

Executive summary
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**'Update of Analysis of Prospects in
the Scenar 2020 Study'**
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Executive summary

Objectives, drivers and scenarios

Background

The initial Scenar 2020 study carried out in 2006 identified and analysed a number of long-term trends concerning the *demographic developments in rural regions, the dynamics of rural areas and the future of the agricultural economy including the environmental dimension* for the EU, in its planned and potential future geographical shape until 2020. Two years later the exercise has been repeated. In this period the policy environment concerning the Common Agricultural Policy (CAP), the bilateral and global discussions concerning trade of agricultural commodities, and Community objectives for the natural environment (including the mitigation of climate change) have evolved considerably. A milestone has been the Health Check in 2008, designed to review and adjust the impact of the reforms enacted by the mid-term review of the CAP in 2003, notably the implementation of the new rules concerning agricultural payments in Pillar 1 and Pillar 2 of the CAP. As from 2005, the decoupling of financial support in Pillar 1 from the production of agricultural commodities has been accompanied by the introduction of a cross compliance mechanism which leads to reduction of direct payments if legal standards on environment, food safety, and animal welfare and good agricultural and environmental conditions of agricultural lands are not respected. Above this baseline, targeted payments of rural development cover a range of measures from the competitiveness of the sector to the sustainable use of natural resources and of agricultural production, and ultimately to the continued vitality of rural communities.

Drivers influencing the evolution of agriculture up to 2020

As with the initial Scenar 2020, in Scenar 2020-II there are two sets of 'drivers' that are assumed to influence the evolution of agriculture up to 2020. The first set consists of the *exogenous* drivers, those that are not substantially altered by EU policy decisions within the time period of the study. These are population growth, macro-economic growth, consumer preferences, agri-technology, environmental conditions and world markets. The second set comprises the *endogenous, or policy-related* drivers that are expected to have a discernible effect within the Scenar 2020-II time horizon. These are EU agricultural policy, enlargement decisions and implementation, World Trade Organisation (WTO) and selected EU bilateral agreements, renewable energy policy and environmental policy. Quite obviously, this distinction between exogenous and endogenous drivers is a simplification of reality, but the purpose is to be able to have a contrast in scenario options that permits a didactic exposition of the possible consequences of policymaking.

The three policy scenarios in Scenar 2020-II

Three policy scenarios, indeed, are proposed within the Scenar 2020-II study. The first is a 'Reference' scenario, in which plausible policy decisions, based on current CAP orientations, are carried forward in the time period of the study. Particularly, this means a 20% reduction of CAP budget in real terms (constant in nominal terms), the implementation of a Single Payment System (SPS) as of 2013, full decoupling, a 30% decrease in direct payments (DP) in nominal terms and a 105% increase of the European Agricultural Fund for Rural Development (EAFRD). Trade agreements are synthetically represented, e.g. the WTO Agreement is based on the Falconer paper.

The second is a 'Conservative CAP' scenario, which refers to a situation in which Pillar 1 payments remain higher than currently assumed, and where as a consequence – to achieve a financial balance in the assumed budget for the period – the Pillar 2 payments are commensurably less. This means a 20% reduction of CAP budget in real terms (constant in nominal terms), the continuation of the results of the Health Check (HC) after 2013, a flat rate (regional model) implemented at national level, coupling as HC, and a reduced decrease (15%) of direct payments in nominal terms, a reduced (45%) increase of EAFRD relative to the Reference scenario. Trade policies are maintained as in the Reference scenario.

The third is a 'Liberalisation' scenario, in which all trade-related measures that impede full liberty in the export and import of agricultural products are discontinued, otherwise referred to as the removal of trade barriers. The CAP budget is reduced by 75% in real

terms (55% in nominal terms), all direct payments and market instruments are removed, and there is a 100% increase of EAFRD.

Biofuel targets of 10% in 2020, as set out in the EU Renewable Energy Directive are incorporated in all three scenarios. For the sake of simplification, certain possibilities – such as the further enlargement of the EU – are not taken into account.

Methodology: Macro-economic and SWOT analyses

The comparison between scenarios occurs in two steps. The first step is a modelling exercise that analyses the likely outcome of each scenario using simulation models and other quantitative analyses. This is done to understand the range of potential shifts in agricultural production, income and markets which is the first purpose of this study. Where appropriate and necessary, these in-depth scenario analyses are complemented by qualitative analyses and expert judgement. The result is a description about how each scenario is expressed in spatial terms, across the EU-27. This first type of analysis is all of a macro-economic nature, but the rural world is shaped by far more elements that in particular relate to socio-cultural and biophysical conditions. In order to capture the interplay between the possible pathways for change in the economy with the possible adjustment of the other factors that compose the framework of rural life and work in the EU, a second type of analysis is required. The choice made in the two Scenar 2020 studies is to use a 'SWOT' analysis approach, in which a contrast is made among a series of 'strengths' and 'weaknesses' that can be associated with a group of social and environmental conditions that appear – to a varied degree – at the regional level. For this reason, the phrase 'regional reactions' is used to connote a response that may be expected at the regional level to specific changes in the agricultural economy at the EU level. To better understand the range of regional responses is the second purpose of Scenar 2020.

Examining more than 850 regions gives an informative overview that allows a generalising aggregation of typical regions. Nevertheless, the examination of a single region's result is not the objective and is not recommended.

Overview of changes in the agricultural sector within the European Union

Decline in the agricultural economy

The initial Scenar 2020 study demonstrated that there is a strong probability of a decline in the contribution of the agricultural sector to total income and employment within the EU. This is confirmed by the results in Scenar 2020-II. The modelling of the agricultural economy distinguishes this potential impact at different territorial levels: EU-27, national and regional, and also brings out continuing historical contrasts between the EU-15 and EU-12 groupings of Member States. For the EU as a whole, the decline in primary production is accompanied by a decline in food-processing, in spite of the fact that sourcing for the food-processing sector may occur at the world level. This trend is facilitated by liberalisation, which accentuates the relative decline in the primary production in the EU, as it is demonstrated in the Liberalisation scenario. The impacts of the decline are unevenly distributed, because the competitiveness of agricultural production and the structure of the farming industry are enormously varied across the EU.

Structural changes: crop production

A few highlights of the structural changes indicated by Scenar 2020-II can be presented in terms of crop production, livestock production and employment in the agricultural sector. With regard to crop production, on the one hand there is an increase of production in all scenarios, but because of yield increases (reflecting technology improvement) the amount of land devoted to crop production can be expected to decrease. This process of reduction of land use is accentuated under liberalisation, since specialisation and economies of scale would accompany shifts in market shares based on relative prices in an open market. On the other hand, there are non-market determinants in crop demand, and the obvious reference is to biofuel production that is mandated by the Renewable Energy Directive. Certain crops, which are also used for biofuel production, fare better under various future economic conditions than others; these 'biofuel crops' are a subset of arable crops that will have a differentiated market under liberalisation. In particular, substitution is expected to occur through international trade that would have a greater effect upon the internal EU production requirement of those crops used for ethanol than for those used for biodiesel.

Structural changes: livestock production

In the case of livestock production, the impact of different market conditions is far more contrasted, and severe, than for arable production. Pork and poultry production in the EU resists the international competition in more open markets better than beef, in spite of the fact that under a Liberalisation scenario, the consumption per capita of beef relative to pork and poultry might be expected to increase because of a lower price for beef (indeed, it would drop in a liberalised trade context). The dairy market is more complex, as what distinguishes the milk market from meat sales is the possible transformation of milk into other products: butter, cheese and milk powder. Here the market penetration in a global context reflects certain competitive advantages for the EU with regard to cheese, even under a fully liberalised market.

Structural changes: agricultural employment

The impact of projected changes in crop and livestock production is uneven in the EU, and can be seen in the contrast between agricultural production systems of the EU-12 and EU-15. In the former case, the presence of a relatively larger amount of smaller and inefficient agricultural production units leads to a decline in income and to the shedding of agricultural employment, simply because of the incapacity to benefit from economies of scale that larger units in the EU-15 are able to achieve. The loss of agricultural employment in the EU-12 is compounded by an industrial sector also undergoing a process of restructuring. The implication is that migratory pressures can be expected from rural to urban centres within the EU-12, and from east to west in the EU as a whole.

Decline in agricultural land prices

If production increases through productivity gains and nevertheless less agricultural land is used, then this fact will be mirrored in a decline in prices for land, and this is what is seen in the different scenario outcomes. In the Reference and especially the Conservative CAP scenarios the decline in land prices is limited (-3.5% and -1%, respectively), whereas land prices decrease substantially in the Liberalisation scenario (-30%). When decomposing the various influences on land prices within the agricultural sector, the modelling permits an estimation of the relative importance of different aspects of policy-related influences. Reducing border measures and direct payments are the key driving factors behind the decline in land prices in the Liberalisation scenario. Mandated biofuel production strengthens land demand, and therefore has a positive repercussion on land prices. Less-Favoured Areas and Natura 2000 measures (Pillar 2) should also contribute to sustaining land prices. These influences on land prices appear to vary directly in terms of the scenario. Other effects, related to EAFRD financial support measures for agricultural enterprises regarding human and physical capital investment, basically contribute to greater productivity in EU agriculture.

Environmental effects

The decrease of crop and beef production in some areas could have a positive impact because, for example, there would be a decrease in nitrate use and methane emissions. But beyond a certain threshold of reduction in activity, there will be land abandonment in less competitive areas. The latter can have serious negative environmental implications as many valuable habitats and the site-specific biodiversity depend on appropriate levels of land management. The regional expression of the impact of production level changes depends on the mix of agricultural production types, as is discussed in the regional analysis part of Scenar 2020-II. Finally, as the technological attributes of agriculture are changing, reduced environmental impact through greater mastery of production methods is expected. The regional analysis showed that this was an essential development for regions with particular environmental risks.

Global dynamics impacting upon agricultural commodities

There is a contrast between the projected growth rate for crop and livestock production outside and within the EU for some commodities. Livestock production, for example, is stimulated in Latin America, Asia and Africa by a growth in consumption that corresponds to a per capita increase in GDP.

Agricultural land use decreases slightly in the non-EU countries of the OECD, while in developing countries the amount of agricultural land expands, especially in countries where the possibilities to expand are greatest, such as in Central and South America (in

particular Brazil) and in Africa. Increased food demand at the domestic level (Africa) or from export potential (Central and South America) appears to drive the expansion in land used for agriculture.

In terms of international trade, the amount of agricultural products imported into the EU is related to the degree of border protection, and this amount is set to increase under the provisions of the Falconer proposal. Under full liberalisation, exports also increase, but to a lesser extent than imports.

Influence of EU policies on crop and livestock production and land use

Effects of the Renewable Energy Directive and biofuel production on crop production

The Renewable Energy Directive stimulates the production of the crops that are used in part for biofuel production, and this has an effect that sustains the entire agricultural economy, including positive effects on employment and land under agricultural use. In the Reference scenario, indeed, the growth of biofuel crop production within the EU is 14% up to 2020; but in the Liberalisation scenario, however, it would be only 3%. Mandated biofuel consumption in the EU is the same in both scenarios, but this does not necessarily correspond with the origin of the biofuel feedstock, as the decomposition of the factors behind the growth of biofuel crop production shows under the different scenarios. The Renewable Energy Directive would not be able to outweigh the contrary consequences of reduced border effects in the Liberalisation scenario (better competitive advantage of crops – e.g. grains, sugar – or of ethanol production outside the EU); and the reduction in Pillar 1 payments in this scenario means less support for farm income generally.

Small growth in EU livestock production

With regard to livestock, the foreseen increase in the consumption of meat on the global level does not translate into a major impetus for the EU livestock sector as a whole: in the Reference scenario the production of poultry increases by 15% over the study period, and pork by 7%; but beef declines by 11%. The situation depicted in the Reference scenario also takes account of the influence of border protection. The negative impact is rather limited, as in the Scenar analysis livestock is assumed to be treated as a sensitive product under the Falconer proposal. Therefore, when trade barriers are removed under the Liberalisation scenario, the projection for the growth in both poultry and pork production becomes very small over the study period, but the reduction in beef production is more than 35%. According to the decomposition analysis that has been made of all the scenarios, it can be claimed that the Renewable Energy Directive contributes to limiting the growth of all meat products, as the demand for arable crops used for biofuels would cause the feed and land for livestock to become more expensive, and the supplementary support from Pillar 2 measures does not compensate for this.

Land and labour markets have an important buffer function to ease sector adjustment

The impact of trade liberalisation and reducing domestic support is in general moderate; even with liberalisation agriculture will still be an important sector in Europe. The land and (to a lesser extent) the segmented labour markets play a key role in keeping production levels up as they absorb the negative impact of liberalisation by a decline in land prices and a lower growth rate of agricultural wages. These two factors contribute to keeping European agriculture competitive, along with the expected increase in productivity.

Reduced agricultural land use

The overall influence of liberalisation on EU-27 agricultural land use is perceptibly negative, in spite of the strong demand for arable crop land provided by the Renewable Energy Directive. A sensitivity analysis shows that the growth of biofuel crop production under the Reference scenario would even be 25% less if 2nd generation biofuels were to meet about another 25% of the mandated biofuel production requirements. Even if the economic situation within the EU is marked by growth over the long term, productivity gains in the agricultural sector diminish the land required for crops; and with the fall in beef consumption, even the needs for grasslands for extensive pasture are progressively reduced and so is the utilised area. Finally, the removal of Pillar 1 payments under the Liberalisation scenario would also translate into reduced agricultural land use, as an important source of revenue for farming is removed. Reducing first pillar payments leads, on the one hand, to intensification of the use of land in the core production areas to earn a

decent living and, on the other hand, to land abandonment in marginal production areas, as it becomes unprofitable produce in these regions.

Farm income evolution and follow-on effect on farm structure

Farm income is composed of several financial streams; with regard to strictly agricultural considerations, the sources of income are returns from farm sales, direct payments (Pillar 1) and EAFRD payments (Pillar 2).

Decline in income

The evolution of real prices for arable crops is generally negative up to the horizon of 2020 in the Reference scenario, with the exception of soybean, rapeseed and sunflower seed. Oilseeds have a quite high demand stimulated by the Renewable Energy Directive, with an additional component of demand through the by-product for livestock feed in the form of protein-rich oilseed cake. Livestock activities under the Reference scenario generally experience a decline in total income, although Pillar 1 and Pillar 2 support has a positive effect on income. The situation with regard to cereals changes under the Liberalisation scenario, as the part of this production that is transformed to ethanol loses its market share to imported intermediary or final products. Basically, the income from all agricultural commodity production will drop by 30% (arable) to 60% (livestock) in the Liberalisation scenario when compared with the Reference scenario.

Much of this loss of income in the Liberalisation scenario would not come from a decreased revenue from sales (of the order of 2-4% for arable crops, 20% for cattle activities, and 4% for other animal production), but from the removal of direct payments (Pillar 1 support). The associated loss in asset (especially land) values would also have an impact on the financial situation of farms. The exception is, of course, cattle activities, which experience a loss in sales revenue already in the Reference scenario and even more in the Liberalisation scenario; so the fact that there is little loss in regard to diminished premiums in the Liberalisation scenario (by 4%) does not change the relative magnitude of total income loss.

The effect of Pillar 2 on productivity

It can be expected that Pillar 2 support will increase productivity (Axis 1 payments for human and physical capital investments), stimulate extensive production (Axis 2 payments for maintaining and enhancing the natural capital) and lead to farm diversification (Axis 3 payments stimulate diversification and improve the rural infrastructure). The Pillar 2 effect can be seen in the decomposition analysis carried out for the agri-food production in the EU-27 as a whole (even if small in comparison with the influence of trade measures, but still larger than the influence of the Renewable Energy Directive).

Farm income across the EU-27 decreases in the Reference scenario on average by 7% from 2002 to 2020. The level of income would be the same under the Conservative CAP scenario, but would decrease by a further 22% under the Liberalisation scenario. Historical patterns of production make a difference in regional impact even in the Reference scenario, and for instance the overall impact in the EU-15 is negative largely because of the decrease in real prices in the livestock sector. The EU-12 benefits from the important injection of Pillar 2 financial support for productivity enhancement through physical and social capital investments. Liberalisation has the same relative impact across the EU, with little distinction between EU-15 and EU-12 at country level. The regional income perspective, nevertheless, is quite varied at the subnational level, as has been depicted within Scenar 2020-II.

Changes in farm structure and farm types

The impact on farm structure within the Reference scenario is reflected in the projected change in farm numbers, which shows a drop of a third from 11 million units across the EU in 2003 to 7 million in 2020. The distribution of impact is unequal, but in general the drop is of the order of 25% in the EU-15 and 40% in the EU-12. The impact on agricultural subsectors is also unequal, with a squeeze in particular projected for mixed crop and mixed livestock farm types (considered together, these already represent less than 15% of EU farms). As can be assumed from the other indications reported previously, it is the cattle-related production that is most severely affected, but – to the contrary – 'other

animal' units are the only farm types to increase in number. The number of farms is very negatively affected by reducing direct payments.

Macro trends affecting the agricultural labour force in the EU

Agricultural employment in the EU is influenced by the global situation

The contribution of the agricultural sector to employment in the EU is determined by macro trends, in which the share of both the agricultural and industrial sectors in the gross value added of the economy is displaced by the development of the service sector. The prospect for the agricultural sector is a worldwide phenomenon, reflecting a limited growth in food demand and an increase in productivity. On the demand side, there is a low elasticity for an increase in crop use for food when per capita income grows; there is a higher – but limited – elasticity for meat in the human diet with income growth. On the supply side, as long as technology continues to produce beneficial effects for seed quality, commodity production and storage, and the transport of primary and processed products, then the overall amount of food available will continue to increase per hectare of land used and per unit of agricultural labour employed.

Wage gap between the agricultural and other sectors in the EU

Within the EU the projected loss of farm employment is accompanied by a continuing wage gap between the agricultural and the other sectors of the economy. Whereas agricultural wages may increase by 20% in real terms on the horizon of 2020 in the Reference scenario, industrial workers would see their remuneration grow by nearly 30%. Although the agricultural labour force would perhaps be slightly better rewarded under the Conservative CAP scenario, there would be a significantly lower increase in remuneration under the Liberalisation scenario, at the level of only 12%, whereas the non-agricultural worker would benefit from an income increase even slightly better than in the Reference scenario.

Agricultural land prices buffer negative employment impact

At the same time, the decline in agricultural land prices that corresponds to a decrease in land use during the scenario period will buffer the negative agricultural employment situation. In the economic paradigm, land substitutes with capital and labour among the factors involved in agricultural production. This is particularly the case in the Liberalisation scenario, in which a drop of 30% in land price at the horizon of 2020 is accompanied by a decline in agricultural land use of only about 5%. The land that remains in agricultural production is also being used to provide agricultural employment, even if economies of scale may lower the number of workers through productivity increases.

Socio-economic performance of EU-27 regions

Impact of long-term trends that affect the EU socio-economic framework as a whole

When considering the socio-economic development of the EU-27 regions in a larger framework than the agricultural sector, the influence of the three scenarios is hardly important for the long-term trends of demographic development and employment. Both the growth or decline of population and employment are for most regions within a range of plus or minus 1% annual rates of changes at the regional level. There are differences in the intensity of migratory movement, which Scenar 2020-II seeks to portray, as well as the underlying causes. These may be associated with employment possibilities as well as the relative quality of life. What is most important as a conclusion is that there is no evidence that the EU-27 regions with a higher than average agricultural employment are structurally unsuited for 'positive' development perspectives, in both an economic and a social sense.

The dynamics of regional economies in the EU

Looking in more detail to the dynamics of regional economies within the EU, the different types of growth potential are found within each of the Member States, and two-thirds of the regions have a *slightly positive* potential as opposed to being *negative* or *very positive*. The *slightly positive* 'regional reaction' to the economic conditions that are projected in the Reference scenario is evenly distributed across 'most rural', 'intermediate rural' and 'most urban' regional types.¹ In terms of the employment situation, this can be considered as

¹ The degree of rurality distinction is based on the OECD typology.

negative in a sixth of the regions. Herein, the 'most urban' category is the least associated with a negative rate of change. In terms of the *very positive* employment situation, it is the 'most rural' type that is least associated with a positive rate of change. So there seems to be a very minor distinction between the capacities of very rural regions to benefit from employment possibilities when compared with regions that are less marked by extreme rurality characteristics.

When considering specifically the degree of agricultural employment in the description of the economic dynamics within a region, there are distinct patterns of agricultural employment levels. These are greater in the south-eastern and the south-western regions. There is also a combination of a high level of agricultural employment and of economic growth that is characteristic of three relatively large groups of regions, two in the south-west and one in the north-west. Further regional groupings made in Scenar 2020-II make it possible to identify regions in which the regional development potential has distinct characteristics as a combined expression of the agricultural sector, the service sector and population growth. Only a few regions – more to the east and the north of the EU – seem to be generally weak in the Scenar 2020 time horizon. A great number, distributed across the EU, have a moderate development potential; and regions with a positive development potential are spread out from the centre to the south-western and north-western parts of the EU.

Small changes overall, but a difference between the EU-12 and EU-15

The general picture of the EU-27 regional socio-economic 'reactions' in 2020 is that of fairly small changes. The analysis shows, however, that although the different types of regional 'reactions' are represented throughout the EU-27, there is a certain division between the EU-12 and the EU-15, with the more positive 'reactions' occurring in the latter. Overall, the potential of the emerging 'strong' EU-12 regions, as well as of those within the southern EU-15 regions, for development in the service sector would seem to be a means for enhancing the quality of life, as agriculture will provide limited stimulus for employment or for discouraging out-migration.

Quality of life within EU regions

Variables used to index quality of life

The indexation of quality of life requires the use of variables that can serve as proxies for a number of attributes that are subjective in nature. For the purposes of Scenar 2020-II, three variables are used: GDP per capita, regional share of the service sector in terms of GVA, and a Green Background Landscape Index.² The results of the combination of these three variables show that in 25% of the regions the quality of life can be considered as low and in 75% as neutral; an insignificant number of 20 regions (out of 857) can be considered as having a high quality of life.

Results from other studies

Other studies making an analysis of quality of life including subjective valuation do so at far more aggregated levels. However, what is revealing is that there is very little distinction in urban or rural perspectives. Also, most sampling exercises give a similar level of rating: in one study, 70% of the persons surveyed are satisfied with their life; in another study, 75% express happiness with their situation; in a third study, about 65% are optimistic about the future.

Scenar conclusions on quality of life

Further proxies could be used, of course, for more precise investigations: access to health services and level of education are frequently suggested indicators. Unfortunately, the data available for the EU-27 regions are incomplete for such additional indicators, and do not allow for a systematic coverage of all the EU regions. The conclusion to be drawn from the three indicators that are used in this socio-economic regional analysis is that quality of life is rather homogeneous in the European Union, with only a relatively small portion of the population living in an area that is less favourable than the average.

The quality of life analysis has been extended by integrating the three variables within a more extensive socio-economic framework that is an outcome of the regional analysis. The

² The Green Background Landscape Index is derived from a selection of aggregated Corine Land Cover classes, taken as a representation of landscape characteristics favourable to nature.

potential future socio-economic performance is contrasted with the current strengths and weaknesses of quality of life. Conclusions are drawn whether the present and future conditions are independent or interdependent at the regional level, and six types of 'regional reactions' are depicted. Although the analysis reveals a similar configuration between the groups of regions with a low quality of life situation at the present time and those with low socio-economic reactions in 2020, there is no conceptual basis to consider this as a cause-effect relationship. Again, 'most rural' regions are represented in all types of regions' groups, but are dominant in the weaker ones.

Agriculture in relation to environmental conditions within the EU

Indicators used in Scenar 2020-II

Capturing the state of the natural environment across the EU at a disaggregated regional level has proven to be complex, in particular because of a lack of standardised data and their recording within extended time series. A number of indicators have been examined or constructed for the purposes of the regional analysis performed within Scenar 2020-II. These are intended to provide information for interpreting water and soil conditions, for knowing about soil-related greenhouse gas (GHG) emission, and for understanding the state of biodiversity. The indicators are used to place the modelling results concerning regional agricultural land uses into the regional environmental context to help to determine the (potential) interaction in terms of possible vulnerabilities and risks.

The regional analysis examines different types of risk areas in relation to the forms of agricultural production found in the regions concerned by the risk, in order to determine whether or not the farming practised is adapted to the environmental conditions, or whether the trend in agricultural land use will continue to sustain valuable ecosystems.

Soils sensitive to erosion, water limitations and GHG emission

An important risk identified is associated with a high proportion of soils sensitive to erosion within a region, a situation that concerns 35% of the regions across the EU, and 50% of the EU-12 regions. Regions with particularly limited available water capacities (16%) are more frequent in the southern parts of Europe, such as Bulgaria, Greece, Slovenia and Spain, but Austria is also concerned. A predominance of sandy soils (concerning 20% of EU regions), which are considered here as an indicator for risk of nitrate leaching when combined with intensive agriculture, is characteristic of regions in the northern EU, specifically Denmark, Finland, Germany and Poland, but also Portugal. Many northern EU regions are likely to have high shares of soils rich in soil organic matter, and may have possibilities to contribute to the reduction of GHG emission by applying appropriate land-use practices. In contrast, many regions in western, southern and south-eastern Europe have soils with a relatively low content in organic matter, which could function as potential GHG sinks if appropriate land-use measures are undertaken.

Indicators of opportunity for biodiversity

Two indicators of *strength* with regard to biodiversity are the presence of a relatively high share of Natura 2000 sites (in 37% of EU regions, and in over 50% of the EU-12 regions) and the quality of High Nature Value attributed to EU farmland. Natura 2000 land area is quite important in Bulgaria, Hungary, Slovenia and Spain. Approximately 20% of all EU regions (at NUTS2) show a high (> 48%) or very high (>71%) share of HNV farmland, on the basis of current estimates; and a few countries have a particularly high number of regions in this category, such as Austria, Greece, Portugal and Spain. In terms of potential conflicts between changing agricultural practices (intensification, land abandonment) and biodiversity preservation (Natura 2000), the management plans that EU Member States have to put in place for each site should ensure compatible use of the land through farming, as the Natura 2000 network is an EU policy instrument for biodiversity protection. High Nature Value farming on the other hand is found on much larger areas than designated in the Natura 2000 network, covering about one-third of farmed areas in the EU, mainly in marginal areas.

Risk associated with land abandonment

The role of farming to maintain landscape quality and biodiversity (associated with both Natura 2000 and HNV areas) underlines the potential risk associated with land abandonment, which is apparent to different degrees in the three scenarios elaborated in the macro-economic part of Scenar 2020-II. This possibility is put into perspective by the

type of subsequent regional analysis performed, and within Scenar 2020-II an attempt has been made to identify the regions particularly characterised by those types of land use that might indicate an ongoing process of land abandonment. To do this, the future shares of different farming types projected on the horizon of 2020 have been clustered to give a broad overview of agricultural performance (but only for the Reference scenario). The conditions representing a risk of land abandonment are found in a third of the EU regions. Most of the regions in this cluster are located in France, Greece, Italy, Portugal and Spain in the western and southern EU; in Bulgaria, Hungary, Poland and Romania in the eastern EU; and in Finland and Sweden in the northern EU. The reduction in agricultural utilised land projected in the macro-economic analysis with regard to the Liberalisation scenario, however, indicates the heightened risk of more widespread land abandonment within the EU as the agricultural economy becomes more liberalised. In any case in the Liberalisation scenario the Good Agricultural and Environmental Conditions (GAEC) do not apply anymore due to the cessation of direct payments in the absence of Pillar 1. Farmers will still have to fulfil requirements of the environmental legislation, without further consideration of good agricultural practices that are present in the GAEC and not in the existing legislation. In the less competitive regions, in particular, structural land abandonment would be accompanied by environmental decline. As a secondary effect of such structural change, targeted Pillar 2 measures aiming to enhance the environment would not find addressees and, therefore, could no longer contribute to sustaining extensive farming practices and thus securing the ecological values and benefits which these provide.

Preparing for change

The first Scenar 2020 study had as a subtitle: *Understanding Change*. In the two years separating the first study and the current work, many of the underlying conditions are similar, but certainly the economic crisis gives an additional perspective as to the acuteness of the dynamic of change currently at work. Today, understanding change is an insufficient attitude; rather, it is necessary to be actively *Preparing for Change*. This attitude is already witnessed in the CAP reforms carried out at the European level.

This current Scenar 2020 'update' study tests three scenarios of the possible evolution of EU agricultural policy linked to the international market framework. Like the initial study, the current update demonstrates that the differences in CAP and trade policies have more effect on agricultural income and the number of farms than on agricultural production. Land prices and, to a lesser extent, agricultural wages play a key role in absorbing the negative impact of changes in the CAP and trade policy on the agricultural sector and rural areas and contribute to mitigating the fall in production levels. The future pattern of agricultural production in the EU will generally be subject to the international trade policy situation, as well as to purely domestic policies such as the mandated biofuels incorporation into transportation fuel resources. Direct income support is very important for farm income and for the number of farms and their balanced distribution in the EU-27.

With regard to the environmental risks that are related to the agricultural activities of the Reference scenario, it can be stated that, although they are manifold, none is dominating in spatial terms or with regard to a specific orientation of agricultural production. Further changes in environmental conditions, which the agricultural sector has to deal with in the future, are the opportunities and risks related to climate change. In this study, only a few aspects have been taken into account.

A scenario study demonstrates that it is possible to anticipate the type of restructuring of the agricultural sector that is ineluctable. Considering the agricultural economy at the European scale, there is increasingly a true dichotomy in agricultural systems. On the one hand, there is a trend for specialisation (in open-field arable, horticultural and livestock-rearing/dairy systems); on the other hand, there is the livestock-based system with mixed cropping for fodder system, interlaced with fallow lands tending towards retirement from agricultural use. Both systems are valid and valuable, from a social and an environmental perspective. These trends are long term and geographically identifiable. There are aspects of agricultural land use that can be encouraged by policy instruments at the EU level in order to enhance the environmental contribution of the two types of farming systems.

Postscript

No scenario study can claim to present what *will* happen, but merely can portray what *may* happen. What is important afterwards is that these eventualities are debated, and that the necessary choices concerning the future of agriculture and the rural world are as fully informed as possible.