP
******************
%ReConcordance% time mbtime PREG_E2VABP _rc
*the sets time_rc1 mbtime_rc1 and timetombtime_rc1 are created and calculated

parameter PREG_E2VABP_Conv(currency,nace,geo,MBTime) "Gross value added at basic prices at NUTS level 2 (REG_E2VABP)";
PREG_E2VABP_Conv(currency,nace,geo,MBTime_rc)=sum((TIME_rc),PREG_E2VABP(currency,nace,geo,time_rc)$TimeToMBtime_rc(TIME_rc,MBtime_r
c));

******************
```


```
* Pa2animal
*******************
%ReConcordance% time mbtime Pa2animal _rc
*the sets time_rc2 mbtime_rc2 and timetombtime_rc2 are created and calculated

parameter Pa2animal_Conv(animals,unit,geo,MBTime) "Animal populations (December) (A2ANIMAL)";
Pa2animal_Conv(animals,unit,geo,MBTime_rc)=sum((TIME_rc),Pa2animal(animals,unit,geo,time_rc)$TimeToMBtime_rc(TIME_rc,MBtime_rc));

*********************************
*! <%GTREE 2 Create PrimaSource %>
Parameter PrimaSource(geo,PrSource,PrimaVar,UserMBTime);

*d3ar  'DEMO_R_D3AREA'
PrimaSource(geo,'d3ar','TotalArea',UserMBTime)   = DEMO_R_D3AREA('KM2','total',geo,UserMBTime);
PrimaSource(geo,'d3ar','L0008',UserMBTime)       = DEMO_R_D3AREA('KM2','L0008',geo,UserMBTime);

*lcvo  'LAN_LCV_OVW'
PrimaSource(geo,'lcvo','LCA',UserMBTime)     = LAN_LCV_OVW('KM2','LCA',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCB',UserMBTime)     = LAN_LCV_OVW('KM2','LCB',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCC',UserMBTime)     = LAN_LCV_OVW('KM2','LCC',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCD',UserMBTime)     = LAN_LCV_OVW('KM2','LCD',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCE',UserMBTime)     = LAN_LCV_OVW('KM2','LCE',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCF',UserMBTime)     = LAN_LCV_OVW('KM2','LCF',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCG',UserMBTime)     = LAN_LCV_OVW('KM2','LCG',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCH',UserMBTime)     = LAN_LCV_OVW('KM2','LCH',UserMBTime,geo);

*lcva  'LAN_LCV_ART'
PrimaSource(geo,'lcvo','LCA',UserMBTime)     = LAN_LCV_ART('KM2','LCA',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCA11',UserMBTime)   = LAN_LCV_ART('KM2','LCA11',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCA12',UserMBTime)   = LAN_LCV_ART('KM2','LCA12',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCA13',UserMBTime)   = LAN_LCV_ART('KM2','LCA13',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCA21',UserMBTime)   = LAN_LCV_ART('KM2','LCA21',UserMBTime,geo);
PrimaSource(geo,'lcvo','LCA22',UserMBTime)   = LAN_LCV_ART('KM2','LCA22',UserMBTime,geo);

*lcvw 'LAN_LCV_WOO'
PrimaSource(geo,'lcvw','LCC',UserMBTime)     = LAN_LCV_WOO('KM2','LCC',UserMBTime,geo);
PrimaSource(geo,'lcvw','LCC1',UserMBTime)    = LAN_LCV_WOO('KM2','LCC1',UserMBTime,geo);
PrimaSource(geo,'lcvw','LCC2',UserMBTime)    = LAN_LCV_WOO('KM2','LCC2',UserMBTime,geo);
PrimaSource(geo,'lcvw','LCC3',UserMBTime)    = LAN_LCV_WOO('KM2','LCC3',UserMBTime,geo);

*lcvs 'LAN_LCV_SHR'
PrimaSource(geo,'lcvs','LCD1',UserMBTime)    = LAN_LCV_SHR('KM2','LCD1',UserMBTime,geo);
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PrimaSource(geo,'lcvs','LCD2',UserMBTime)     = LAN_LCV_SHR('KM2','LCD2',UserMBTime,geo);

*lcvg  'LAN_LCV_GRS'
PrimaSource(geo,'lcvg','LCE',UserMBTime)      = LAN_LCV_GRS('KM2','LCE',UserMBTime,geo);
PrimaSource(geo,'lcvg','LCE1',UserMBTime)     = LAN_LCV_GRS('KM2','LCE1',UserMBTime,geo);
PrimaSource(geo,'lcvg','LCE2',UserMBTime)     = LAN_LCV_GRS('KM2','LCE2',UserMBTime,geo);
PrimaSource(geo,'lcvg','LCE3',UserMBTime)     = LAN_LCV_GRS('KM2','LCE3',UserMBTime,geo);

*luov  'LAN_LU_OVW'
PrimaSource(geo,'luov','LUA',UserMBTime)      = LAN_LU_OVW('LUA','KM2',UserMBTime,geo);
PrimaSource(geo,'luov','LUB',UserMBTime)      = LAN_LU_OVW('LUB','KM2',UserMBTime,geo);
PrimaSource(geo,'luov','LUC',UserMBTime)      = LAN_LU_OVW('LUC','KM2',UserMBTime,geo);
PrimaSource(geo,'luov','LUD',UserMBTime)      = LAN_LU_OVW('LUD','KM2',UserMBTime,geo);
PrimaSource(geo,'luov','LUE',UserMBTime)      = LAN_LU_OVW('LUE','KM2',UserMBTime,geo);
PrimaSource(geo,'luov','LUF',UserMBTime)      = LAN_LU_OVW('LUF','KM2',UserMBTime,geo);

*luag  'LAN_LU_AGR'
PrimaSource(geo,'luag','LUA',UserMBTime)      = LAN_LU_AGR('LUA','KM2',UserMBTime,geo);
PrimaSource(geo,'luag','LUA11',UserMBTime)    = LAN_LU_AGR('LUA11','KM2',UserMBTime,geo);
PrimaSource(geo,'luag','LUA12',UserMBTime)    = LAN_LU_AGR('LUA12','KM2',UserMBTime,geo);
PrimaSource(geo,'luag','LUA13',UserMBTime)    = LAN_LU_AGR('LUA13','KM2',UserMBTime,geo);

*luhe  'LAN_LU_HEA'
PrimaSource(geo,'luhe','LUD',UserMBTime)      = LAN_LU_HEA('LUD','KM2',UserMBTime,geo);
PrimaSource(geo,'luhe','LUD1',UserMBTime)     = LAN_LU_HEA('LUD1','KM2',UserMBTime,geo);
PrimaSource(geo,'luhe','LUD2',UserMBTime)     = LAN_LU_HEA('LUD2','KM2',UserMBTime,geo);
PrimaSource(geo,'luhe','LUD3',UserMBTime)     = LAN_LU_HEA('LUD3','KM2',UserMBTime,geo);
PrimaSource(geo,'luhe','LUD4',UserMBTime)     = LAN_LU_HEA('LUD4','KM2',UserMBTime,geo);
PrimaSource(geo,'luhe','LUD5',UserMBTime)     = LAN_LU_HEA('LUD5','KM2',UserMBTime,geo);
PrimaSource(geo,'luhe','LUD6',UserMBTime)     = LAN_LU_HEA('LUD6','KM2',UserMBTime,geo);

*luin  'LAN_LU_INF'
PrimaSource(geo,'luin','LUE',UserMBTime)      = LAN_LU_INF('LUE','KM2',UserMBTime,geo);
PrimaSource(geo,'luin','LUE1',UserMBTime)     = LAN_LU_INF('LUE1','KM2',UserMBTime,geo);
PrimaSource(geo,'luin','LUE2',UserMBTime)     = LAN_LU_INF('LUE2','KM2',UserMBTime,geo);
PrimaSource(geo,'luin','LUE3',UserMBTime)     = LAN_LU_INF('LUE3','KM2',UserMBTime,geo);
PrimaSource(geo,'luin','LUE4',UserMBTime)     = LAN_LU_INF('LUE4','KM2',UserMBTime,geo);

*craa  'PEF_LU_OVCROPAA'
PrimaSource(geo,'craa','totarea',UserMBTime) = PEF_LU_OVCROPAA('total','totarea','ha',geo,UserMBTime);
PrimaSource(geo,'craa','agrarea',UserMBTime) = PEF_LU_OVCROPAA('total','agrarea','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d_str',UserMBTime)   = PEF_LU_OVCROPAA('total','d','ha',geo,UserMBTime);
```


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PrimaSource(geo,'craa','d01_08',UserMBTime)  = PEF_LU_OVCROPAA('total','d01_08','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d01',UserMBTime)     = PEF_LU_OVCROPAA('total','d01','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d02',UserMBTime)     = PEF_LU_OVCROPAA('total','d02','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d03',UserMBTime)     = PEF_LU_OVCROPAA('total','d03','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d04',UserMBTime)     = PEF_LU_OVCROPAA('total','d04','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d05',UserMBTime)     = PEF_LU_OVCROPAA('total','d05','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d06',UserMBTime)     = PEF_LU_OVCROPAA('total','d06','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d07',UserMBTime)     = PEF_LU_OVCROPAA('total','d07','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d08',UserMBTime)     = PEF_LU_OVCROPAA('total','d08','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d09',UserMBTime)     = PEF_LU_OVCROPAA('total','d09','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d09c',UserMBTime)    = PEF_LU_OVCROPAA('total','d09c','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d09d',UserMBTime)    = PEF_LU_OVCROPAA('total','d09d','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d10',UserMBTime)     = PEF_LU_OVCROPAA('total','d10','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d11',UserMBTime)     = PEF_LU_OVCROPAA('total','d11','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d12',UserMBTime)     = PEF_LU_OVCROPAA('total','d12','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13',UserMBTime)     = PEF_LU_OVCROPAA('total','d13','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13a',UserMBTime)    = PEF_LU_OVCROPAA('total','d13a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13b',UserMBTime)    = PEF_LU_OVCROPAA('total','d13b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13c',UserMBTime)    = PEF_LU_OVCROPAA('total','d13c','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d',UserMBTime)    = PEF_LU_OVCROPAA('total','d13d','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d1',UserMBTime)   = PEF_LU_OVCROPAA('total','d13d1','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d1a',UserMBTime)  = PEF_LU_OVCROPAA('total','d13d1a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d1b',UserMBTime)  = PEF_LU_OVCROPAA('total','d13d1b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d1c',UserMBTime)  = PEF_LU_OVCROPAA('total','d13d1c','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d1d',UserMBTime)  = PEF_LU_OVCROPAA('total','d13d1d','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d2',UserMBTime)   = PEF_LU_OVCROPAA('total','d13d2','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d13d3',UserMBTime)   = PEF_LU_OVCROPAA('total','d13d3','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d14_15',UserMBTime)  = PEF_LU_OVCROPAA('total','d14_15','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d14',UserMBTime)     = PEF_LU_OVCROPAA('total','d14','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d14a',UserMBTime)    = PEF_LU_OVCROPAA('total','d14a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d14b',UserMBTime)    = PEF_LU_OVCROPAA('total','d14b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d15',UserMBTime)     = PEF_LU_OVCROPAA('total','d15','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d16',UserMBTime)     = PEF_LU_OVCROPAA('total','d16','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d17',UserMBTime)     = PEF_LU_OVCROPAA('total','d17','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d18',UserMBTime)     = PEF_LU_OVCROPAA('total','d18','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d18a',UserMBTime)    = PEF_LU_OVCROPAA('total','d18a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d18b',UserMBTime)    = PEF_LU_OVCROPAA('total','d18b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d18b1',UserMBTime)   = PEF_LU_OVCROPAA('total','d18b1','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d18b2',UserMBTime)   = PEF_LU_OVCROPAA('total','d18b2','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d19',UserMBTime)     = PEF_LU_OVCROPAA('total','d19','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d20',UserMBTime)     = PEF_LU_OVCROPAA('total','d20','ha',geo,UserMBTime);
PrimaSource(geo,'craa','d21',UserMBTime)     = PEF_LU_OVCROPAA('total','d21','ha',geo,UserMBTime);
```


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PrimaSource(geo,'craa','f_str',UserMBTime)    = PEF_LU_OVCROPAA('total','f','ha',geo,UserMBTime);
PrimaSource(geo,'craa','f01',UserMBTime)      = PEF_LU_OVCROPAA('total','f01','ha',geo,UserMBTime);
PrimaSource(geo,'craa','f02',UserMBTime)      = PEF_LU_OVCROPAA('total','f02','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g_str',UserMBTime)    = PEF_LU_OVCROPAA('total','g','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g01',UserMBTime)      = PEF_LU_OVCROPAA('total','g01','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g01a',UserMBTime)     = PEF_LU_OVCROPAA('total','g01a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g01b',UserMBTime)     = PEF_LU_OVCROPAA('total','g01b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g01c',UserMBTime)     = PEF_LU_OVCROPAA('total','g01c','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g02',UserMBTime)      = PEF_LU_OVCROPAA('total','g02','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g03',UserMBTime)      = PEF_LU_OVCROPAA('total','g03','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g03a',UserMBTime)     = PEF_LU_OVCROPAA('total','g03a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g03b',UserMBTime)     = PEF_LU_OVCROPAA('total','g03b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g04',UserMBTime)      = PEF_LU_OVCROPAA('total','g04','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g04a',UserMBTime)     = PEF_LU_OVCROPAA('total','g04a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g04b',UserMBTime)     = PEF_LU_OVCROPAA('total','g04b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g04c',UserMBTime)     = PEF_LU_OVCROPAA('total','g04c','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g04d',UserMBTime)     = PEF_LU_OVCROPAA('total','g04d','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g05',UserMBTime)      = PEF_LU_OVCROPAA('total','g05','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g06',UserMBTime)      = PEF_LU_OVCROPAA('total','g06','ha',geo,UserMBTime);
PrimaSource(geo,'craa','g07',UserMBTime)      = PEF_LU_OVCROPAA('total','g07','ha',geo,UserMBTime);
PrimaSource(geo,'craa','e_str',UserMBTime)    = PEF_LU_OVCROPAA('total','e','ha',geo,UserMBTime);
PrimaSource(geo,'craa','h_str',UserMBTime)    = PEF_LU_OVCROPAA('total','h','ha',geo,UserMBTime);
PrimaSource(geo,'craa','h0103',UserMBTime)    = PEF_LU_OVCROPAA('total','h0103','ha',geo,UserMBTime);
PrimaSource(geo,'craa','h02',UserMBTime)      = PEF_LU_OVCROPAA('total','h02','ha',geo,UserMBTime);
PrimaSource(geo,'craa','h02f',UserMBTime)     = PEF_LU_OVCROPAA('total','h02f','ha',geo,UserMBTime);
PrimaSource(geo,'craa','h02g',UserMBTime)     = PEF_LU_OVCROPAA('total','h02g','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i02',UserMBTime)      = PEF_LU_OVCROPAA('total','i02','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i05',UserMBTime)      = PEF_LU_OVCROPAA('total','i05','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i05a',UserMBTime)     = PEF_LU_OVCROPAA('total','i05a','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i05b',UserMBTime)     = PEF_LU_OVCROPAA('total','i05b','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i05c',UserMBTime)     = PEF_LU_OVCROPAA('total','i05c','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i05d',UserMBTime)     = PEF_LU_OVCROPAA('total','i05d','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i08',UserMBTime)      = PEF_LU_OVCROPAA('total','i08','ha',geo,UserMBTime);
PrimaSource(geo,'craa','i08ad22',UserMBTime)  = PEF_LU_OVCROPAA('total','i08ad22','ha',geo,UserMBTime);

*cres  'PEF_LU_OVCROPESU'
PrimaSource(geo,'cres','totarea',UserMBTime)  = PEF_LU_OVCROPESU('total','totarea','ha',geo,UserMBTime);
PrimaSource(geo,'cres','agrarea',UserMBTime)  = PEF_LU_OVCROPESU('total','agrarea','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d_str',UserMBTime)    = PEF_LU_OVCROPESU('total','d','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d01_08',UserMBTime)   = PEF_LU_OVCROPESU('total','d01_08','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d01',UserMBTime)      = PEF_LU_OVCROPESU('total','d01','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d02',UserMBTime)      = PEF_LU_OVCROPESU('total','d02','ha',geo,UserMBTime);
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PrimaSource(geo,'cres','d03',UserMBTime)     = PEF_LU_OVCROPESU('total','d03','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d04',UserMBTime)     = PEF_LU_OVCROPESU('total','d04','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d05',UserMBTime)     = PEF_LU_OVCROPESU('total','d05','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d06',UserMBTime)     = PEF_LU_OVCROPESU('total','d06','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d07',UserMBTime)     = PEF_LU_OVCROPESU('total','d07','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d08',UserMBTime)     = PEF_LU_OVCROPESU('total','d08','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d09',UserMBTime)     = PEF_LU_OVCROPESU('total','d09','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d09c',UserMBTime)    = PEF_LU_OVCROPESU('total','d09c','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d09d',UserMBTime)    = PEF_LU_OVCROPESU('total','d09d','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d10',UserMBTime)     = PEF_LU_OVCROPESU('total','d10','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d11',UserMBTime)     = PEF_LU_OVCROPESU('total','d11','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d12',UserMBTime)     = PEF_LU_OVCROPESU('total','d12','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13',UserMBTime)     = PEF_LU_OVCROPESU('total','d13','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13a',UserMBTime)    = PEF_LU_OVCROPESU('total','d13a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13b',UserMBTime)    = PEF_LU_OVCROPESU('total','d13b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13c',UserMBTime)    = PEF_LU_OVCROPESU('total','d13c','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d',UserMBTime)    = PEF_LU_OVCROPESU('total','d13d','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d1',UserMBTime)   = PEF_LU_OVCROPESU('total','d13d1','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d1a',UserMBTime)  = PEF_LU_OVCROPESU('total','d13d1a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d1b',UserMBTime)  = PEF_LU_OVCROPESU('total','d13d1b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d1c',UserMBTime)  = PEF_LU_OVCROPESU('total','d13d1c','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d1d',UserMBTime)  = PEF_LU_OVCROPESU('total','d13d1d','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d2',UserMBTime)   = PEF_LU_OVCROPESU('total','d13d2','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d13d3',UserMBTime)   = PEF_LU_OVCROPESU('total','d13d3','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d14_15',UserMBTime)  = PEF_LU_OVCROPESU('total','d14_15','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d14',UserMBTime)     = PEF_LU_OVCROPESU('total','d14','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d14a',UserMBTime)    = PEF_LU_OVCROPESU('total','d14a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d14b',UserMBTime)    = PEF_LU_OVCROPESU('total','d14b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d15',UserMBTime)     = PEF_LU_OVCROPESU('total','d15','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d16',UserMBTime)     = PEF_LU_OVCROPESU('total','d16','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d17',UserMBTime)     = PEF_LU_OVCROPESU('total','d17','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d18',UserMBTime)     = PEF_LU_OVCROPESU('total','d18','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d18a',UserMBTime)    = PEF_LU_OVCROPESU('total','d18a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d18b',UserMBTime)    = PEF_LU_OVCROPESU('total','d18b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d18b1',UserMBTime)   = PEF_LU_OVCROPESU('total','d18b1','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d18b2',UserMBTime)   = PEF_LU_OVCROPESU('total','d18b2','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d19',UserMBTime)     = PEF_LU_OVCROPESU('total','d19','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d20',UserMBTime)     = PEF_LU_OVCROPESU('total','d20','ha',geo,UserMBTime);
PrimaSource(geo,'cres','d21',UserMBTime)     = PEF_LU_OVCROPESU('total','d21','ha',geo,UserMBTime);
PrimaSource(geo,'cres','f_str',UserMBTime)   = PEF_LU_OVCROPESU('total','f','ha',geo,UserMBTime);
PrimaSource(geo,'cres','f01',UserMBTime)     = PEF_LU_OVCROPESU('total','f01','ha',geo,UserMBTime);
PrimaSource(geo,'cres','f02',UserMBTime)     = PEF_LU_OVCROPESU('total','f02','ha',geo,UserMBTime);
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PrimaSource(geo,'cres','g_str',UserMBTime)    = PEF_LU_OVCROPESU('total','g','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g01',UserMBTime)      = PEF_LU_OVCROPESU('total','g01','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g01a',UserMBTime)     = PEF_LU_OVCROPESU('total','g01a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g01b',UserMBTime)     = PEF_LU_OVCROPESU('total','g01b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g01c',UserMBTime)     = PEF_LU_OVCROPESU('total','g01c','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g02',UserMBTime)      = PEF_LU_OVCROPESU('total','g02','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g03',UserMBTime)      = PEF_LU_OVCROPESU('total','g03','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g03a',UserMBTime)     = PEF_LU_OVCROPESU('total','g03a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g03b',UserMBTime)     = PEF_LU_OVCROPESU('total','g03b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g04',UserMBTime)      = PEF_LU_OVCROPESU('total','g04','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g04a',UserMBTime)     = PEF_LU_OVCROPESU('total','g04a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g04b',UserMBTime)     = PEF_LU_OVCROPESU('total','g04b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g04c',UserMBTime)     = PEF_LU_OVCROPESU('total','g04c','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g04d',UserMBTime)     = PEF_LU_OVCROPESU('total','g04d','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g05',UserMBTime)      = PEF_LU_OVCROPESU('total','g05','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g06',UserMBTime)      = PEF_LU_OVCROPESU('total','g06','ha',geo,UserMBTime);
PrimaSource(geo,'cres','g07',UserMBTime)      = PEF_LU_OVCROPESU('total','g07','ha',geo,UserMBTime);
PrimaSource(geo,'cres','e_str',UserMBTime)    = PEF_LU_OVCROPESU('total','e','ha',geo,UserMBTime);
PrimaSource(geo,'cres','h_str',UserMBTime)    = PEF_LU_OVCROPESU('total','h','ha',geo,UserMBTime);
PrimaSource(geo,'cres','h0103',UserMBTime)    = PEF_LU_OVCROPESU('total','h0103','ha',geo,UserMBTime);
PrimaSource(geo,'cres','h02',UserMBTime)      = PEF_LU_OVCROPESU('total','h02','ha',geo,UserMBTime);
PrimaSource(geo,'cres','h02f',UserMBTime)     = PEF_LU_OVCROPESU('total','h02f','ha',geo,UserMBTime);
PrimaSource(geo,'cres','h02g',UserMBTime)     = PEF_LU_OVCROPESU('total','h02g','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i02',UserMBTime)      = PEF_LU_OVCROPESU('total','i02','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i05',UserMBTime)      = PEF_LU_OVCROPESU('total','i05','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i05a',UserMBTime)     = PEF_LU_OVCROPESU('total','i05a','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i05b',UserMBTime)     = PEF_LU_OVCROPESU('total','i05b','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i05c',UserMBTime)     = PEF_LU_OVCROPESU('total','i05c','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i05d',UserMBTime)     = PEF_LU_OVCROPESU('total','i05d','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i08',UserMBTime)      = PEF_LU_OVCROPESU('total','i08','ha',geo,UserMBTime);
PrimaSource(geo,'cres','i08ad22',UserMBTime)  = PEF_LU_OVCROPESU('total','i08ad22','ha',geo,UserMBTime);

*rfar  'PEF_R_FARM'
PrimaSource(geo,'rfar','037',UserMBTime)   = PEF_R_FARM('037',geo,UserMBTime);
PrimaSource(geo,'rfar','002',UserMBTime)   = PEF_R_FARM('002',geo,UserMBTime);
PrimaSource(geo,'rfar','039',UserMBTime)   = PEF_R_FARM('039',geo,UserMBTime);
PrimaSource(geo,'rfar','042',UserMBTime)   = PEF_R_FARM('042',geo,UserMBTime);
PrimaSource(geo,'rfar','044',UserMBTime)   = PEF_R_FARM('044',geo,UserMBTime);
PrimaSource(geo,'rfar','046',UserMBTime)   = PEF_R_FARM('046',geo,UserMBTime);
PrimaSource(geo,'rfar','048',UserMBTime)   = PEF_R_FARM('048',geo,UserMBTime);
PrimaSource(geo,'rfar','050',UserMBTime)   = PEF_R_FARM('050',geo,UserMBTime);
PrimaSource(geo,'rfar','052',UserMBTime)   = PEF_R_FARM('052',geo,UserMBTime);
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PrimaSource(geo,'rfar','054',UserMBTime)  = PEF_R_FARM('054',geo,UserMBTime);
PrimaSource(geo,'rfar','056',UserMBTime)  = PEF_R_FARM('056',geo,UserMBTime);
PrimaSource(geo,'rfar','058',UserMBTime)  = PEF_R_FARM('058',geo,UserMBTime);
PrimaSource(geo,'rfar','060',UserMBTime)  = PEF_R_FARM('060',geo,UserMBTime);
PrimaSource(geo,'rfar','062',UserMBTime)  = PEF_R_FARM('062',geo,UserMBTime);
PrimaSource(geo,'rfar','064',UserMBTime)  = PEF_R_FARM('064',geo,UserMBTime);
PrimaSource(geo,'rfar','066',UserMBTime)  = PEF_R_FARM('066',geo,UserMBTime);
PrimaSource(geo,'rfar','068',UserMBTime)  = PEF_R_FARM('068',geo,UserMBTime);
PrimaSource(geo,'rfar','070',UserMBTime)  = PEF_R_FARM('070',geo,UserMBTime);
PrimaSource(geo,'rfar','072',UserMBTime)  = PEF_R_FARM('072',geo,UserMBTime);
PrimaSource(geo,'rfar','074',UserMBTime)  = PEF_R_FARM('074',geo,UserMBTime);
PrimaSource(geo,'rfar','076',UserMBTime)  = PEF_R_FARM('076',geo,UserMBTime);
PrimaSource(geo,'rfar','078',UserMBTime)  = PEF_R_FARM('078',geo,UserMBTime);
PrimaSource(geo,'rfar','080',UserMBTime)  = PEF_R_FARM('080',geo,UserMBTime);
PrimaSource(geo,'rfar','082',UserMBTime)  = PEF_R_FARM('082',geo,UserMBTime);
PrimaSource(geo,'rfar','084',UserMBTime)  = PEF_R_FARM('084',geo,UserMBTime);
PrimaSource(geo,'rfar','087',UserMBTime)  = PEF_R_FARM('087',geo,UserMBTime);
PrimaSource(geo,'rfar','089',UserMBTime)  = PEF_R_FARM('089',geo,UserMBTime);
PrimaSource(geo,'rfar','091',UserMBTime)  = PEF_R_FARM('091',geo,UserMBTime);
PrimaSource(geo,'rfar','093',UserMBTime)  = PEF_R_FARM('093',geo,UserMBTime);
PrimaSource(geo,'rfar','095',UserMBTime)  = PEF_R_FARM('095',geo,UserMBTime);
PrimaSource(geo,'rfar','097',UserMBTime)  = PEF_R_FARM('097',geo,UserMBTime);
PrimaSource(geo,'rfar','099',UserMBTime)  = PEF_R_FARM('099',geo,UserMBTime);
PrimaSource(geo,'rfar','101',UserMBTime)  = PEF_R_FARM('101',geo,UserMBTime);
PrimaSource(geo,'rfar','103',UserMBTime)  = PEF_R_FARM('103',geo,UserMBTime);
PrimaSource(geo,'rfar','105',UserMBTime)  = PEF_R_FARM('105',geo,UserMBTime);
PrimaSource(geo,'rfar','107',UserMBTime)  = PEF_R_FARM('107',geo,UserMBTime);
PrimaSource(geo,'rfar','109',UserMBTime)  = PEF_R_FARM('109',geo,UserMBTime);

*rnut  'Pef_r_nuts'
PrimaSource(geo,'rnut','037',UserMBTime)  = PEF_r_nuts('037',geo,UserMBTime);
PrimaSource(geo,'rnut','002',UserMBTime)  = PEF_r_nuts('002',geo,UserMBTime);
PrimaSource(geo,'rnut','039',UserMBTime)  = PEF_r_nuts('039',geo,UserMBTime);
PrimaSource(geo,'rnut','042',UserMBTime)  = PEF_r_nuts('042',geo,UserMBTime);
PrimaSource(geo,'rnut','044',UserMBTime)  = PEF_r_nuts('044',geo,UserMBTime);
PrimaSource(geo,'rnut','046',UserMBTime)  = PEF_r_nuts('046',geo,UserMBTime);
PrimaSource(geo,'rnut','048',UserMBTime)  = PEF_r_nuts('048',geo,UserMBTime);
PrimaSource(geo,'rnut','050',UserMBTime)  = PEF_r_nuts('050',geo,UserMBTime);
PrimaSource(geo,'rnut','052',UserMBTime)  = PEF_r_nuts('052',geo,UserMBTime);
PrimaSource(geo,'rnut','054',UserMBTime)  = PEF_r_nuts('054',geo,UserMBTime);
PrimaSource(geo,'rnut','056',UserMBTime)  = PEF_r_nuts('056',geo,UserMBTime);
PrimaSource(geo,'rnut','058',UserMBTime)  = PEF_r_nuts('058',geo,UserMBTime);
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PrimaSource(geo,'rnut','060',UserMBTime)  = PEF_r_nuts('060',geo,UserMBTime);
PrimaSource(geo,'rnut','062',UserMBTime)  = PEF_r_nuts('062',geo,UserMBTime);
PrimaSource(geo,'rnut','064',UserMBTime)  = PEF_r_nuts('064',geo,UserMBTime);
PrimaSource(geo,'rnut','066',UserMBTime)  = PEF_r_nuts('066',geo,UserMBTime);
PrimaSource(geo,'rnut','068',UserMBTime)  = PEF_r_nuts('068',geo,UserMBTime);
PrimaSource(geo,'rnut','070',UserMBTime)  = PEF_r_nuts('070',geo,UserMBTime);
PrimaSource(geo,'rnut','072',UserMBTime)  = PEF_r_nuts('072',geo,UserMBTime);
PrimaSource(geo,'rnut','074',UserMBTime)  = PEF_r_nuts('074',geo,UserMBTime);
PrimaSource(geo,'rnut','076',UserMBTime)  = PEF_r_nuts('076',geo,UserMBTime);
PrimaSource(geo,'rnut','078',UserMBTime)  = PEF_r_nuts('078',geo,UserMBTime);
PrimaSource(geo,'rnut','080',UserMBTime)  = PEF_r_nuts('080',geo,UserMBTime);
PrimaSource(geo,'rnut','082',UserMBTime)  = PEF_r_nuts('082',geo,UserMBTime);
PrimaSource(geo,'rnut','084',UserMBTime)  = PEF_r_nuts('084',geo,UserMBTime);
PrimaSource(geo,'rnut','087',UserMBTime)  = PEF_r_nuts('087',geo,UserMBTime);
PrimaSource(geo,'rnut','089',UserMBTime)  = PEF_r_nuts('089',geo,UserMBTime);
PrimaSource(geo,'rnut','091',UserMBTime)  = PEF_r_nuts('091',geo,UserMBTime);
PrimaSource(geo,'rnut','093',UserMBTime)  = PEF_r_nuts('093',geo,UserMBTime);
PrimaSource(geo,'rnut','095',UserMBTime)  = PEF_r_nuts('095',geo,UserMBTime);
PrimaSource(geo,'rnut','097',UserMBTime)  = PEF_r_nuts('097',geo,UserMBTime);
PrimaSource(geo,'rnut','099',UserMBTime)  = PEF_r_nuts('099',geo,UserMBTime);
PrimaSource(geo,'rnut','101',UserMBTime)  = PEF_r_nuts('101',geo,UserMBTime);
PrimaSource(geo,'rnut','103',UserMBTime)  = PEF_r_nuts('103',geo,UserMBTime);
PrimaSource(geo,'rnut','105',UserMBTime)  = PEF_r_nuts('105',geo,UserMBTime);
PrimaSource(geo,'rnut','107',UserMBTime)  = PEF_r_nuts('107',geo,UserMBTime);
PrimaSource(geo,'rnut','109',UserMBTime)  = PEF_r_nuts('109',geo,UserMBTime);

*cppc  'PAPRO_CPP_CROP'
PrimaSource(geo,'cppc','c1040',UserMBTime)  = PAPRO_CPP_CROP('c1040','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1050',UserMBTime)  = PAPRO_CPP_CROP('c1050','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1100',UserMBTime)  = PAPRO_CPP_CROP('c1100','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1120',UserMBTime)  = PAPRO_CPP_CROP('c1120','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1130',UserMBTime)  = PAPRO_CPP_CROP('c1130','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1140',UserMBTime)  = PAPRO_CPP_CROP('C1140','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1150',UserMBTime)  = PAPRO_CPP_CROP('c1150','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1155',UserMBTime)  = PAPRO_CPP_CROP('C1155','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1160',UserMBTime)  = PAPRO_CPP_CROP('c1160','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1170',UserMBTime)  = PAPRO_CPP_CROP('C1170','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1180',UserMBTime)  = PAPRO_CPP_CROP('C1180','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1185',UserMBTime)  = PAPRO_CPP_CROP('C1185','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1200',UserMBTime)  = PAPRO_CPP_CROP('c1200','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1201',UserMBTime)  = PAPRO_CPP_CROP('C1201','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1211',UserMBTime)  = PAPRO_CPP_CROP('C1211','AR',geo,UserMBTime);
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PrimaSource(geo,'cppc','C1212',UserMBTime)  = PAPRO_CPP_CROP('C1212','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1213',UserMBTime)  = PAPRO_CPP_CROP('C1213','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1219',UserMBTime)  = PAPRO_CPP_CROP('C1219','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1250',UserMBTime)  = PAPRO_CPP_CROP('c1250','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1300',UserMBTime)  = PAPRO_CPP_CROP('c1300','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1310',UserMBTime)  = PAPRO_CPP_CROP('C1310','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1311',UserMBTime)  = PAPRO_CPP_CROP('C1311','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1320',UserMBTime)  = PAPRO_CPP_CROP('C1320','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1330',UserMBTime)  = PAPRO_CPP_CROP('C1330','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1331',UserMBTime)  = PAPRO_CPP_CROP('C1331','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1335',UserMBTime)  = PAPRO_CPP_CROP('C1335','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1338',UserMBTime)  = PAPRO_CPP_CROP('C1338','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1340',UserMBTime)  = PAPRO_CPP_CROP('C1340','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1341',UserMBTime)  = PAPRO_CPP_CROP('C1341','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1342',UserMBTime)  = PAPRO_CPP_CROP('C1342','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1343',UserMBTime)  = PAPRO_CPP_CROP('C1343','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1349',UserMBTime)  = PAPRO_CPP_CROP('C1349','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1350',UserMBTime)  = PAPRO_CPP_CROP('C1350','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1360',UserMBTime)  = PAPRO_CPP_CROP('c1360','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1370',UserMBTime)  = PAPRO_CPP_CROP('c1370','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1381',UserMBTime)  = PAPRO_CPP_CROP('C1381','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1382',UserMBTime)  = PAPRO_CPP_CROP('C1382','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1383',UserMBTime)  = PAPRO_CPP_CROP('C1383','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1384',UserMBTime)  = PAPRO_CPP_CROP('C1384','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1385',UserMBTime)  = PAPRO_CPP_CROP('C1385','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1386',UserMBTime)  = PAPRO_CPP_CROP('C1386','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1390',UserMBTime)  = PAPRO_CPP_CROP('C1390','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1400',UserMBTime)  = PAPRO_CPP_CROP('C1400','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1410',UserMBTime)  = PAPRO_CPP_CROP('c1410','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1420',UserMBTime)  = PAPRO_CPP_CROP('c1420','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1430',UserMBTime)  = PAPRO_CPP_CROP('C1430','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1450',UserMBTime)  = PAPRO_CPP_CROP('c1450','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1460',UserMBTime)  = PAPRO_CPP_CROP('c1460','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1470',UserMBTime)  = PAPRO_CPP_CROP('c1470','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1480',UserMBTime)  = PAPRO_CPP_CROP('C1480','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1490',UserMBTime)  = PAPRO_CPP_CROP('c1490','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1500',UserMBTime)  = PAPRO_CPP_CROP('C1500','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1510',UserMBTime)  = PAPRO_CPP_CROP('C1510','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1520',UserMBTime)  = PAPRO_CPP_CROP('C1520','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1530',UserMBTime)  = PAPRO_CPP_CROP('C1530','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1540',UserMBTime)  = PAPRO_CPP_CROP('C1540','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c1550',UserMBTime)  = PAPRO_CPP_CROP('c1550','AR',geo,UserMBTime);
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PrimaSource(geo,'cppc','C1560',UserMBTime)  = PAPRO_CPP_CROP('C1560','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1570',UserMBTime)  = PAPRO_CPP_CROP('C1570','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1571',UserMBTime)  = PAPRO_CPP_CROP('C1571','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1572',UserMBTime)  = PAPRO_CPP_CROP('C1572','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1580',UserMBTime)  = PAPRO_CPP_CROP('C1580','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1582',UserMBTime)  = PAPRO_CPP_CROP('C1582','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C1589',UserMBTime)  = PAPRO_CPP_CROP('C1589','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2600',UserMBTime)  = PAPRO_CPP_CROP('C2600','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2610',UserMBTime)  = PAPRO_CPP_CROP('C2610','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2611',UserMBTime)  = PAPRO_CPP_CROP('C2611','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2612',UserMBTime)  = PAPRO_CPP_CROP('C2612','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c2040',UserMBTime)  = PAPRO_CPP_CROP('c2040','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c2270',UserMBTime)  = PAPRO_CPP_CROP('c2270','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c2410',UserMBTime)  = PAPRO_CPP_CROP('c2410','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c2450',UserMBTime)  = PAPRO_CPP_CROP('c2450','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','c2625',UserMBTime)  = PAPRO_CPP_CROP('c2625','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2670',UserMBTime)  = PAPRO_CPP_CROP('C2670','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2671',UserMBTime)  = PAPRO_CPP_CROP('C2671','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2672',UserMBTime)  = PAPRO_CPP_CROP('C2672','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2673',UserMBTime)  = PAPRO_CPP_CROP('C2673','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2680',UserMBTime)  = PAPRO_CPP_CROP('C2680','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C0002',UserMBTime)  = PAPRO_CPP_CROP('C0002','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2710',UserMBTime)  = PAPRO_CPP_CROP('C2710','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2720',UserMBTime)  = PAPRO_CPP_CROP('C2720','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2721',UserMBTime)  = PAPRO_CPP_CROP('C2721','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2722',UserMBTime)  = PAPRO_CPP_CROP('C2722','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2971',UserMBTime)  = PAPRO_CPP_CROP('C2971','AR',geo,UserMBTime);
PrimaSource(geo,'cppc','C2980',UserMBTime)  = PAPRO_CPP_CROP('C2980','AR',geo,UserMBTime);

*cppl  'PAPRO_CPP_LUSE'
PrimaSource(geo,'cppl','L0000',UserMBTime)  = PAPRO_CPP_LUSE('L0000',geo,UserMBTime);
PrimaSource(geo,'cppl','L0005',UserMBTime)  = PAPRO_CPP_LUSE('L0005',geo,UserMBTime);
PrimaSource(geo,'cppl','L0001',UserMBTime)  = PAPRO_CPP_LUSE('L0001',geo,UserMBTime);
PrimaSource(geo,'cppl','L2610',UserMBTime)  = PAPRO_CPP_LUSE('L2610',geo,UserMBTime);
PrimaSource(geo,'cppl','L2696',UserMBTime)  = PAPRO_CPP_LUSE('L2696',geo,UserMBTime);
PrimaSource(geo,'cppl','L0002',UserMBTime)  = PAPRO_CPP_LUSE('L0002',geo,UserMBTime);
PrimaSource(geo,'cppl','L0003',UserMBTime)  = PAPRO_CPP_LUSE('L0003',geo,UserMBTime);
PrimaSource(geo,'cppl','L2410',UserMBTime)  = PAPRO_CPP_LUSE('L2410',geo,UserMBTime);
PrimaSource(geo,'cppl','L2450',UserMBTime)  = PAPRO_CPP_LUSE('L2450',geo,UserMBTime);
PrimaSource(geo,'cppl','L0004',UserMBTime)  = PAPRO_CPP_LUSE('L0004',geo,UserMBTime);
PrimaSource(geo,'cppl','L0006',UserMBTime)  = PAPRO_CPP_LUSE('L0006',geo,UserMBTime);
PrimaSource(geo,'cppl','L0007',UserMBTime)  = PAPRO_CPP_LUSE('L0007',geo,UserMBTime);
```


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PrimaSource(geo,'cppl','L0008',UserMBTime)  = PAPRO_CPP_LUSE('L0008',geo,UserMBTime);
PrimaSource(geo,'cppl','L0009',UserMBTime)  = PAPRO_CPP_LUSE('L0009',geo,UserMBTime);
PrimaSource(geo,'cppl','L0016',UserMBTime)  = PAPRO_CPP_LUSE('L0016',geo,UserMBTime);
PrimaSource(geo,'cppl','L0900',UserMBTime)  = PAPRO_CPP_LUSE('L0900',geo,UserMBTime);
PrimaSource(geo,'cppl','L1050',UserMBTime)  = PAPRO_CPP_LUSE('L1050',geo,UserMBTime);
PrimaSource(geo,'cppl','L1112',UserMBTime)  = PAPRO_CPP_LUSE('L1112',geo,UserMBTime);
PrimaSource(geo,'cppl','L1113',UserMBTime)  = PAPRO_CPP_LUSE('L1113',geo,UserMBTime);
PrimaSource(geo,'cppl','L1114',UserMBTime)  = PAPRO_CPP_LUSE('L1114',geo,UserMBTime);
PrimaSource(geo,'cppl','L1250',UserMBTime)  = PAPRO_CPP_LUSE('L1250',geo,UserMBTime);
PrimaSource(geo,'cppl','L1300',UserMBTime)  = PAPRO_CPP_LUSE('L1300',geo,UserMBTime);
PrimaSource(geo,'cppl','L1350',UserMBTime)  = PAPRO_CPP_LUSE('L1350',geo,UserMBTime);
PrimaSource(geo,'cppl','L1400',UserMBTime)  = PAPRO_CPP_LUSE('L1400',geo,UserMBTime);
PrimaSource(geo,'cppl','L1600',UserMBTime)  = PAPRO_CPP_LUSE('L1600',geo,UserMBTime);
PrimaSource(geo,'cppl','L2002',UserMBTime)  = PAPRO_CPP_LUSE('L2002',geo,UserMBTime);
PrimaSource(geo,'cppl','L2695',UserMBTime)  = PAPRO_CPP_LUSE('L2695',geo,UserMBTime);
PrimaSource(geo,'cppl','L2810',UserMBTime)  = PAPRO_CPP_LUSE('L2810',geo,UserMBTime);
PrimaSource(geo,'cppl','L2960',UserMBTime)  = PAPRO_CPP_LUSE('L2960',geo,UserMBTime);
PrimaSource(geo,'cppl','L2980',UserMBTime)  = PAPRO_CPP_LUSE('L2980',geo,UserMBTime);
PrimaSource(geo,'cppl','L3001',UserMBTime)  = PAPRO_CPP_LUSE('L3001',geo,UserMBTime);
PrimaSource(geo,'cppl','L3310',UserMBTime)  = PAPRO_CPP_LUSE('L3310',geo,UserMBTime);

*crop  'AGR_R_CROPS'
PrimaSource(geo,'crop','c1040',UserMBTime)  = AGR_R_CROPS('c1040','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1050',UserMBTime)  = AGR_R_CROPS('c1050','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1100',UserMBTime)  = AGR_R_CROPS('c1100','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1120',UserMBTime)  = AGR_R_CROPS('c1120','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1130',UserMBTime)  = AGR_R_CROPS('c1130','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1150',UserMBTime)  = AGR_R_CROPS('c1150','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1160',UserMBTime)  = AGR_R_CROPS('c1160','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1200',UserMBTime)  = AGR_R_CROPS('c1200','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1250',UserMBTime)  = AGR_R_CROPS('c1250','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1300',UserMBTime)  = AGR_R_CROPS('c1300','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1360',UserMBTime)  = AGR_R_CROPS('c1360','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1370',UserMBTime)  = AGR_R_CROPS('c1370','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1410',UserMBTime)  = AGR_R_CROPS('c1410','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1420',UserMBTime)  = AGR_R_CROPS('c1420','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1450',UserMBTime)  = AGR_R_CROPS('c1450','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1460',UserMBTime)  = AGR_R_CROPS('c1460','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1470',UserMBTime)  = AGR_R_CROPS('c1470','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1490',UserMBTime)  = AGR_R_CROPS('c1490','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c1550',UserMBTime)  = AGR_R_CROPS('c1550','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c2625',UserMBTime)  = AGR_R_CROPS('c2625','ha',geo,UserMBTime);
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PrimaSource(geo,'crop','c2040',UserMBTime)  = AGR_R_CROPS('c2040','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c2270',UserMBTime)  = AGR_R_CROPS('c2270','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c2410',UserMBTime)  = AGR_R_CROPS('c2410','ha',geo,UserMBTime);
PrimaSource(geo,'crop','c2450',UserMBTime)  = AGR_R_CROPS('c2450','ha',geo,UserMBTime);

*land  'AGR_R_LANDUSE'
PrimaSource(geo,'land','L0000',UserMBTime)  = AGR_R_LANDUSE('L0000','ha',geo,UserMBTime);
PrimaSource(geo,'land','L0005',UserMBTime)  = AGR_R_LANDUSE('L0005','ha',geo,UserMBTime);
PrimaSource(geo,'land','L0001',UserMBTime)  = AGR_R_LANDUSE('L0001','ha',geo,UserMBTime);
PrimaSource(geo,'land','L2610',UserMBTime)  = AGR_R_LANDUSE('L2610','ha',geo,UserMBTime);
PrimaSource(geo,'land','L2696',UserMBTime)  = AGR_R_LANDUSE('L2696','ha',geo,UserMBTime);
PrimaSource(geo,'land','L0002',UserMBTime)  = AGR_R_LANDUSE('L0002','ha',geo,UserMBTime);
PrimaSource(geo,'land','L0003',UserMBTime)  = AGR_R_LANDUSE('L0003','ha',geo,UserMBTime);
PrimaSource(geo,'land','L2410',UserMBTime)  = AGR_R_LANDUSE('L2410','ha',geo,UserMBTime);
PrimaSource(geo,'land','L2450',UserMBTime)  = AGR_R_LANDUSE('L2450','ha',geo,UserMBTime);
PrimaSource(geo,'land','L0004',UserMBTime)  = AGR_R_LANDUSE('L0004','ha',geo,UserMBTime);
PrimaSource(geo,'land','L0006',UserMBTime)  = AGR_R_LANDUSE('L0006','ha',geo,UserMBTime);

*anim  'AGR_R_ANIMAL'
PrimaSource(geo,'anim','PC0000',UserMBTime)    = AGR_R_ANIMAL('PC0000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC1000',UserMBTime)    = AGR_R_ANIMAL('PC1000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC1100',UserMBTime)    = AGR_R_ANIMAL('PC1100','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC1200',UserMBTime)    = AGR_R_ANIMAL('PC1200','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC1210',UserMBTime)    = AGR_R_ANIMAL('PC1210','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC1220',UserMBTime)    = AGR_R_ANIMAL('PC1220','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC2000',UserMBTime)    = AGR_R_ANIMAL('PC2000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC2100',UserMBTime)    = AGR_R_ANIMAL('PC2100','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC2200',UserMBTime)    = AGR_R_ANIMAL('PC2200','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC2210',UserMBTime)    = AGR_R_ANIMAL('PC2210','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC2220',UserMBTime)    = AGR_R_ANIMAL('PC2220','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3000',UserMBTime)    = AGR_R_ANIMAL('PC3000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3100',UserMBTime)    = AGR_R_ANIMAL('PC3100','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3200',UserMBTime)    = AGR_R_ANIMAL('PC3200','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3210',UserMBTime)    = AGR_R_ANIMAL('PC3210','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3211',UserMBTime)    = AGR_R_ANIMAL('PC3211','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3212',UserMBTime)    = AGR_R_ANIMAL('PC3212','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3220',UserMBTime)    = AGR_R_ANIMAL('PC3220','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3221',UserMBTime)    = AGR_R_ANIMAL('PC3221','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC3222',UserMBTime)    = AGR_R_ANIMAL('PC3222','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PC4000',UserMBTime)    = AGR_R_ANIMAL('PC4000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PS0000',UserMBTime)    = AGR_R_ANIMAL('PS0000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PG0000',UserMBTime)    = AGR_R_ANIMAL('PG0000','1000HD',geo,UserMBTime);
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PrimaSource(geo,'anim','PP0000',UserMBTime)    = AGR_R_ANIMAL('PP0000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP1000',UserMBTime)    = AGR_R_ANIMAL('PP1000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP2000',UserMBTime)    = AGR_R_ANIMAL('PP2000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP3000',UserMBTime)    = AGR_R_ANIMAL('PP3000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP3100',UserMBTime)    = AGR_R_ANIMAL('PP3100','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP3200',UserMBTime)    = AGR_R_ANIMAL('PP3200','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP3300',UserMBTime)    = AGR_R_ANIMAL('PP3300','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP4000',UserMBTime)    = AGR_R_ANIMAL('PP4000','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP4100',UserMBTime)    = AGR_R_ANIMAL('PP4100','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP4200',UserMBTime)    = AGR_R_ANIMAL('PP4200','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP4210',UserMBTime)    = AGR_R_ANIMAL('PP4210','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP4211',UserMBTime)    = AGR_R_ANIMAL('PP4211','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP4220',UserMBTime)    = AGR_R_ANIMAL('PP4220','1000HD',geo,UserMBTime);
PrimaSource(geo,'anim','PP4221',UserMBTime)    = AGR_R_ANIMAL('PP4221','1000HD',geo,UserMBTime);

*a2an  'Pa2animal_Conv'
PrimaSource(geo,'a2an','total_lsu',UserMBTime)    = Pa2animal_Conv('total','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','cattle',UserMBTime)       = Pa2animal_Conv('cattle','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','calf',UserMBTime)         = Pa2animal_Conv('calf','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','calf_br_f',UserMBTime)    = Pa2animal_Conv('calf_br_f','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','calf_br_m',UserMBTime)    = Pa2animal_Conv('calf_br_m','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','calf_sl',UserMBTime)      = Pa2animal_Conv('calf_sl','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','bull1_2y',UserMBTime)     = Pa2animal_Conv('bull1_2y','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','heif1_2y_br',UserMBTime)  = Pa2animal_Conv('heif1_2y_br','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','heif1_2y_sl',UserMBTime)  = Pa2animal_Conv('heif1_2y_sl','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','bull2y',UserMBTime)       = Pa2animal_Conv('bull2y','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','heif2y_br',UserMBTime)    = Pa2animal_Conv('heif2y_br','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','heif2y_sl',UserMBTime)    = Pa2animal_Conv('heif2y_sl','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','cow',UserMBTime)          = Pa2animal_Conv('cow','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','cow_dai',UserMBTime)      = Pa2animal_Conv('cow_dairy','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','cow_oth',UserMBTime)      = Pa2animal_Conv('cow_oth','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','buffalo',UserMBTime)      = Pa2animal_Conv('buffalo','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','equid',UserMBTime)        = Pa2animal_Conv('equid','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','sheep',UserMBTime)        = Pa2animal_Conv('sheep','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','goat',UserMBTime)         = Pa2animal_Conv('goat','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','pig',UserMBTime)          = Pa2animal_Conv('pig','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','piglet20kg',UserMBTime)   = Pa2animal_Conv('piglet20kg','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','pig20_50kg',UserMBTime)   = Pa2animal_Conv('pig20_50kg','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','pig50kg',UserMBTime)      = Pa2animal_Conv('pig50kg','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','pig50_80kg',UserMBTime)   = Pa2animal_Conv('pig50_80kg','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','pig80_110kg',UserMBTime)  = Pa2animal_Conv('pig80_110kg','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','pig110kg',UserMBTime)     = Pa2animal_Conv('pig110kg','1000lsu',geo,UserMBTime);
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PrimaSource(geo,'a2an','sow_br',UserMBTime)       = Pa2animal_Conv('sow_br','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','sow_far1',UserMBTime)     = Pa2animal_Conv('sow_far1','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','sow_far2',UserMBTime)     = Pa2animal_Conv('sow_far2','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','sow_nfar1',UserMBTime)    = Pa2animal_Conv('sow_nfar1','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','sow_nfar2',UserMBTime)    = Pa2animal_Conv('sow_nfar2','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','boars',UserMBTime)        = Pa2animal_Conv('boars','1000lsu',geo,UserMBTime);
PrimaSource(geo,'a2an','poultry',UserMBTime)      = Pa2animal_Conv('poultry','1000lsu',geo,UserMBTime);

*d3av  'DEMO_R_D3AVG'
PrimaSource(geo,'d3av','AnAvPop',UserMBTime)   = DEMO_R_D3AVG('T',geo,UserMBTime);

*d3pj  'DEMO_R_PJANAGGR3'
PrimaSource(geo,'d3pj','PopJanTot',UserMBTime)     = DEMO_R_PJANAGGR3('T','TOTAL',geo,UserMBTime);
PrimaSource(geo,'d3pj','PopJanUnKnown',UserMBTime) = DEMO_R_PJANAGGR3('T','UNK',geo,UserMBTime);
PrimaSource(geo,'d3pj','PopJanLT15Yr',UserMBTime)  = DEMO_R_PJANAGGR3('T','Y0_14',geo,UserMBTime);
PrimaSource(geo,'d3pj','PopJan15To65',UserMBTime)  = DEMO_R_PJANAGGR3('T','Y15_64',geo,UserMBTime);
PrimaSource(geo,'d3pj','PopJanGE65Yr',UserMBTime)  = DEMO_R_PJANAGGR3('T','Y65_MAX',geo,UserMBTime);

*d2pj  'DEMO_R_D2JAN'
PrimaSource(geo,'d2pj','PopJanTot',UserMBTime)     = DEMO_R_D2JAN('T','TOTAL',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJanUnKnown',UserMBTime) = DEMO_R_D2JAN('T','UNK',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJanLT5Yr',UserMBTime)   = DEMO_R_D2JAN('T','Y0_4',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan5To10',UserMBTime)   = DEMO_R_D2JAN('T','Y5_9',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan10To15',UserMBTime)  = DEMO_R_D2JAN('T','Y10_14',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan15To20',UserMBTime)  = DEMO_R_D2JAN('T','Y15_19',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan20To25',UserMBTime)  = DEMO_R_D2JAN('T','Y20_24',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan25To30',UserMBTime)  = DEMO_R_D2JAN('T','Y25_29',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan30To35',UserMBTime)  = DEMO_R_D2JAN('T','Y30_34',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan35To40',UserMBTime)  = DEMO_R_D2JAN('T','Y35_39',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan40To45',UserMBTime)  = DEMO_R_D2JAN('T','Y40_44',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan45To50',UserMBTime)  = DEMO_R_D2JAN('T','Y45_49',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan50To55',UserMBTime)  = DEMO_R_D2JAN('T','Y50_54',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan55To60',UserMBTime)  = DEMO_R_D2JAN('T','Y55_59',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan60To65',UserMBTime)  = DEMO_R_D2JAN('T','Y60_64',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJan65To70',UserMBTime)  = DEMO_R_D2JAN('T','Y65_69',geo,UserMBTime);
PrimaSource(geo,'d2pj','PopJanGE70Yr',UserMBTime)  = DEMO_R_D2JAN('T','Y70_MAX',geo,UserMBTime);

*miga  'MIGR_R_2ARR'
PrimaSource(geo,'miga','MigrArr',UserMBTime)       = MIGR_R_2ARR('TOTAL','T',geo,UserMBTime);

*migd  'MIGR_R_2DEP'
PrimaSource(geo,'migd','MigrDep',UserMBTime)       = MIGR_R_2DEP('TOTAL','T',geo,UserMBTime);
```

```
*amec  'Ameco'
* Concordances Ameco to PRIMA
*
Parameter SelectedCountryToGeo(SelectedCountry,Geo)
/
'Austria'.'AT'  1
'Belgium'.'BE'  1
'Bulgaria'.'BG'  1
'Cyprus'.'CY'  1
'Czech Republic'.'CZ'  1
'Denmark'.'DK'  1
'Estonia'.'EE'  1
'Finland'.'FI'  1
'France'.'FR'  1
'Germany'.'DE'  1
'Greece'.'GR'  1
'Hungary'.'HU'  1
'Ireland'.'IE'  1
'Italy'.'IT'  1
'Latvia'.'LV'  1
'Lithuania'.'LT'  1
'Luxembourg'.'LU'  1
'Malta'.'MT'  1
'Netherlands'.'NL'  1
'Poland'.'PL'  1
'Portugal'.'PT'  1
'Romania'.'RO'  1
'Slovakia'.'SK'  1
'Slovenia'.'SI'  1
'Spain'.'ES'  1
'Sweden'.'SE'  1
'United Kingdom'.'UK'  1
'West Germany'.'DEW'  1
/;

Parameter SelectedYearToUserMBTime(SelectedYear,UserMBTime)
/
1980.1980  1
1981.1981  1
1982.1982  1
1983.1983  1
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1984.1984  1
1985.1985  1
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1987.1987  1
1988.1988  1
1989.1989  1
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1991.1991  1
1992.1992  1
1993.1993  1
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2003.2003  1
2004.2004  1
2005.2005  1
2006.2006  1
2007.2007  1
2008.2008  1
2009.2009  1
/;

*amec  'Ameco'
* Conversion Ameco to PRIMA
*
Parameter PrimaSourceTmp1(SelectedCountry,PrSource,PrimaVar,SelectedYear);
Parameter PrimaSourceTmp2(geo,PrSource,PrimaVar,SelectedYear);

PrimaSourceTmp1(SelectedCountry,'amec','NPTD',SelectedYear) = Ameco('NPTD',SelectedCountry,'1000',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','NPTN',SelectedYear) = Ameco('NPTN',SelectedCountry,'1000',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','NPCN',SelectedYear) = Ameco('NPCN',SelectedCountry,'1000',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','NPAN',SelectedYear) = Ameco('NPAN',SelectedCountry,'1000',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','NPON',SelectedYear) = Ameco('NPON',SelectedCountry,'1000',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','NETN',SelectedYear) = Ameco('NETN',SelectedCountry,'1000',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','NETD',SelectedYear) = Ameco('NETD',SelectedCountry,'1000',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVGD',SelectedYear) = Ameco('UVGD',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
```


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PrimaSourceTmp1(SelectedCountry,'amec','PVGD',SelectedYear) = Ameco('PVGD',SelectedCountry,'ECU/EUR: 2000 = 100',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVGE',SelectedYear) = Ameco('UVGE',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVG0',SelectedYear) = Ameco('UVG0',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVG1',SelectedYear) = Ameco('UVG1',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVG2',SelectedYear) = Ameco('UVG2',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVG4',SelectedYear) = Ameco('UVG4',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVG5',SelectedYear) = Ameco('UVG5',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','UVGM',SelectedYear) = Ameco('UVGM',SelectedCountry,'Mrd ECU/EUR',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','PVG1',SelectedYear) = Ameco('PVG1',SelectedCountry,'ECU/EUR: 2000 = 100',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','PVG2',SelectedYear) = Ameco('PVG2',SelectedCountry,'ECU/EUR: 2000 = 100',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','PVG4',SelectedYear) = Ameco('PVG4',SelectedCountry,'ECU/EUR: 2000 = 100',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','PVG5',SelectedYear) = Ameco('PVG5',SelectedCountry,'ECU/EUR: 2000 = 100',SelectedYear);
PrimaSourceTmp1(SelectedCountry,'amec','PVGM',SelectedYear) = Ameco('PVGM',SelectedCountry,'ECU/EUR: 2000 = 100',SelectedYear);

PrimaSourceTmp2(geo,'amec',PrimaVar,SelectedYear) =
sum(SelectedCountry,PrimaSourceTmp1(SelectedCountry,'amec',PrimaVar,SelectedYear)
                                                 * SelectedCountryToGeo(SelectedCountry,Geo));

PrimaSource(geo,'amec',PrimaVar,UserMBTime)       = sum(SelectedYear,PrimaSourceTmp2(geo,'amec',PrimaVar,SelectedYear)
                                                 * SelectedYearToUserMBTime(SelectedYear,UserMBTime));

*e2va  'PREG_E2VABP_Conv'
PrimaSource(geo,'e2va','G_total',UserMBTime)  = PREG_E2VABP_Conv('mio_eur','total',geo,UserMBTime);
PrimaSource(geo,'e2va','G_a_to_p',UserMBTime) = PREG_E2VABP_Conv('mio_eur','a_to_p',geo,UserMBTime);
PrimaSource(geo,'e2va','G_a_b',UserMBTime)    = PREG_E2VABP_Conv('mio_eur','a_b',geo,UserMBTime);
PrimaSource(geo,'e2va','G_a',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','a',geo,UserMBTime);
PrimaSource(geo,'e2va','G_b',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','b',geo,UserMBTime);
PrimaSource(geo,'e2va','G_c_to_f',UserMBTime) = PREG_E2VABP_Conv('mio_eur','c_to_f',geo,UserMBTime);
PrimaSource(geo,'e2va','G_c_d_e',UserMBTime)  = PREG_E2VABP_Conv('mio_eur','c_d_e',geo,UserMBTime);
PrimaSource(geo,'e2va','G_c',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','c',geo,UserMBTime);
PrimaSource(geo,'e2va','G_d',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','d',geo,UserMBTime);
PrimaSource(geo,'e2va','G_e',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','e',geo,UserMBTime);
PrimaSource(geo,'e2va','G_f',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','f',geo,UserMBTime);
PrimaSource(geo,'e2va','G_g_to_p',UserMBTime) = PREG_E2VABP_Conv('mio_eur','g_to_p',geo,UserMBTime);
PrimaSource(geo,'e2va','G_g_h_i',UserMBTime)  = PREG_E2VABP_Conv('mio_eur','g_h_i',geo,UserMBTime);
PrimaSource(geo,'e2va','G_g',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','g',geo,UserMBTime);
PrimaSource(geo,'e2va','G_h',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','h',geo,UserMBTime);
PrimaSource(geo,'e2va','G_i',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','i',geo,UserMBTime);
PrimaSource(geo,'e2va','G_j_k',UserMBTime)    = PREG_E2VABP_Conv('mio_eur','j_k',geo,UserMBTime);
PrimaSource(geo,'e2va','G_j',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','j',geo,UserMBTime);
PrimaSource(geo,'e2va','G_k',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','k',geo,UserMBTime);
PrimaSource(geo,'e2va','G_l_to_p',UserMBTime) = PREG_E2VABP_Conv('mio_eur','l_to_p',geo,UserMBTime);
```

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PrimaSource(geo,'e2va','G_l',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','l',geo,UserMBTime);
PrimaSource(geo,'e2va','G_m',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','m',geo,UserMBTime);
PrimaSource(geo,'e2va','G_n',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','n',geo,UserMBTime);
PrimaSource(geo,'e2va','G_o',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','o',geo,UserMBTime);
PrimaSource(geo,'e2va','G_p',UserMBTime)      = PREG_E2VABP_Conv('mio_eur','p',geo,UserMBTime);

*acct  'AGR_R_ACCTS'
PrimaSource(geo,'acct','A18000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','18000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','A16000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','16000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','A14000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','14000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','A15000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','15000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','A17000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','17000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','A19000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','19000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','A20000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','20000','mio_eur',geo,UserMBTime);

PrimaSource(geo,'acct','A10000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','10000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01100',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01100','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01110',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01110','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01120',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01120','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01200',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01200','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01300',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01300','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01400',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01400','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01500',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01500','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01600',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01600','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','01900',UserMBTime)     = AGR_R_ACCTS('PROD_BP','01900','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02100',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02100','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02110',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02110','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02120',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02120','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02130',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02130','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02190',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02190','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02200',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02200','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02300',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02300','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02400',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02400','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','02900',UserMBTime)     = AGR_R_ACCTS('PROD_BP','02900','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','03000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','03000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','03100',UserMBTime)     = AGR_R_ACCTS('PROD_BP','03100','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','03200',UserMBTime)     = AGR_R_ACCTS('PROD_BP','03200','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','03900',UserMBTime)     = AGR_R_ACCTS('PROD_BP','03900','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','04000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','04000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','04100',UserMBTime)     = AGR_R_ACCTS('PROD_BP','04100','mio_eur',geo,UserMBTime);
```


```
PrimaSource(geo,'acct','04200',UserMBTime)     = AGR_R_ACCTS('PROD_BP','04200','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','05000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','05000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','06000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','06000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','06100',UserMBTime)     = AGR_R_ACCTS('PROD_BP','06100','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','06200',UserMBTime)     = AGR_R_ACCTS('PROD_BP','06200','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','06300',UserMBTime)     = AGR_R_ACCTS('PROD_BP','06300','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','06400',UserMBTime)     = AGR_R_ACCTS('PROD_BP','06400','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','06500',UserMBTime)     = AGR_R_ACCTS('PROD_BP','06500','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','07000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','07000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','08000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','08000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','09000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','09000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','A13000',UserMBTime)    = AGR_R_ACCTS('PROD_BP','13000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','11000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','11000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','11100',UserMBTime)     = AGR_R_ACCTS('PROD_BP','11100','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','11200',UserMBTime)     = AGR_R_ACCTS('PROD_BP','11200','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','11300',UserMBTime)     = AGR_R_ACCTS('PROD_BP','11300','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','11400',UserMBTime)     = AGR_R_ACCTS('PROD_BP','11400','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','11500',UserMBTime)     = AGR_R_ACCTS('PROD_BP','11500','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','11900',UserMBTime)     = AGR_R_ACCTS('PROD_BP','11900','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','12000',UserMBTime)     = AGR_R_ACCTS('PROD_BP','12000','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','12100',UserMBTime)     = AGR_R_ACCTS('PROD_BP','12100','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','12200',UserMBTime)     = AGR_R_ACCTS('PROD_BP','12200','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','12900',UserMBTime)     = AGR_R_ACCTS('PROD_BP','12900','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','12910',UserMBTime)     = AGR_R_ACCTS('PROD_BP','12910','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','12920',UserMBTime)     = AGR_R_ACCTS('PROD_BP','12920','mio_eur',geo,UserMBTime);
PrimaSource(geo,'acct','12930',UserMBTime)     = AGR_R_ACCTS('PROD_BP','12930','mio_eur',geo,UserMBTime);

*eaf1  'FOR_EAF01'
PrimaSource(geo,'eaf1','F18000',UserMBTime)    = FOR_EAF01('18000','01','mio_eur',geo,UserMBTime);
PrimaSource(geo,'eaf1','F16000',UserMBTime)    = FOR_EAF01('16000','01','mio_eur',geo,UserMBTime);
PrimaSource(geo,'eaf1','F14000',UserMBTime)    = FOR_EAF01('14000','01','mio_eur',geo,UserMBTime);
PrimaSource(geo,'eaf1','F15000',UserMBTime)    = FOR_EAF01('15000','01','mio_eur',geo,UserMBTime);
PrimaSource(geo,'eaf1','F17000',UserMBTime)    = FOR_EAF01('17000','01','mio_eur',geo,UserMBTime);
PrimaSource(geo,'eaf1','F19000',UserMBTime)    = FOR_EAF01('19000','01','mio_eur',geo,UserMBTime);
PrimaSource(geo,'eaf1','F20000',UserMBTime)    = FOR_EAF01('20000','01','mio_eur',geo,UserMBTime);

*e2em  'PREG_E2EMPL_Conv'
PrimaSource(geo,'e2em','E_total',UserMBTime)  = PREG_E2EMPL_Conv('emp','total',geo,UserMBTime);
PrimaSource(geo,'e2em','E_a_to_p',UserMBTime) = PREG_E2EMPL_Conv('emp','a_to_p',geo,UserMBTime);
PrimaSource(geo,'e2em','E_a_b',UserMBTime)    = PREG_E2EMPL_Conv('emp','a_b',geo,UserMBTime);
PrimaSource(geo,'e2em','E_a',UserMBTime)      = PREG_E2EMPL_Conv('emp','a',geo,UserMBTime);
PrimaSource(geo,'e2em','E_b',UserMBTime)      = PREG_E2EMPL_Conv('emp','b',geo,UserMBTime);
```


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PrimaSource(geo,'e2em','E_c_to_f',UserMBTime) = PREG_E2EMPL_Conv('emp','c_to_f',geo,UserMBTime);
PrimaSource(geo,'e2em','E_c_d_e',UserMBTime)  = PREG_E2EMPL_Conv('emp','c_d_e',geo,UserMBTime);
PrimaSource(geo,'e2em','E_c',UserMBTime)      = PREG_E2EMPL_Conv('emp','c',geo,UserMBTime);
PrimaSource(geo,'e2em','E_d',UserMBTime)      = PREG_E2EMPL_Conv('emp','d',geo,UserMBTime);
PrimaSource(geo,'e2em','E_e',UserMBTime)      = PREG_E2EMPL_Conv('emp','e',geo,UserMBTime);
PrimaSource(geo,'e2em','E_f',UserMBTime)      = PREG_E2EMPL_Conv('emp','f',geo,UserMBTime);
PrimaSource(geo,'e2em','E_g_to_p',UserMBTime) = PREG_E2EMPL_Conv('emp','g_to_p',geo,UserMBTime);
PrimaSource(geo,'e2em','E_g_h_i',UserMBTime)  = PREG_E2EMPL_Conv('emp','g_h_i',geo,UserMBTime);
PrimaSource(geo,'e2em','E_g',UserMBTime)      = PREG_E2EMPL_Conv('emp','g',geo,UserMBTime);
PrimaSource(geo,'e2em','E_h',UserMBTime)      = PREG_E2EMPL_Conv('emp','h',geo,UserMBTime);
PrimaSource(geo,'e2em','E_i',UserMBTime)      = PREG_E2EMPL_Conv('emp','i',geo,UserMBTime);
PrimaSource(geo,'e2em','E_j_k',UserMBTime)    = PREG_E2EMPL_Conv('emp','j_k',geo,UserMBTime);
PrimaSource(geo,'e2em','E_j',UserMBTime)      = PREG_E2EMPL_Conv('emp','j',geo,UserMBTime);
PrimaSource(geo,'e2em','E_k',UserMBTime)      = PREG_E2EMPL_Conv('emp','k',geo,UserMBTime);
PrimaSource(geo,'e2em','E_l_to_p',UserMBTime) = PREG_E2EMPL_Conv('emp','l_to_p',geo,UserMBTime);
PrimaSource(geo,'e2em','E_l',UserMBTime)      = PREG_E2EMPL_Conv('emp','l',geo,UserMBTime);
PrimaSource(geo,'e2em','E_m',UserMBTime)      = PREG_E2EMPL_Conv('emp','m',geo,UserMBTime);
PrimaSource(geo,'e2em','E_n',UserMBTime)      = PREG_E2EMPL_Conv('emp','n',geo,UserMBTime);
PrimaSource(geo,'e2em','E_o',UserMBTime)      = PREG_E2EMPL_Conv('emp','o',geo,UserMBTime);
PrimaSource(geo,'e2em','E_p',UserMBTime)      = PREG_E2EMPL_Conv('emp','p',geo,UserMBTime);

*e2re  'NAMA_R_E2REM'
PrimaSource(geo,'e2re','W_TOTAL',UserMBTime)  = NAMA_R_E2REM('MIO_EUR','TOTAL',geo,UserMBTime);
PrimaSource(geo,'e2re','W_A_B',UserMBTime)    = NAMA_R_E2REM('MIO_EUR','A_B',geo,UserMBTime);
PrimaSource(geo,'e2re','W_C-F',UserMBTime)    = NAMA_R_E2REM('MIO_EUR','C-F',geo,UserMBTime);
PrimaSource(geo,'e2re','W_C-E',UserMBTime)    = NAMA_R_E2REM('MIO_EUR','C-E',geo,UserMBTime);
PrimaSource(geo,'e2re','W_F',UserMBTime)      = NAMA_R_E2REM('MIO_EUR','F',geo,UserMBTime);
PrimaSource(geo,'e2re','W_G-P',UserMBTime)    = NAMA_R_E2REM('MIO_EUR','G-P',geo,UserMBTime);
PrimaSource(geo,'e2re','W_G-I',UserMBTime)    = NAMA_R_E2REM('MIO_EUR','G-I',geo,UserMBTime);
PrimaSource(geo,'e2re','W_J_K',UserMBTime)    = NAMA_R_E2REM('MIO_EUR','J_K',geo,UserMBTime);
PrimaSource(geo,'e2re','W_L-P',UserMBTime)    = NAMA_R_E2REM('MIO_EUR','L-P',geo,UserMBTime);

*e2gf  'NAMA_R_E2GFCF'
PrimaSource(geo,'e2gf','K_TOTAL',UserMBTime)  = NAMA_R_E2GFCF('MIO_EUR','TOTAL',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_A_B',UserMBTime)    = NAMA_R_E2GFCF('MIO_EUR','A_B',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_C-F',UserMBTime)    = NAMA_R_E2GFCF('MIO_EUR','C-F',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_C-E',UserMBTime)    = NAMA_R_E2GFCF('MIO_EUR','C-E',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_F',UserMBTime)      = NAMA_R_E2GFCF('MIO_EUR','F',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_G-P',UserMBTime)    = NAMA_R_E2GFCF('MIO_EUR','G-P',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_G-I',UserMBTime)    = NAMA_R_E2GFCF('MIO_EUR','G-I',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_J_K',UserMBTime)    = NAMA_R_E2GFCF('MIO_EUR','J_K',geo,UserMBTime);
PrimaSource(geo,'e2gf','K_L-P',UserMBTime)    = NAMA_R_E2GFCF('MIO_EUR','L-P',geo,UserMBTime);
```


```
*prin  'PAPRI_PI00_OUTA'
PrimaSource(geo,'prin','D140000',UserMBTime)  = PAPRI_PI00_OUTA('out','deflated','i2000','140000',geo,UserMBTime);
PrimaSource(geo,'prin','N140000',UserMBTime)  = PAPRI_PI00_OUTA('out','nominal','i2000','140000',geo,UserMBTime);

** TO BE ADDED: CAPRI CoCo

*! <%GTREE 3 Create PrimaSoMBNuts012Base %>
Parameter PrimaSoMBTerr(MBTerritories,PrSource,PrimaVar,UserMBTime);
Parameter PrimaSoGeo(geo,PrSource,PrimaVar,UserMBTime);
Parameter PrimaSoMBNuts012Base(MBNuts012,PrSource,PrimaVar,UserMBTime);

PrimaSoMBTerr(geo,PrSource,PrimaVar,UserMBTime)
                  = PrimaSource(geo,PrSource,PrimaVar,UserMBTime);
PrimaSoGeo(geo,PrSource,PrimaVar,UserMBTime)
                  = PrimaSoMBTerr(geo,PrSource,PrimaVar,UserMBTime);
PrimaSoMBNuts012Base(MBNuts012,PrSource,PrimaVar,UserMBTime)
                  = PrimaSoMBTerr(MBNuts012,PrSource,PrimaVar,UserMBTime);

*! <%GTREE 4 Output %>
Execute_Unload 'PrimaFG_PrimaSource.gdx',PrimaSource;
Execute_Unload 'PrimaFG_PrimaSoMBTerr.gdx',PrimaSoMBTerr;
Execute_Unload 'PrimaFG_PrimaSoGeo.gdx',PrimaSoGeo;
Execute_Unload 'PrimaFG_PrimaSoMBNuts012Base.gdx',PrimaSoMBNuts012Base;

$Exit
*============================   End Of File   ================================
```

F6. Content of the PrimaParametersResult.gms

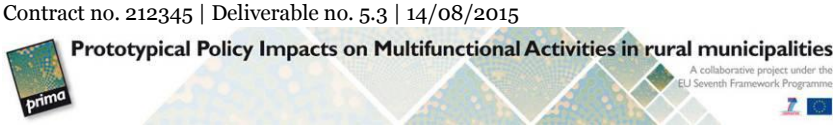
```
*===============================================================================
* File      : PrimaParametersResult.gms
* Author    : Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Version   : 1.0
* Date      : 08-02-2011 19:34:13
* Changed   : 18-02-2011 13:02:19
* Changed by: Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Remarks   :
$ontext

$offtext
*===============================================================================
*! <%GTREE HeadToLsu(PrimaVar) "Conversion rates from head to lsu" %>
Parameter HeadToLsu(PrimaVar) "Conversion rates from head to lsu";

HeadToLsu(PrimaVar) = 1;

*** groups of animals determined on 0, because the subgroups have different
conversion rates
HeadToLsu('PC0000') = 0;
*                           'Total of cattle population (1000 heads)'
HeadToLsu('087')    = 0;
*                           'Bovine animals (J/02-J/08), number'
HeadToLsu('PC1000') = 0.4;
*                           'Bovine animals less than 1 year old (1000 heads)'
HeadToLsu('089')    = 0.4;
*                           'Bovine animals under 1 year old (J/02), number'
HeadToLsu('PC1100') = 0.4;
*                           'Calves for slaughter (1000 heads)'
HeadToLsu('PC1200') = 0.4;
*                           'Other calves (1000 heads)'
HeadToLsu('PC1210') = 0.4;
*                           'Other calves : Male (1000 heads)'
HeadToLsu('PC1220') = 0.4;
*                           'Other calves : Female (1000 heads)'
HeadToLsu('PC2000') = 0.7;
*                           'Bovine animals aged between 1 and 2 years (1000 heads)'
HeadToLsu('PC2100') = 0.7;
*                           'Bovine animals aged between 1 and 2 years : Male (1000
heads)'
HeadToLsu('091')    = 0.7;
*                           'Bovine animals 1 year or over but under 2 years, male
(J/03), number'
HeadToLsu('PC2200') = 0.7;
*                           'Bovine animals aged between 1 and 2 years : Female
(1000 heads)'
HeadToLsu('093')    = 0.7;
*                           'Bovine animals 1 year or over but under 2 years, female
(J/04), number'
HeadToLsu('PC2210') = 0.7;
*                           'Animals for slaughter (1000 heads)'
HeadToLsu('PC2220') = 0.7;
*                           'Other (1000 heads)'
HeadToLsu('PC3000') = 0;
*                           'Bovines animals of 2 years and over (1000 heads)'
HeadToLsu('PC3100') = 1.0;
*                           'Bovines animals of 2 years and over : Male (1000
heads)'
HeadToLsu('095')    = 1.0;
*                           'Bovine animals 2 year old and over, male (J/05),
number'
HeadToLsu('PC3200') = 0;
```

```
*                          'Bovines animals of 2 years and over : Female (1000
heads)'
HeadToLsu('097')    = 0.8;
*                          'Bovine animals 2 year old and over, heifers (J/06)'
HeadToLsu('PC3210') = 0.8;
*                          'Heifers (1000 heads)'
HeadToLsu('PC3211') = 0.8;
*                          'Heifers for slaughter (1000 heads)'
HeadToLsu('PC3212') = 0.8;
*                          'Other (1000 heads)'
HeadToLsu('PC3220') = 0;
*                          'Cows (1000 heads)'
HeadToLsu('PC3221') = 1.0;
*                          'Dairy cows (1000 heads)'
HeadToLsu('099')    = 1.0;
*                          'Dairy cows (J/07), number'
HeadToLsu('PC3222') = 0.8;
*                          'Other cows (1000 heads)'
HeadToLsu('101')    = 0.8;
*                          'Other cows (J/08), number'
HeadToLsu('PC4000') = 0.8;
*                          'Buffaloes (1000 heads)'
HeadToLsu('PS0000') = 0.1;
*                          'Sheep total (1000 heads)'
HeadToLsu('103')    = 0.1;
*                          'Sheep (J/09), number'
HeadToLsu('PG0000') = 0.1;
*                          'Total of the goat population (1000 heads)'
HeadToLsu('105')    = 0.1;
*                          'Goats (J/10), number'
HeadToLsu('PP0000') = 0;
*                          'Total of the pig population (1000 heads)'
HeadToLsu('107')    = 0;
*                          'Pigs (J/11-J/13), number'
HeadToLsu('PP1000') = 0.3;
*                          'Piglets with a live weight of less than 20 kg (1000
heads)'
HeadToLsu('PP2000') = 0.3;
*                          'Pigs with a live weight of 20 kg and less than 50 kg
(1000 heads)'
HeadToLsu('PP3000') = 0.3;
*                          'Fattening pigs (including rejected boars and sows) of
at least 50 kg (1000 heads)'
HeadToLsu('PP3100') = 0.3;
*                          'Fattening pigs between 50 and < 80 kg (1000 heads)'
HeadToLsu('PP3200') = 0.3;
*                          'Fattening pigs between 80 and < 110 kg (1000 heads)'
HeadToLsu('PP3300') = 0.3;
*                          'Fattening pigs of at least 110 kg (1000 heads)'
HeadToLsu('PP4000') = 0.3;
*                          'Breeding pigs with a live weight of 50 kg and higher
(1000 heads)'
HeadToLsu('PP4100') = 0.3;
*                          'Boars (1000 heads)'
*** all sows now 0.5, but part of them should be 0.3 !!??
HeadToLsu('PP4200') = 0.5;
*                          'Sows - total (1000 heads)'
HeadToLsu('PP4210') = 0.5;
*                          'Covered sows (1000 heads)'
HeadToLsu('PP4211') = 0.5;
*                          'Of which: sows covered for the first time (1000 heads)'
HeadToLsu('PP4220') = 0.5;
*                          'Sows not covered - total (1000 heads)'
HeadToLsu('PP4221') = 0.5;
*                          'Of which: gilts not yet covered (1000 heads)'
HeadToLsu('109')    = 0;
*                          'Poultry (J/14-J/16), number'
```




```
*********************************************************
* Livestock unit (LU) calculations (source DG-Agri, FADN)
***
* D22 Horses 0.8
*     NOT INCLUDED IN THESE STATISTICS ???!!!!
* D23 Calves for fattening 0.4
* D24 Other cattle less than 12 months 0.4
* D25 Male cattle 12-24 months 0.7
* D26 Female cattle 12-24 months 0.7
* D27 Male cattle over 24 months 1
* D28 Breeding heifers 0.8
* D29 Heifers for fattening 0.8
* D30 Dairy cows 1
* D31 Cull dairy cows 1
* D32 Other (including suckler) cows 0.8
* D38 Goat (breeding females) 0.1
* D39 Other goats 0.1
* D40 Ewes 0.1
* D41 Other sheep 0.1
* D44 Breeding sows 0.5
* D45 Pigs for fattening 0.3
* D46 Other pigs 0.3
* D47 Table chickens 0.007
* D48 Laying hens 0.014
*********************************************************

*============================    End Of File    ================================
```

F7. Content of the PrimaCalculationsResult.gms

```
*===============================================================================
* File      : PrimaCalculationsResult.gms
* Author    : Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Version   : 1.0
* Date      : 08-02-2011 18:10:26
* Changed   : 12-05-2011 19:41:59
* Changed by: Frans Godeschalk (Frans.Godeschalk@wur.nl)
* Remarks   :
$ontext

$offtext
*===============================================================================
*! <%GTREE 1 Creating and filling some new paramaters to check the content of the
PrimaSource parameter%>
****
Parameter PrimaSoMBNuts012(MBNuts012,PrSource,PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,PrSource,PrimaVar,UserMBTime)
                = PrimaSoMBNuts012Base(%SelNuts%,PrSource,PrimaVar,UserMBTime);
***************
*! <%GTREE 3.1 Combining sources to Comb (Combined) %>
* using the following priority
***
* comb  'Combined'
*
* 1 d3ar  'DEMO_R_D3AREA'
* 2 lcvo  'LAN_LCV_OVW'
* 3 lcva  'LAN_LCV_ART'
* 4 lcvw  'LAN_LCV_WOO'
* 5 lcvs  'LAN_LCV_SHR'
* 6 lcvg  'LAN_LCV_GRS'
* 7 luov  'LAN_LU_OVW'
* 8 luag  'LAN_LU_AGR'
* 9 luhe  'LAN_LU_HEA'
*10 luin  'LAN_LU_INF'

*11 craa  'PEF_LU_OVCROPAA'
*12 cres  'PEF_LU_OVCROPESU'
*13 rfar  'PEF_R_FARM'
*14 rnut  'Pef_r_nuts'
*15 cppc  'PAPRO_CPP_CROP'
*16 cppl  'PAPRO_CPP_LUSE'
*17 crop  'AGR_R_CROPS'
*18 land  'AGR_R_LANDUSE'

*19 anim  'AGR_R_ANIMAL'
*20 a2an  'Pa2animal_Conv'

*21 amec  'Ameco'

*22 d3av  'DEMO_R_D3AVG'
*23 d3pj  'DEMO_R_PJANAGGR3'
*24 d2pj  'DEMO_R_D2JAN'
*25 miga  'MIGR_R_2ARR'
*26 migd  'MIGR_R_2DEP'

*27 e2va  'PREG_E2VABP_Conv'
*28 acct  'AGR_R_ACCTS'
*29 eaf1  'FOR_EAF01'

*30 e2em  'PREG_E2EMPL_Conv'
*31 e2re  'NAMA_R_E2REM'
*32 e2gf  'NAMA_R_E2GFCF'
```

```
*33 prin  'PAPRI_PI00_OUTA'

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d3ar',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvo',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcva',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvw',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvs',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvg',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luov',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luag',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luhe',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luin',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'craa',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'cres',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'rfar',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'rnut',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'cppc',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'cppl',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
```

```
         = PrimaSoMBNuts012(%SelNuts%,'crop',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'land',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'anim',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'a2an',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'amec',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d3av',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d3pj',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d2pj',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'miga',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'migd',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2va',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'acct',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'eaf1',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2em',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2re',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2gf',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Comb',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'prin',PrimaVar,UserMBTime);

***************
*! <%GTREE 3.2 Harmonising sources to Harm (Harmonsised)%>
```

```
* using the following priority like Comb
* converting 1000 hectares to hectares, and animal heads to lsu
* and persons to 1000 persons, mrd euro to mio euro
***
* harm  'Harmonised'
****************
PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d3ar',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvo',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcva',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvw',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvs',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'lcvg',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luov',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luag',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luhe',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'luin',PrimaVar,UserMBTime) * 100;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'craa',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'cres',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'rfar',PrimaVar,UserMBTime)
         * HeadToLsu(PrimaVar);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'rnut',PrimaVar,UserMBTime)
         * HeadToLsu(PrimaVar);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'cppc',PrimaVar,UserMBTime) * 1000;
```

```
PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'cppl',PrimaVar,UserMBTime) * 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'crop',PrimaVar,UserMBTime) * 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'land',PrimaVar,UserMBTime) * 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'anim',PrimaVar,UserMBTime) * 1000
         * HeadToLsu(PrimaVar);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'a2an',PrimaVar,UserMBTime) * 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'amec',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm','UVGD',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVGD',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','PVGD',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','PVGD',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','UVGE',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVGE',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','UVG0',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVG0',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','UVG1',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVG1',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','UVG2',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVG2',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','UVG4',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVG4',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','UVG5',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVG5',UserMBTime) * 1000;
PrimaSoMBNuts012(%SelNuts%,'Harm','UVGM',UserMBTime)
         = PrimaSoMBNuts012(%SelNuts%,'Harm','UVGM',UserMBTime) * 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d3av',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d3pj',PrimaVar,UserMBTime) / 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'d2pj',PrimaVar,UserMBTime) / 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'miga',PrimaVar,UserMBTime) / 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'migd',PrimaVar,UserMBTime) / 1000;

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2va',PrimaVar,UserMBTime);
```

```
PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'acct',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'eaf1',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2em',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2re',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'e2gf',PrimaVar,UserMBTime);

PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime)
         $ (PrimaSoMBNuts012(%SelNuts%,'Harm',PrimaVar,UserMBTime) = 0)
         = PrimaSoMBNuts012(%SelNuts%,'prin',PrimaVar,UserMBTime);

****************
Parameter PrimaResVarTree(MBNuts012,PrSource,PrimaVarTree,UserMBTime);
Parameter PrimaResVarGtapTree(MBNuts012,PrSource,PrimaVarGtapTree,UserMBTime);

PrimaResVarTree(%SelNuts%,PrSource,PrimaVarTree,UserMBTime)
           = PrimaSoMBNuts012(%SelNuts%,PrSource,PrimaVarTree,UserMBTime);

%Aggregate% PrimaResVarTree (%SelNuts%,PrSource, PrimaVarTree ,UserMBTime)

*****************************************************************************
* Since Eurostat only provides forestry data at country level,
* and also AMECO only contains data at country level,
* and de tree aggregation only aggregates,
* and F20000 (GVA forestry) also can be calculated as
* (G_a - A20000) (=GVA for Nace 'a' minus GVA agricultural accounts 'A20000')
* we will do this before entering the PrimaVarTree data in the PrimaVarGtapTree.
***
PrimaResVarTree(%SelNuts%,'harm','F20000',UserMBTime)
         $ (PrimaResVarTree(%SelNuts%,'harm','F20000',UserMBTime) = 0)
         = PrimaResVarTree(%SelNuts%,'harm','G_a',UserMBTime)
         - PrimaResVarTree(%SelNuts%,'harm','A20000',UserMBTime);
* Correction if F20000 becomes < 0, then F20000 = 0
PrimaResVarTree(%SelNuts%,'harm','F20000',UserMBTime)
         $ (PrimaResVarTree(%SelNuts%,'harm','F20000',UserMBTime) < 0)
         = 0;

*****************************************************************************

PrimaResVarGtapTree(%SelNuts%,PrSource,PrimaVarGtapTree,UserMBTime)
           = PrimaResVarTree(%SelNuts%,PrSource,PrimaVarGtapTree,UserMBTime);

%Aggregate% PrimaResVarGtapTree (%SelNuts%,PrSource, PrimaVarGtapTree ,UserMBTime)

*Selection of results for only GTAP sectors

Parameter PrimaResVarGtapSel(MBNuts012,PrSource,PrimaVarGtapSel,UserMBTime);

PrimaResVarGtapSel(%SelNuts%,'harm',PrimaVarGtapSel,UserMBTime)
           = PrimaResVarGtapTree(%SelNuts%,'harm',PrimaVarGtapSel,UserMBTime);

*! <%GTREE 2 Additional calculations on PrimaResVarGtapSel %>

PrimaResVarGtapSel(%SelNuts%,'harm','dummy',UserMBTime) = -99;
```

```
* Distribution of grassland, fodder roots and brassicas, green maize and
* other fodder (= Fodder - Total minus Green maize) to str_ctl and str_rmk
* str_ctl    'Str - Cattle,sheep,goats,horses'
* str_rmk    'Str - Raw milk'
* L0002      'LU - Permanent grassland (1 000 ha)'
* d12        'FSS - Fodder roots and brassicas (ha)'
* L2610      'LU - Fodder from arable land (1 000 ha)'
* c2625      'CrP - Green maize (1 000 ha)'
* cattle     'AnD - Cattle (total) (1000lsu)'
* cow_dai    'AnD - Dairy cows (1000lsu)'
* equid      'AnD - Equidae (total) (1000lsu)'
* sheep      'AnD - Sheep (total)  (1000lsu)'
* goat       'AnD - Goats (total) (1000lsu)'

PrimaResVarGtapSel(%SelNuts%,'harm','str_ctl',UserMBTime)
         $ ((PrimaResVarGtapSel(%SelNuts%,'harm','cattle',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','equid',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','sheep',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','goat',UserMBTime)) <> 0)
         = ((PrimaResVarGtapSel(%SelNuts%,'harm','cattle',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','equid',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','sheep',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','goat',UserMBTime))
            -  PrimaResVarGtapSel(%SelNuts%,'harm','cow_dai',UserMBTime))
         /   (PrimaResVarGtapSel(%SelNuts%,'harm','cattle',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','equid',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','sheep',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','goat',UserMBTime))
         *  PrimaResVarGtapSel(%SelNuts%,'harm','L0002',UserMBTime);

PrimaResVarGtapSel(%SelNuts%,'harm','str_rmk',UserMBTime)
         $ ((PrimaResVarGtapSel(%SelNuts%,'harm','cattle',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','equid',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','sheep',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','goat',UserMBTime)) <> 0)
         =  PrimaResVarGtapSel(%SelNuts%,'harm','cow_dai',UserMBTime)
         /   (PrimaResVarGtapSel(%SelNuts%,'harm','cattle',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','equid',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','sheep',UserMBTime)
             + PrimaResVarGtapSel(%SelNuts%,'harm','goat',UserMBTime))
         *  PrimaResVarGtapSel(%SelNuts%,'harm','L0002',UserMBTime);

PrimaResVarGtapSel(%SelNuts%,'harm','str_ctl',UserMBTime)
         = PrimaResVarGtapSel(%SelNuts%,'harm','str_ctl',UserMBTime)
         + PrimaResVarGtapSel(%SelNuts%,'harm','d12',UserMBTime)
         + (PrimaResVarGtapSel(%SelNuts%,'harm','L2610',UserMBTime)
         -  PrimaResVarGtapSel(%SelNuts%,'harm','c2625',UserMBTime));

PrimaResVarGtapSel(%SelNuts%,'harm','str_rmk',UserMBTime)
         = PrimaResVarGtapSel(%SelNuts%,'harm','str_rmk',UserMBTime)
         + PrimaResVarGtapSel(%SelNuts%,'harm','c2625',UserMBTime);

*************************************************************************
*! <%GTREE 10 Combine PrimaResVarGtapSel of MS%>
Parameter PrimaResVarGtapSelComb(MBNuts012,PrSource,PrimaVarGtapSel,UserMBTime);

$ifi "%UsePrimaResVarGtapSelComb%"=="no" $goto SkipCombPrimaResVarGtapSel

$gdxin "PrimaFG_PrimaResVarGtapSelComb.gdx"
$load PrimaResVarGtapSelComb
$gdxin

$label SkipCombPrimaResVarGtapSel
*************************************************************************

PrimaResVarGtapSelComb(MBNuts012,PrSource,PrimaVarGtapSel,UserMBTime)
         $ (PrimaResVarGtapSel(MBNuts012,PrSource,PrimaVarGtapSel,UserMBTime) <> 0)
         = PrimaResVarGtapSel(MBNuts012,PrSource,PrimaVarGtapSel,UserMBTime);
```


```
Execute_Unload 'PrimaFG_PrimaResVarGtapSelComb.gdx',PrimaResVarGtapSelComb;
*******************************************************************************

*******************************************************************************
*! <%GTREE 2 Output %>
*display 'Used MetaBase Parameters',MBSelectedParameters;
*display 'Used MetaBase Sets: ',MBSelectedSets;
*display 'Used MetaBase Concordances:',MBSelectedConcordances;
***
***
Execute_Unload 'PrimaFG_PrimaSo%SelNuts%.gdx',PrimaSoMBNuts012;

Execute_Unload 'PrimaFG_PrimaResVarTree%SelMS%.gdx',
PrimaResVarTree
Aggregated_PrimaResVarTree_PrimaVarTree
Difference_PrimaResVarTree_PrimaVarTree
Full_PrimaResVarTree_PrimaVarTree
;

Execute_Unload 'PrimaFG_PrimaResVarGtapTree%SelMS%.gdx',
PrimaResVarGtapTree
Aggregated_PrimaResVarGtapTree_PrimaVarGtapTree
Difference_PrimaResVarGtapTree_PrimaVarGtapTree
Full_PrimaResVarGtapTree_PrimaVarGtapTree
;

Execute_Unload 'PrimaFG_PrimaResVarGtapSel%SelMS%.gdx',PrimaResVarGtapSel;


*! <%GTREE 3 Outlier Testing %>
$ifi "%PrimaOutliers%"=="no" $goto EndOutliers
*a. Outlier options:
$SetGlobal DoQplots             TRUE
$SetGlobal DoRegression         TRUE
$SetGlobal Pvalue               0.99
$SetGlobal PvalueOutlier        0.99999
$SetGlobal CheckOn              t.scores
*leave blank if you do not want to Check/limit the R results

*b. perform outliers on:
$SetGlobal OutlierName          PrimaResVarGtapSel%SelMS%
$SetGlobal Index                %SelNuts%,PrSource,PrimaVar,UserMBTime
$SetGlobal GroupOnSets          %SelNuts%,PrSource,PrimaVar
$setGlobal SeriesVariable       UserMBTime

*c. execute
%SimpleOutliers%

$label EndOutliers

$Exit
*============================   End Of File   ================================
```