European Commission
Directorate-General for Agriculture and Rural Development

PROSPECTS FOR AGRICULTURAL MARKETS AND INCOME IN THE EU 2010–2020

December 2010

NOTE TO THE READERS

The outlook presented in this publication consist of a set of market and sector income prospects elaborated on the basis of specific assumptions regarding macroeconomic conditions, the agricultural and trade policy environment, weather conditions and international market developments. They are not intended to constitute a forecast of what the future will be, but instead a description of what may happen under a specific set of assumptions and circumstances, which at the time of projections were judged plausible. As such, they should be seen as an analytical tool for medium-term market and policy issues, not as a short-term forecasting tool for monitoring market developments and addressing short-term market issues.

The present projections and analyses have been carried out on the basis of economic models available in the European Commission (at the Directorate-General for Agriculture and Rural Development (AGRI) and in the Joint Research Centre – Institute for Perspective Technological Studies (IPTS)). This report is based on the information available at the end of September 2010. The changes in legislation proposed or adopted since that date have not been taken into account. Moreover the projections do not take account of any potential outcome of ongoing bilateral/regional/multilateral trade negotiations. The analysis covers the period between 2010 and 2020.

The present medium term prospects for agricultural markets and income in the EU feature some considerable improvements, including an extended time horizon (beyond the usual 7 years) and product coverage (including biofuels, detailed oilseed complex and whole milk powder) as well as an attempt to identify and quantify the main areas of uncertainty: a separate part has been added to the publication dealing with scenarios on various uncertainties.

The modelling approach has been improved by increasing the number of market and modelling experts involved and by relying on agro-economic models that represent the state of the art. The validation procedure was extended to an external review of the baseline and uncertainty scenarios in a workshop on 5-6 October 2010 in Brussels, gathering high-level policy makers, modelling and market experts from the EU, the United States and international organisations such as the Organisation for Economic Co-operation and Development, the United Nation's Food and Agriculture Organisation and the World Bank.

These changes are to be seen as an attempt to improve the accuracy, usefulness and relevance of baseline market prospects that are more important this year as the projections and analyses presented in this publication will feed into the ongoing Common Agriculture Policy post-2013 impact assessment process, as a reference (baseline) for future policy options.

For the first time, the publication involved joint efforts by AGRI and the IPTS. While the authorship and responsibility for the contents of the publication rest with AGRI, acknowledgement is due for the staff at the IPTS working on the modelling background and baseline projections, as well as the uncertainty scenarios in Part II of the publication.

EXECUTIVE SUMMARY

The medium-term outlook for EU agriculture depicts a mixed picture with regard to commodity market developments. The outlook for EU agricultural markets remains subject to a number of uncertainties regarding future market developments as well as the macroeconomic and policy settings.

They concern in particular the drivers of demand and supply of agricultural commodities, the linkage between agriculture and energy markets and the path of economic recovery; uncertainties whose possible impacts on the baseline are addressed in Part II of the publication. Climate change will remain to influence the market outlook, with unpredictable weather patterns leading to supply fluctuations. Other factors such as future changes in agricultural and trade policies as well as the outcome of the current Doha Development Round of trade negotiations and bilateral/regional trade discussions and the policies on renewable energy could also have far reaching implications for the future pattern of EU agricultural markets.

While the expected demand growth resulting from the assumed economic recovery and mandatory biofuel mandates should support production expansion, EU output would remain under its full potential as the expected increase in input costs would limit the profitability of production. In addition, crop yields are expected to grow at a slow pace, continuing the decline in the rate of growth observed during the previous decade.

The assumed appreciation of the EUR would further weaken the competitiveness of EU exports on world markets, leading to a loss in world market share at a time when global demand is growing at a relatively fast pace. The deteriorating competitiveness of the EU under the current setting is further emphasized in the analysis of alternative assumptions on yield and global demand growth rates.

On the other hand, commodity markets are expected to remain balanced over the outlook period, without the need for market intervention, (only the SMP market will remain sensitive to global supply-demand developments over the near term). Prospects for agricultural income remain positive, displaying a modest growth rate at the EU level, driven by the decline in labour input which is expected to continue.

Policy, economic and world market environment

The outlook for EU agricultural markets and income over 2010-2020 assumes a status quo policy environment, stable macroeconomic conditions and relatively favourable world market perspectives. The Common Agricultural Policy is assumed to follow the Health-Check decisions, and global trade policy to respect the Uruguay Round Agreement on Agriculture. Macroeconomic assumptions include a gradual and modest EU GDP growth at around 2% p.a. and a steady appreciation of the EUR to around 1.47 USD/EUR. Commodity prices are expected to stay firm over the medium term supported by factors such as the growth in global food demand, the development of the biofuel sector and the long-term decline in food crop productivity growth.

Arable crops

The medium-term prospects for the EU cereal markets depict a relatively positive picture with tight market conditions, low stock levels and prices remaining above long term averages. Supply growth is expected to result mostly from very moderate yield growth (just above 0.5% per year on average) with some reallocation between crops in a stable cereal area.

The domestic use of cereals in the EU is expected to increase, most notably thanks to the growth in the emerging bioethanol and biomass industry in the wake of the initiatives

taken by Member States in the framework of the 2008 Renewable Energy Directive (RED).

The medium-term prospects for the EU oilseed markets depict a positive picture with strong demand and high oilseed oil prices. Supply growth is expected to result mostly from moderate yield growth and to a lesser extent from a slightly expanding oilseed area, with some reallocation between crops. The expected increase in domestic use of oilseeds in the EU would also be driven by the growth in the emerging biodiesel and biomass industry following the initiatives taken by Member States in the framework of the RED. The trade balance is not expected to improve over the medium term as additional imports are required to meet the biofuel targets.

Meat

Total meat production is expected to recover over the near term from the decline suffered in the wake of the economic crisis, but longer term growth prospects remain modest at an annual rate of 0.3% on average. Aggregate meat production would reach 44.4 mio t in 2020, exceeding the 2009 level by 4%. The situation differs between ruminant and non-ruminants, as beef/veal and sheep/goat meat production would drop by 7% and 11% respectively while pig and poultry meat production would expand by 7% each. The potential growth in non-ruminant meat production would remain constrained by the expected increase in production costs.

The driving factor for production growth would be the increasing poultry and pig meat consumption. On a per capita basis, overall EU meat consumption would reach 85.4 kg in 2020, 2% higher than 2009. Poultry meat consumption would increase most, above 6% and pig meat growth would remain below 5% on aggregate between 2009 and 2020. Pig meat would remain the most preferred meat in the EU at 43.3 kg/capita in 2020, compared to 24.7 kg for poultry, 15.4 kg for beef and veal and less than 2 kg for sheep and goat meat.

The net trade position of the EU is projected to deteriorate over the outlook driven by a steady increase in meat imports (of beef and poultry meats) and a parallel decline in meat exports (of beef, pig and poultry meats). Aggregate meat imports would grow by 14% altogether, while meat exports would decline by almost 23% by 2020, leaving the EU with net exports of around 200 thousand t, with pig meat as the single commodity with a positive net trade balance.

Milk and dairy products

Milk production is expected to return to an increasing path, driven by a fairly optimistic demand outlook based on improved macroeconomic prospects. The rate of increase will be rather moderate, with EU-27 milk production in 2020 projected to exceed the 2009 level by less than 4%. Milk deliveries would increase by a slightly higher rate (of almost 5%), the difference being due to the gradually declining on-farm consumption in the EU-12. The quota abolition is expected to lead to a very modest reaction of EU-27 milk deliveries at the end of the quota regime in 2015.

The outlook appears favourable for higher value added dairy commodities, driven by growing demand for cheese and fresh dairy products. Production of fresh dairy products (including drinking milk, cream, yoghurts, etc.) is projected to increase by about 8% (from 2009 to 2020) and cheese output is depicted to grow by about 10%. Prospects for cheese exports are favourable despite the strengthening EUR, with the EU maintaining a steady share in global cheese exports above 30%.

WMP production is expected to fall only marginally below its 2009 level and EU exports would remain firm over the medium term, driven by strong global demand.

Nevertheless, the EU is expected to lose market share of global exports that would decline to 21% in 2020 (from 24% in 2009).

The outlook depicts continued market stability for butter, conditional on firm domestic demand around the level of 2 mio t. The projected increase in production for 2015 (year of quota abolition) would lead to a temporary increase in EU exports.

SMP export perspectives are less favourable given the assumed strengthening of the EUR and strong supply from other exporters. As EU demand prospects are also fairly weak, the outlook for price growth is rather constrained over most of the projection period. However, supply pressure on the market would be mitigated by reduced EU production.

All in all, and despite the relatively favourable outlook and apparent short- and long term market stability for SMP, the nearer term prospects remain sensitive to global supply-demand developments and the market's ability to absorb the release of intervention stocks.

Agricultural income

Agricultural income (expressed as real factor income per labour unit) is expected to recover from the significant low in 2009 with an outlook for a gradual, albeit modest growth in aggregate EU income over most of the projection period that would exceed the 2005-2009 average (base) level by around 20% in 2020. This overall gain would mask uneven developments for the EU-15 and EU-12; whereas agricultural income in the EU-15 would show a more moderate increase to almost 10% above the base level, it is foreseen to display a more pronounced picture in the EU-12 rising 45% above the base level by 2020 and converging towards the EU average. While the assumed decline in agricultural labour remains an important factor behind the income prospects for both EU-15 and EU-12, the increase in the subsidies granted to agricultural producers in the EU-12 over the phasing-in period should remain a key driver of income growth in this group of Member States.

Caveats

Notwithstanding the efforts to base the outlook for agricultural markets and income on the latest statistics and information as well as the most plausible assumptions and expectations on the future, the outlook presented in this publication has to be interpreted in the context of the underlying assumptions on the global market, economic and policy setting as well as the additional assumptions and expectations specific to the income estimation, for which strong assumptions are made for sectors not covered by the model. These assumptions have far reaching implications on the prospects for agricultural markets and income, particularly considering the elevated level of uncertainties regarding future market, economic, policy and climate conditions

An additional element to consider is that despite the improvements in the economic model (modified version of the AGLINK-COSIMO from OECD/FAO) used to generate the market prospects, there are still remaining limitations that need to be addressed in future exercises (e.g. aggregation of demand for coarse grains and oilseed sector, developments in farm structure, trends at other levels of the supply chain, processing and retail in particular).

Quantitative analysis of uncertainties

Part II of the publication aims to address a number of the uncertainties by providing a quantitative assessment of alternative assumptions on supply and demand drivers, the macroeconomic environment and crude oil price developments. The analysis looks at how alternative assumptions may affect the outlook for EU agricultural markets described in Part I (baseline).

The *scenario assuming higher crop yield growth in Europe* due to higher input use shows that lower prices resulting from the increase in EU supply improves the trade position of the EU on world markets, but leaves agricultural income unaffected at the EU level. While the livestock sector gains from lower feed costs, the cereal sector is worse off due to the lower prices and higher costs.

The *scenario assuming faster technological progress worldwide* emphasizes the sensitive trade position of the EU, as the EU export gain becomes less pronounced when yield growth spreads on a global scale.

The scenario *on alternative variable costs* shows the relevance of the level of input costs on the competitiveness of the EU on world markets, while having a fairly limited effect on the aggregate EU agricultural income (less than 1.5%).

The *demand scenario assuming higher GDP growth rates in emerging economies* shows that the resulting price effects on the EU commodity markets is relatively small (in general less than 5%). This is because increases in the demand in emerging economies are only partly transmitted to world market prices, and because only a small share of the EU domestic consumption is sourced from the world market which in turn makes the EU domestic market to be less sensitive to changes in world markets.

The *macroeconomic scenario assuming faster/slower economic growth and a higher/lower crude oil price* leads to an increase/decrease of the world agricultural prices. The magnitude of price transmission to the EU is unequal among the different sectors, with the most pronounced effect observed for oilseeds and vegetable oil.

The *biofuel scenario assuming a higher crude oil price combined with lower transport fuel demand* requires less biofuels to fulfil the EU blending targets and drives prices up, mainly for biofuels and less for feedstock commodities. The results show a shift in favour of biodiesel with respect to ethanol in EU biofuel consumption in the EU. The reactions in feedstock markets are more limited and are driven by the higher input costs due to the higher crude oil price. The land use effect both in the EU as well as worldwide is limited (in general the differences of the harvested area for feedstocks are below +/- 1%).

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List of acronyms and abbreviations

CAP	Common Agricultural Policy
CNDP	Complementary National Direct Payment
cwe	Carcass weight equivalent
DG AGRI	Directorate-General for Agriculture and Rural Development
EAFRD	European Agricultural Fund for Rural Development
EIA	US Energy Information Administration
EU	European Union
EU-27	European Union after the enlargement on January, 1st 2007
EU-12	All Member States that have joined the EU since May, 1st 2004
EU-15	Member States of the European Union before May, 1st 2004
EUR	Euro currency
GDP	Gross Domestic Product
ha	Hectare
HLG	High Level Expert Group on Milk
kg	Kilogram
l	Litre
mio	Million
NUTS	Nomenclature of Territorial Units for Statistics
OPEC	Organisation of the Petroleum Exporting Countries
REAP	Renewable Energy Action Plan
RED	Renewable Energy Directive
SAPS	Single Area Payment Scheme
SMP	Skimmed Milk Powder
SPS	Single Payment Scheme
t	Metric tonne
US	United States of America
USD	US Dollar
WMP	Whole Milk Powder

PART I Prospects for agricultural markets and income

1 Introduction – the baseline setting

Part I of this publication summarises the main results of updated baseline projections for the cereal, oilseed, meat and dairy product markets and agricultural income in the European Union for the period 2010-2020.

The projections are established under a set of assumptions on agricultural and trade policies and the macroeconomic environment as well as considerations for climate and animal disease related issues. The world market environment is based on the OECD-FAO agricultural outlook of June 2010, taking into account more recent global macroeconomic outlook. These working hypotheses have been defined on the basis of the information available, which at the time of the analysis were judged the most plausible. The projections are based on market statistics and other information available at the end of September 2010.

1.1 Policy assumptions

The present projections assume a status quo **EU policy environment** over the outlook, i.e. a continuation of the Common Agricultural Policy following the Health-Check decisions adopted by the Agricultural Council in November 2008. The following elements have particular importance regarding market and income developments:

(1) *Phasing out milk quotas:* Milk quotas are increased by one percent every quota year between 2009/10 and 2013/14. For Italy, the 5 percent increase has been introduced immediately in 2009/10. Milk quotas are abolished by April 2015.

(2) *Intervention mechanisms:* Intervention is set at zero for barley and sorghum. For wheat, butter and skimmed milk powder intervention purchases are possible at guaranteed buying-in prices up to 3 mio t, 30 thousand t and 109 thousand t respectively. Beyond these limits intervention is possible by tender.

(3) *Decoupling:* The payments that some Member States kept coupled after the 2003 CAP reform will be decoupled and moved into the Single Payment Scheme (SPS) by 2010 for arable crops, durum wheat, olive oil and hops and by 2012 for processing aids and the remaining products, with the exception of suckler cow, goat and sheep premia, where Member States are assumed to keep current levels of coupled support.

(4) The Member States currently applying the *single area payment scheme (SAPS)* are assumed to adopt the regionalised system from 2014 onwards.

(5) *Set-aside:* The requirement for arable farmers to leave 10 percent of their land fallow is abolished.

(6) *Modulation (shifting money from direct aid to Rural Development):* direct payments exceeding an annual € 5 000 shall be reduced each year by 7% in 2009 up to 10% in 2012. An additional cut of 4 percent will be made on payments above €300 000 a year.

Regarding the **trade policy environment** all commitments taken within the *Uruguay Round Agreement on Agriculture* regarding in particular market access and subsidised exports are assumed to be fully respected. No account is taken of any potential outcome of the multilateral trade negotiations within the framework of the Doha Development Round. The potential outcome of ongoing bilateral and/or regional trade negotiations have not been incorporated either.

1.2 Macroeconomic environment

Assumptions on the **macroeconomic environment** have been revised since the March 2009 publication in light of the deep recession of 2009 and the apparent speed of recovery in 2010 so far. The revisions have a stronger effect on the short term economic environment as the longer term economic outlook remains similar to the one assumed in the March 2009 publication with respect to population growth, GDP and inflation trends. On the other hand, projections for the USD/EUR exchange rate depict a more pronounced strengthening of the EUR and recent market developments suggest higher crude oil price levels compared to the previous publication.

The current macroeconomic assumptions have mixed implications on EU agricultural markets. The positive impact of increasing population and recovery in the economic output on EU food demand is challenged by higher unemployment and firm food consumer prices. In terms of EU export potential, the positive situation over most of 2010 supported by favourable currency exchange rate developments is projected to weaken over the outlook, as the positive effects of higher GDP growth in importing countries would be dampened by worsening price competitiveness due to the continuous appreciation of the EUR. While the increasing price of crude oil could have positive implications on import demand from oil producing countries, the effect on agricultural input costs would be more pronounced, leading to higher energy, fertilizer and feed costs for agricultural producers.

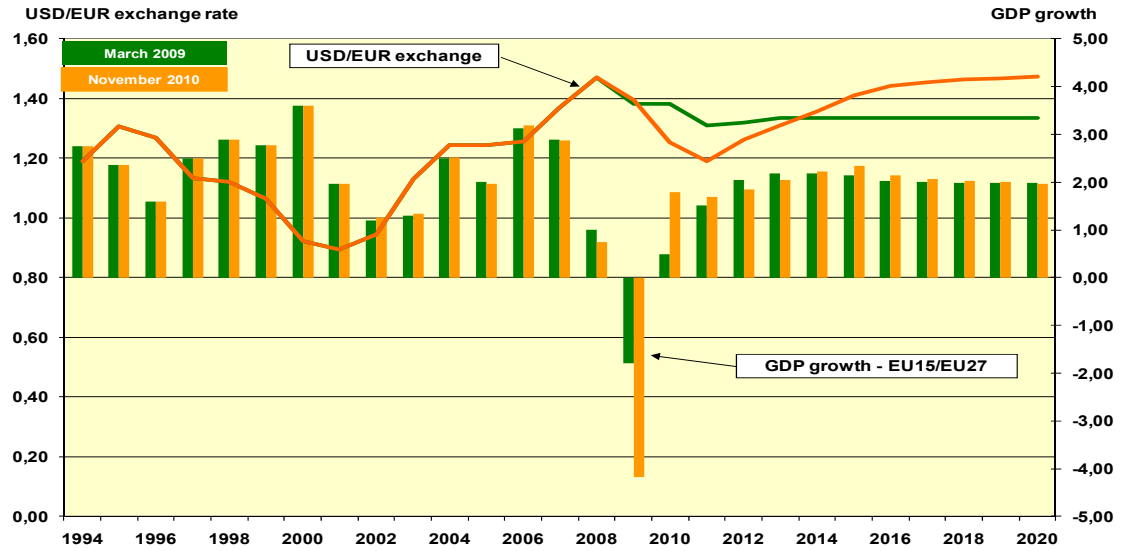
Table 1.1 Baseline assumptions on key macroeconomic variables, 2009–2020

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Population growth												
EU27	**0,4%**	**0,4%**	**0,4%**	**0,4%**	**0,3%**	**0,3%**	**0,3%**	**0,3%**	**0,3%**	**0,2%**	**0,2%**	**0,2%**
of which EU15	0,5%	0,5%	0,5%	0,5%	0,4%	0,4%	0,4%	0,4%	0,3%	0,3%	0,3%	0,3%
of which EU12	0,0%	-0,1%	-0,1%	-0,1%	-0,1%	-0,1%	-0,1%	-0,1%	-0,1%	-0,1%	-0,1%	-0,2%
GDP growth												
EU27	**-4,2%**	**1,8%**	**1,7%**	**1,8%**	**2,1%**	**2,2%**	**2,3%**	**2,2%**	**2,1%**	**2,0%**	**2,0%**	**2,0%**
World	**-1,8%**	**3,7%**	**3,3%**	**3,8%**	**3,9%**	**4,1%**	**4,0%**	**3,9%**	**3,8%**	**3,7%**	**3,7%**	**3,7%**
Inflation												
EU27	**1,0%**	**1,8%**	**1,7%**	**1,8%**	**1,9%**	**2,0%**	**2,0%**	**2,0%**	**2,0%**	**2,0%**	**2,0%**	**2,0%**
Exchange rate												
USD/EUR	**1,39**	**1,25**	**1,19**	**1,26**	**1,31**	**1,36**	**1,41**	**1,44**	**1,46**	**1,46**	**1,47**	**1,47**
Price of crude oil												
USD per barrel	**61**	**73**	**76**	**82**	**86**	**89**	**92**	**96**	**98**	**99**	**98**	**96**

Source: DG AGRI, ECFIN, Eurostat

As a consequence of the financial and economic crisis **EU GDP** contracted by 4.2% in 2009. The speed of recovery has so far been faster than expected, with quarter-on-quarter increases of 1.24% and 2.17% in the first and second quarters of 2010 and subsequent upward revisions of annual GDP growth projections by major economic institutions, currently projected at 1.8% for 2010. EU GDP growth is projected to accelerate over 2011-2015 to reach 2.3% in 2015 but ease back gradually to 2.0% by the end of the outlook period. **World GDP** declined by 1.8% in 2009 but is projected to rebound by 3.7% in 2010. World GDP growth is also projected to accelerate over the near term, reaching 4.1% in 2014 and retract thereafter to the still considerably high level of 3.7%.

Graph 1.1 Baseline assumptions on GDP growth and exchange rate developments



Following a continuous strengthening of the EUR against the USD over 2001-2008, the EUR depreciated in 2009, averaging 1.39 USD/EUR and the trend of depreciation continued over the first half of 2010. Following the short-term depreciation, the **USD/EUR exchange rate** is assumed to exhibit a steady appreciation over the outlook, to stabilise around 1.47 USD/EUR, considerably above the levels in previous DG AGRI projections (at 1.35 USD/EUR in the March 2009 publication).

The annual **inflation rate** averaged 1% in 2009 and has remained relatively low throughout 2010 so far, albeit on a slightly increasing trend. While consumer food price inflation was marginally lower in 2009 (estimated at +0.93%) it has exceeded the rate of overall inflation over the first eight months of 2010. The outlook depicts EU (overall) inflation at 1.8% in 2010 and over the medium term inflation is foreseen to stabilise around 2.0%.

In 2009 the **EU population** grew by an estimated 0.39% to number 497.7 million inhabitants. This increase marks a slowdown in the growth rate observed over 2003-2008 (between 0.4-0.5%) that is foreseen to persist over the outlook period. Eurostat projections (EUROPOP 2008) depict a steady decrease in the annual population growth rate from 0.4% to 0.3% p.a. over the medium term with a slightly higher growth rate in the EU-15 but a marginal decline in the EU-12.

Following the peak in 2008, the **price of crude oil** dropped to an annual average of 61 USD/barrel in 2009. The economic recovery has already triggered a rebound in the price for crude oil, which is projected to average at 73 USD/barrel in 2010 (+23%). The medium term projections depict a continuous increase to 99 USD/barrel in 2018 in line with the projected recovery in GDP growth, to be followed by a slight downward correction in the final years of the outlook (to 96 USD/barrel in 2020)

2 Arable crops

The medium-term projections depict a relatively positive outlook for the EU cereal markets thanks to firm world demand and prices. The emerging bioethanol market would represent the most dynamic part of demand as feed and food would show only a marginal increase.

2.1 Recent market developments

Arable crop markets, like other agricultural markets, were subject to sharp price fluctuations in the last few years. The 2007-2008 surge in agricultural commodity prices resulted from a combination of structural and temporary factors. Structural factors such as global population growth, rising incomes in emerging economies and the development of new market outlets have contributed to a gradual rise in world demand. Global supply was unable to keep pace due to a slowdown in the growth of food crop grain yields and the characteristics of world agricultural markets which are thin and typically constrained by the seasonality of production. Moreover, increasing production costs, due inter alia to rising energy prices, spilled over on agricultural commodity prices.

The impact of these structural factors was amplified by large production shortfalls resulting from adverse weather conditions and trade restrictions imposed by several exporting countries. Exchange rate developments, growing speculative activity in the commodity derivative markets and the close relationship between agricultural and other commodity markets also affected agricultural commodity price developments. The contribution of these various factors varied between sectors. For example, changes in wheat and rice prices were largely attributable to supply-side factors while maize and soybean markets were mainly driven by a strong growth in global demand both for meat consumption and for industrial use.

Commodity prices fell in the second half of 2008 to levels similar to or even below those before the price spikes as the effect of some short-term drivers faded due to more favourable weather conditions, declining energy prices and lifting of export restrictions. Furthermore global supply responded swiftly and strongly to higher prices, supported in the EU by a relaxation of production constraints in the CAP (suspension and then abolition of mandatory set-aside of arable land). Finally crops prices were also negatively affected by the financial crisis and the deepest economic recession in over 60 years.

2009/2010

The short crop of summer 2007 was followed by two good harvests: an exceptional 311 mio t of EU-27 usable cereal production in 2008/2009 followed by 295 mio t in 2009/2010, still above the historical average. Domestic demand in 2009/2010 stood at around 280 mio t, more than 60% of which was represented by animal feed. It is estimated that around 8 mio t of cereals were utilised for the production of bio-ethanol (2.7% of cereal production), half of which represented by soft wheat. Total cereal exports reached 27 mio t, of which the high level of 20.4 mio t of soft wheat (following the 2008/2009 record of 23.1 mio t). The EU was net exporter by 19 mio t. Total cereal ending stocks decreased by 3 mio t in comparison with 2008/2009, to reach 54 mio t (of which 6 mio t in public intervention).

Total oilseed production reached the record level of 29.6 mio t thanks to a record rapeseed crop (21.5 mio t). This large crop was however not sufficient to cover an increasing demand (in particular for biodiesel), hence imports of rapeseeds remained at the high level of 2 mio t (after the record of 3 mio t of 2008/2009).

2010/2011

Climatic conditions have been contrasted for arable crops, with unusual weather conditions in spring and summer. Summer has seen high temperatures in Eastern Europe and Russia and abundant rain in Central and Northern EU, which affected harvest quality.

The EU cereal area would decline by 3.9% in comparison with 2009/2010 to reach 56.3 mio ha. This area combined with average yield estimates of 5.0 t/ha would lead to a harvested production of 280 mio t, or almost 15 mio t lower than the harvest of 2009/2010 harvest (about 11 mio t due to area decrease and 4 mio t due to yields contraction). EU-27 production of common wheat would stand at 128 mio t. Barley and maize production would reach respectively 54 and 58 mio t.

Total domestic uses would decrease by more than 2 mio t to 278 mio t mainly due to the decrease of the utilisation for animal feed (forecast at 171 mio t). On the basis of these forecasts, total ending stocks would decrease by a sizeable 16 mio t to stand at 37 mio t. Intervention stocks would decrease by 4.8 mio t to 1.2 mio t (only barley).

EU-27 oilseed area represented 11 mio ha, slightly up compared to the previous year, of which 6.9 mio ha of rape (+0.4 mio ha in comparison with 2009/2010) and 3.7 mio ha of sunflower. EU rape production would reach 20.6 mio t, nearly 1 mio t below the record of 2009/2010.

After a steady decline until 2008/2009, areas under protein crops increased in 2010/2011 for a second year in a row by 0.2 mio ha. Driven by good yields protein crop production would reach 3.5 mio t (+24.7%).

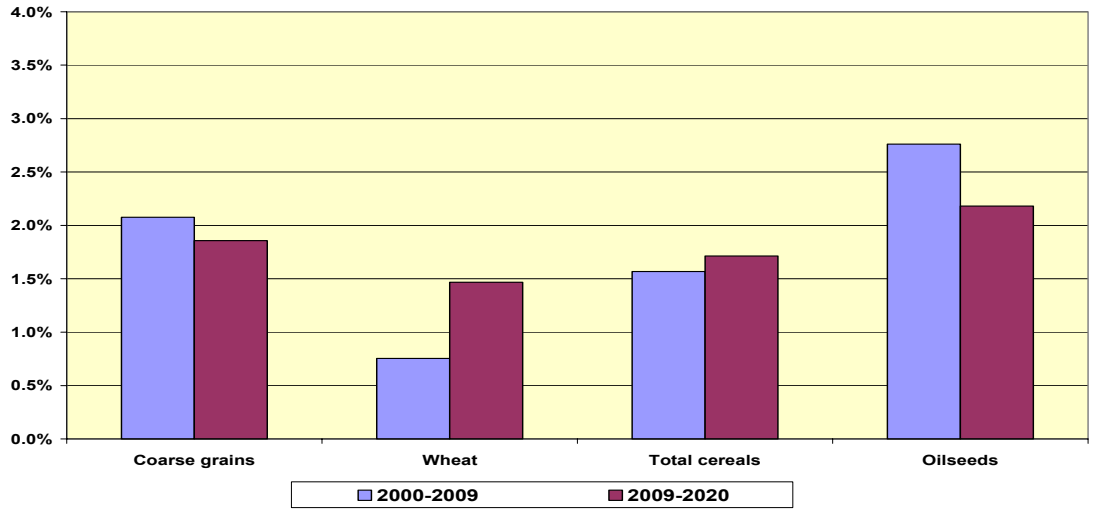
2.2 Market prospects

The medium-term projections depict relatively tight market conditions for the EU cereal markets due to the moderate prospects for yield growth and the emerging bioethanol market.

Sustained world demand fuels prices for crops

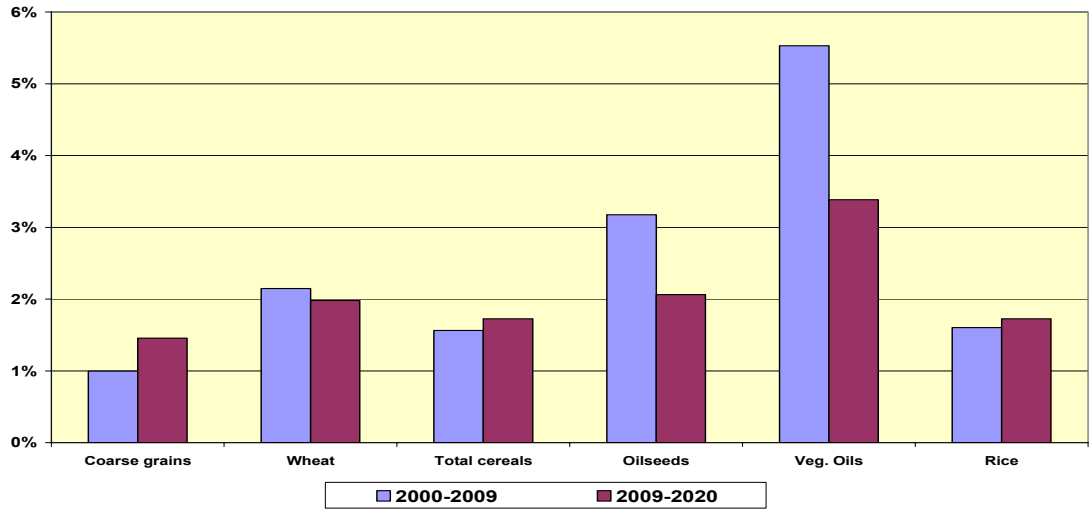
World demand for cereals is projected to increase by more than 20% over the next decade, to reach 2 082 mio t by 2020. Coarse grains demand is expected to grow at a faster pace than wheat (respectively 1.9 and 1.5% per year) also thanks to sustained increase in biofuel use. Oilseeds will continue to show stronger growth than cereals, though less than in the previous decade.

Graph 2.1 World demand for crops – average annual growth (2000-2009 vs. 2009-2020)



The share of world production that is traded is expected to remain at around 14% over the medium term. Coarse grains trade is projected to grow at a faster pace compared to the past decade. However the share of production that is traded will slightly decline as world consumption grows faster than trade. The opposite applies for wheat, where trade growth is on the decline compared to the past decade but the share of production that is traded grows slightly and reaches 18% of world wheat production.

Graph 2.2 World trade developments for crops – average annual growth (2000-2009 vs. 2009-2020)



After the current rise in cereals prices, essentially due to the draught-driven short harvest in Russia and Ukraine, followed by export restrictions, prices are projected to decline in the short term as supply reacts to firm prices and then grow over the medium term. In particular world prices for both wheat and coarse grains are projected to increase until 2015 and then stagnate at relatively high levels. These price developments are driven by the assumption that US biofuel targets will not increase after 2015.

Global economic recovery drives also the arable crop demand

Economic recovery from the worst recession in 60 years is projected to have a positive impact for crops demand and prices in particular through higher feed demand from the livestock sector and in spite of the limited scope for additional demand growth for staple food. For example Chinese rice demand is projected to contract over the medium term both in per capita (-8%) and in total consumption (-3%) between 2010 and 2020 as changes in dietary pattern in the growing urban population drive the consumption of animal proteins. Chinese poultry per capita consumption is projected to grow by more than 3.7% per year in the next decade compared to 1% per year in the past ten years. Pig meat consumption as well will show continued growth at more than 2% per year on a per capita basis over the next decade. The increase in meat consumption has a multiplier effect on the demand for animal feed to produce poultry and pig meat.

EU cereal markets

The medium-term projections for the EU cereals markets depict a relatively positive picture with tight market conditions, low stocks and prices above long term averages.

Supply growth is projected to result mostly from very moderate yield growth (just above 0.5% per year on average) and in spite of stable cereals area, with some reallocation between crops.

The domestic use of cereals in the EU is projected to increase notably thanks to the growth in the emerging bioethanol and biomass industry in the wake of the initiatives taken by Member

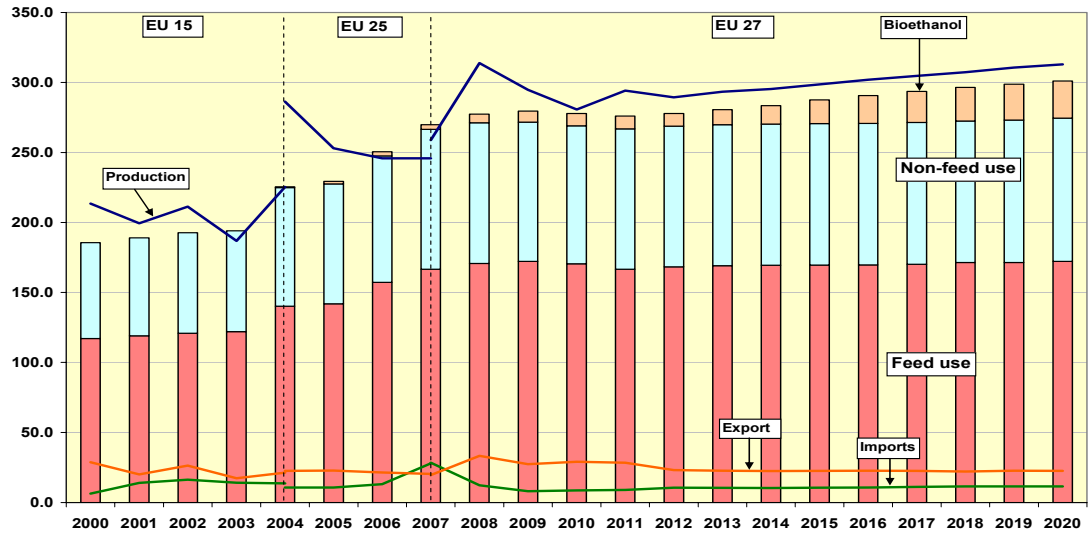
States in the framework of the biofuel directive, the biomass action plan and the 2008 renewable energy directive (RED).

After the strong EU export performance of the past couple of years cereals exports are projected to return to lower levels as relatively tight EU market conditions, sustained domestic prices and assumed unfavourable exchange rate developments limit EU competitiveness on export markets.

These developments on the internal and external markets should all result in relatively tight cereal markets over the medium term in the EU leading to prices in the range between 150 and 170 €/t over the medium term. However, these favourable price projections should be seen in a context of current and projected high production costs, driven mostly by energy. Furthermore these projections would remain subject to a number of uncertainties, most notably with regards to the future climatic conditions on the supply side and the development of the biofuel sectors in the EU and the US as well as the overall macroeconomic environment on the demand side.

The phasing-out of intervention (except for bread making wheat and only up to 3 mio t at a guaranteed price) should lead to improved market orientation of grains production over the medium term and thus considerably reduce the risks of regional structural surpluses, most notably in the land-locked Member States of Central-Eastern Europe.

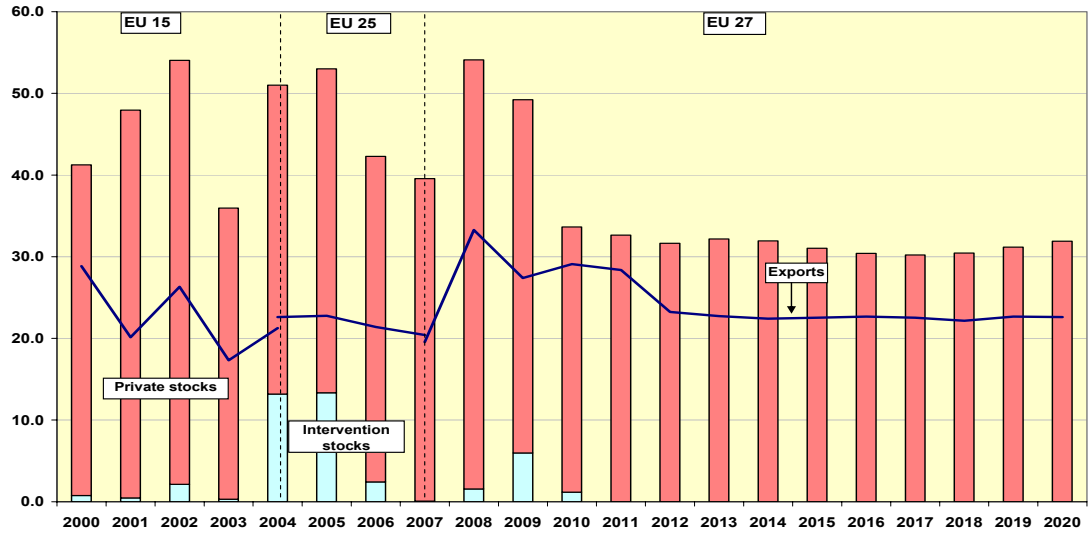
Graph 2.3 Cereal market developments (mio t), 2000-2020



EU cereal production, after the relatively low 2010 harvest with around 280 mio t, is projected to recover over the medium term and reach just above 310 mio t by 2020. Domestic consumption of cereals is also projected to keep growing over the medium term, mainly driven by the rapid growth in bioethanol use, which is expected to more than triple over the next ten years and reach 26 mio t by 2020. Exports are projected to slightly decline below 23 mio t while imports should stabilize just above 11 mio t after the surge of 2007 when the EU was exceptionally a net importer of cereals.

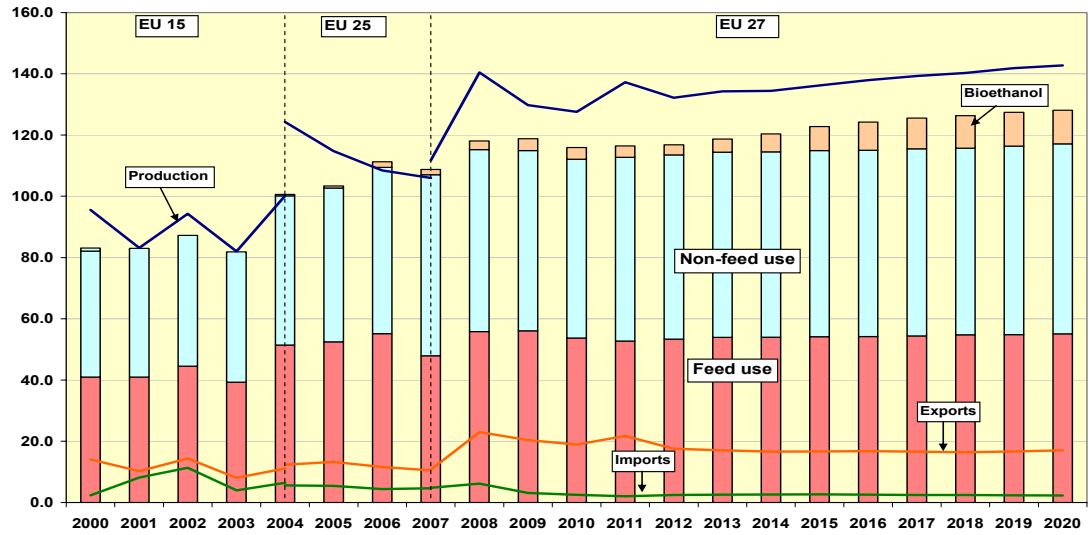
The bumper crop in 2008/09 and the good harvest of 2009/10 made it possible to replenish somewhat cereals stocks. However the 2010 shorter crop together with good export and low imports driven by draught in Russia and Ukraine resulted in much lower stock levels, below a 20% stock to use ratio. Expected low productivity and growing demand for biofuels suggest that stocks may remain low throughout the projection period while intervention stocks are projected to be cleared over the short term. The projected tight market conditions may result in additional imports to rebalance the cereal market.

Graph 2.4 Developments in cereal stocks and exports (mio t), 2000-2020



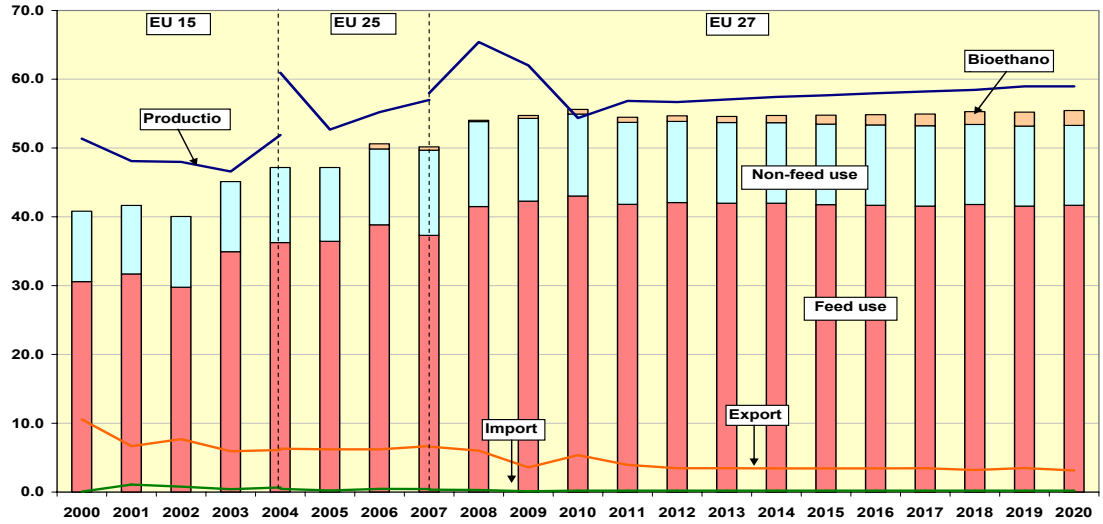
Soft wheat, which represents around 45% of total cereal production, is projected to reach 143 mio t by 2020. While more than 75% of soft wheat production originates from the EU-15, the new Member States exhibit a stronger growth (21% between 2010 and 2020 compared to 8% in the EU-15). Domestic consumption is almost equally shared between feed and food uses. Demand for bioethanol production, which currently represents around 3% of total consumption, is projected to increase its share to more than 8% (11 mio t) by the end of the projection period.

Graph 2.5 Soft wheat market developments (mio t), 2000-2020



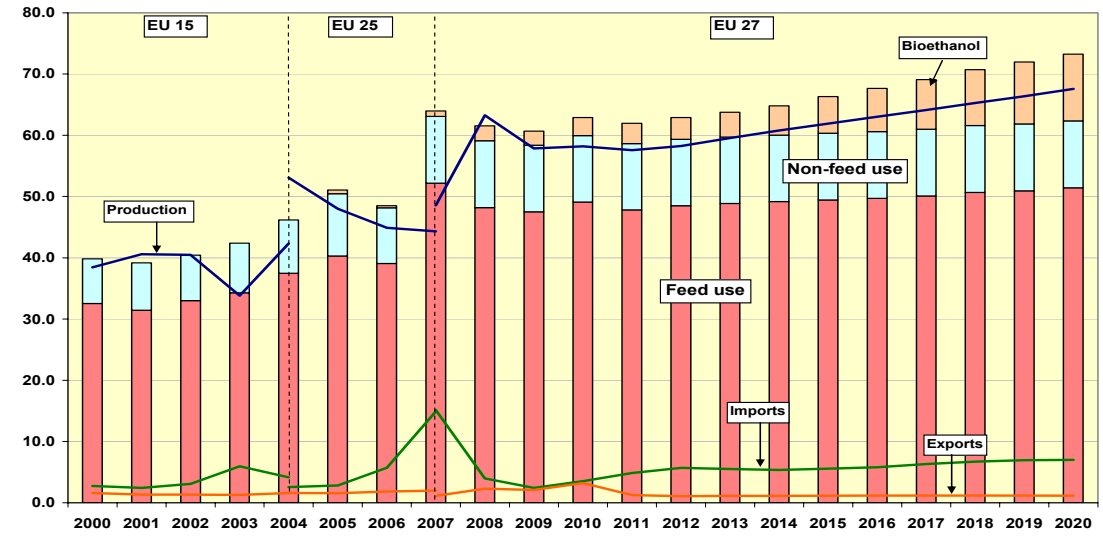
After the sharp drop in production in 2010 EU **barley** production is projected to rebound but show a slower growth compared to the other cereals, remaining below 60 mio t by 2020. Domestic consumption, three quarters of which is destined for animal feed, is projected to grow at a very slow pace. Exports and stocks are projected to decline slightly over the medium term.

Graph 2.6 Barley market developments (mio t), 2000-2020



Growing demand, partially due to the expanding use for bioethanol production, is projected to support EU **maize** production that is foreseen to increase over the medium term and reach 67 mio t by 2020, establishing its second cereals after soft wheat to the expenses of barley. Growing demand, also due to the expanding use for bioethanol production, is projected to keep the EU as growing but limited net importer of maize over the medium term.

Graph 2.7 Maize market developments (mio t), 2000-2020



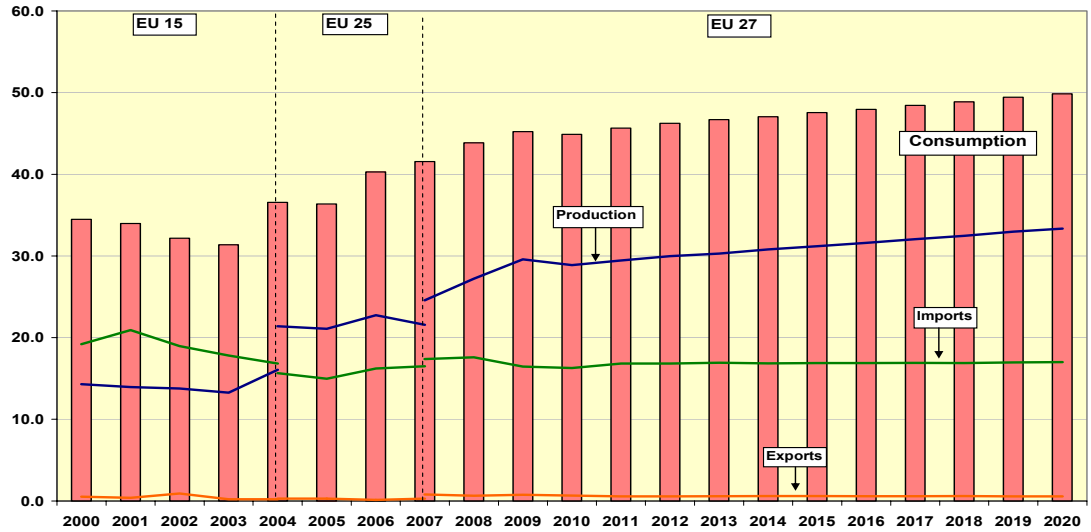
EU oilseed-complex markets

The medium-term projections for the EU oilseed markets depict a positive picture with strong demand and growing oilseed oil prices. Supply growth is projected to result mostly from moderate yield growth (just above 1% per year on average) and to a lesser extent from slightly expanding oilseeds area (0.3 mio hectares between 2010 and 2020), with some reallocation between crops (0.8 mio ha more rapeseeds and 0.6 mio ha less sunflower area).

The domestic use of oilseeds in the EU is projected to increase also thanks to the growth in the emerging biodiesel and biomass industry in the wake of the initiatives taken by Member States in the framework of the renewable energy directive. The EU is a net importer of oilseeds, oilseed meals and oilseed oils. The trade balance would not improve over the outlook as additional imports are required to meet the biofuel targets.

However these projections would remain subject to a number of uncertainties, most notably with regard to the future climatic conditions on the supply side and the development of the biofuel sectors in the EU and the US as well as the overall macroeconomic environment on the demand side.

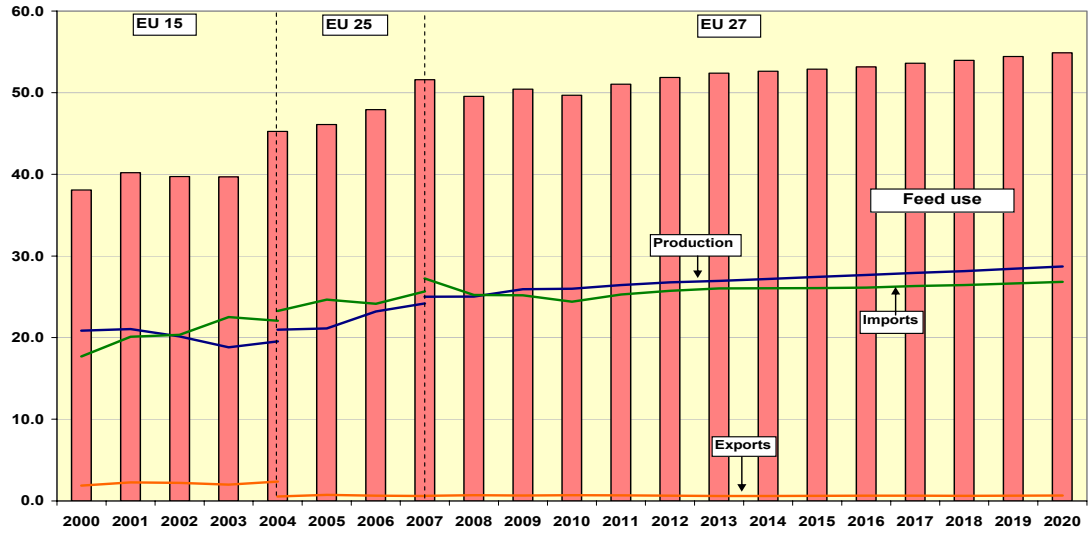
Graph 2.8 Oilseed market developments (mio t), 2000-2020



EU oilseed production, after the relatively low 2010 harvest with around 29 mio t, is projected to recover over the medium term and reach just above 33 mio t by 2020. Domestic consumption of oilseeds is also projected to keep growing over the medium term, mainly driven by the continued demand for oils in the bioenergy industry.

Rapeseeds, the most important oilseed grown in the EU with 63% of oilseed area, is projected to increase both in terms of production (+16%) and area (+12%).

Graph 2.9 Oilseed meal market developments (mio t), 2000-2020

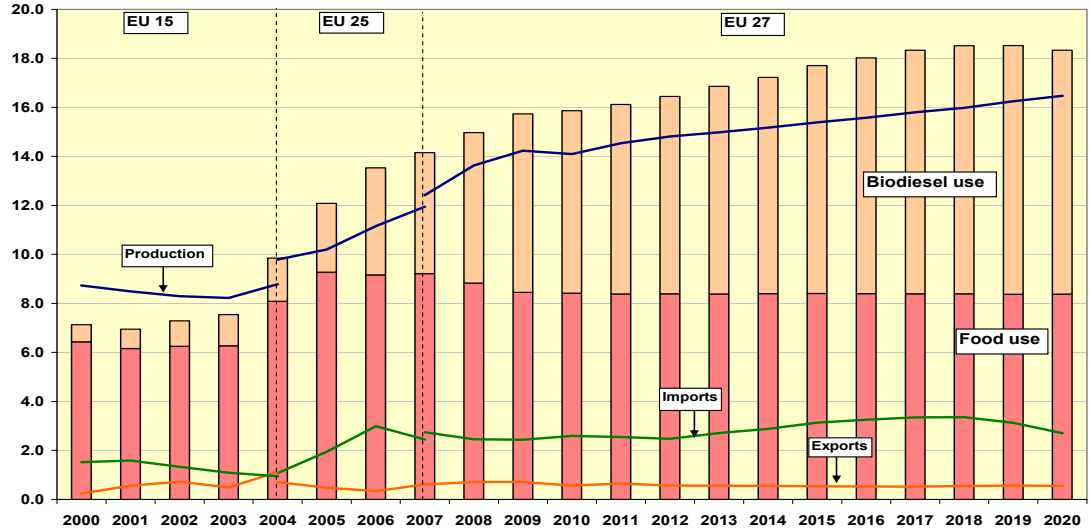


The EU oilseed meal market is projected to show continued growth in both domestic production, also based on imported grains and beans, and meal imports. Oilseed meals consumed by EU livestock and poultry are equally shared between domestically produced and imported meals.

In terms of crops EU oilseed meal demand consists essentially of soybean meals (65% of total meals, 70% of which imported), and to a lesser extent rapeseed meals (25%) and other meals, mostly sunflower seed meals.

EU oilseed oil production is also projected to increase (also based on the crushing in the EU of imported grains and beans). Oils imports are projected to remain low as imports take the form of grains/beans or directly biodiesel. A growing share of oilseed oil is used for the production of biodiesel.

Graph 2.10 Oilseed oil market developments (mio t), 2000-2020



The trade balance for oils worsen further when considering the imports of other vegetable oils like palm oils and other minor oils (linseed, cotton, etc). Use of vegetable oils for biodiesel is expected to increase by more than 30% over the next decade, still much less than for bioethanol, and reach 12 mio t by 2020.

EU biofuel market

Cereals and oilseeds markets are growingly affected by the development of biofuel markets. These markets are still strongly dependent on policies for their development. In the EU the existing policy was reviewed in 2008 and a Renewable Energy Directive entered into force in 2009, setting out an overall binding target to source 20% of the EU energy needs from renewables such as biomass, hydro, wind and solar power by 2020. As part of the overall target, each member state has to achieve at least 10% of their transport fuel consumption from renewable sources (including biofuels).

These policies are further elaborated in the Fuel Quality Directive. Together, the two directives set out sustainability criteria for biofuel production and procedures for verifying that these criteria are met. Agricultural activities related to the renewable energy sector generate a gross value added of well over €9 bn per year.

Table 2.1 shows the baseline assumptions regarding EU biofuel policies and demand trends for gasoline and diesel consumption by the transport sector. The energy share of biofuels is assumed to reach 8.5% in 2020, of which 7% consists of first generation and 1.5% second-generation biofuels. Consistent with the Renewable Energy Directive, the energy provided by the latter is counted as double for the purpose of meeting the 10% target. The outlook for ethanol and biodiesel demand, and their relative shares in fuel consumption is partly driven by the policies in force (differential tariffs and tax exemption rates), but mostly by the relative price competitiveness (production costs) of the two biofuels. Second generation biofuel production is assumed to have no land use implications.

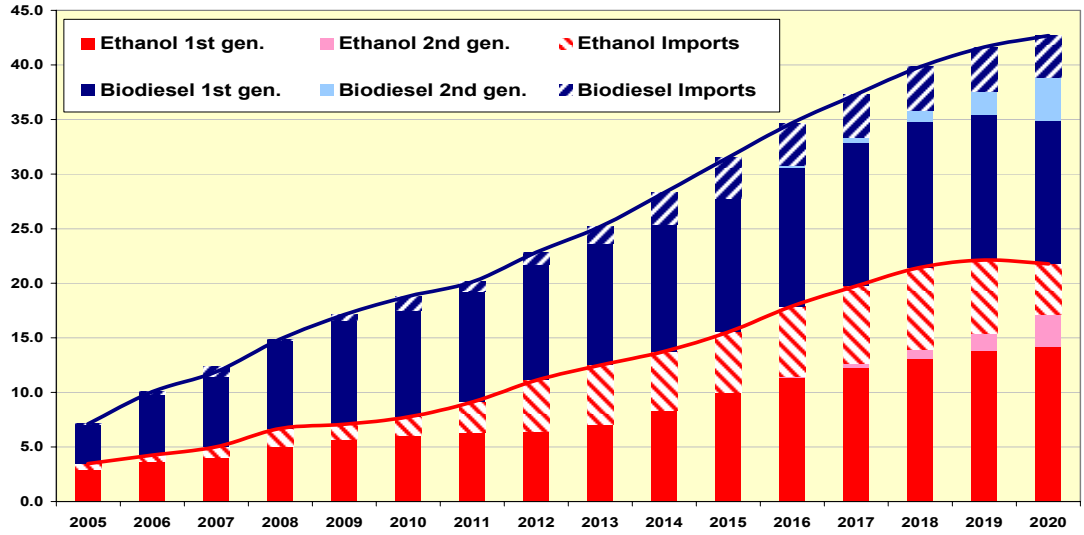
Table 2.1 Baseline assumptions on biofuels for the EU

	2008	2009	2010	2015	2020
Minimum share of biofuels in total transport fuel, %	1.9	2.3	2.8	6.4	8.5
Minimum share of 1st generation biofuels in total transport fuel, %	1.9	2.3	2.8	6.4	7.0
Minimum share of 2nd generation biofuels in total transport fuel, %	-	-	-	-	1.5
Gasoline consumption (mio l)	110957	96783	106217	111314	112734
Diesel consumption (mio l)	118894	104675	114016	119145	120525

Source: own assumptions

According to the projections, by 2020 ethanol energy shares would reach 9.2% of EU gasoline consumption while biodiesel would attain 8.2% of EU diesel consumption. These projections depict a reversal of the current situation where biodiesel dominates EU biofuel markets and are in contrast with latest projections from Member States notified in the Renewable Energy Action Plans (REAP) .

Graph 2.11 Composition of EU biofuel demand 2005-2020, billion litres

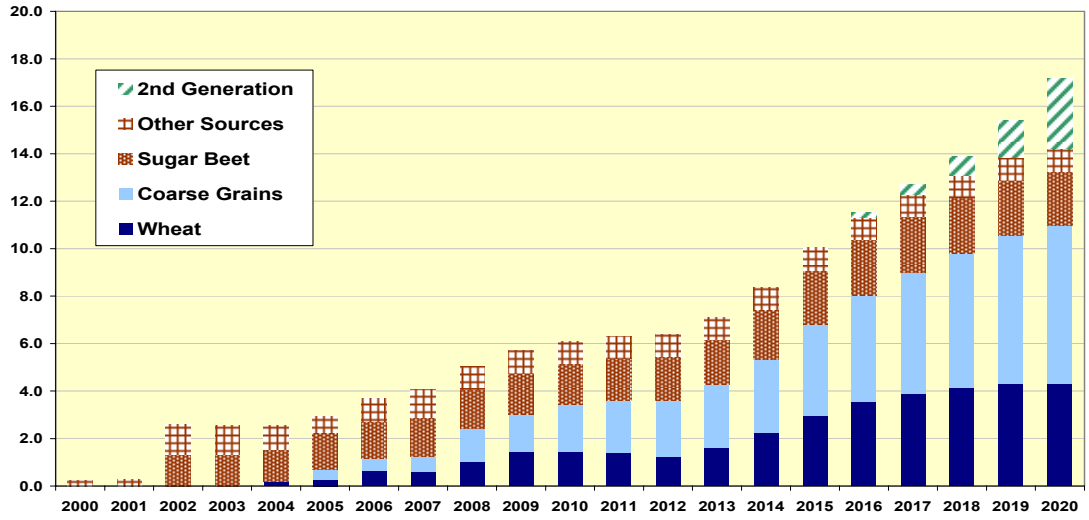


Second-generation biofuels are assumed to kick in after 2015 but account for a low share of 1.5% by 2020. However, given that this share counts double in terms of meeting the 10% target, but not in terms of actual biofuel availability in the market, total biofuel demand declines slightly by the end of the projection period.

Graph 2.12 below displays the outlook for ethanol production. Ethanol production would keep increasing over the medium term, with a projected acceleration after 2012. Imports also increase and reach more than 40% of EU consumption over the next few years. While this share declines over the medium term imports in absolute level are projected to continue increasing until second-generation ethanol kicks in.

Wheat and maize would remain the major ethanol feedstocks (wheat especially in the short term), while sugar beets are projected to increase only marginally.

Graph 2.12 EU ethanol production by feedstock (billion litres)



The increase in EU biodiesel production is projected to follow a more gradual pattern. Imports on the other hand are expected to increase at a fast pace over the next five years. It has to be stressed that even biodiesel that is produced in the EU relies on substantial imports of raw material. A significant share of EU production is based on imports of vegetable oils, notably palm oil, oilseed oils as well as oilseed grains and beans.

3 Meat markets

Long-term prospects for EU meat commodity markets depict a mixed picture, with a relatively favourable outlook for non-ruminants but a continued decline in the production of beef and sheep meat. Production costs are projected to remain above historical levels while the gradual strengthening of the EUR dampens the price increase on world markets when converted into EUR. Poultry meat consumption would grow the most, but pig meat would remain the most preferred meat in the EU. The net trade position of the EU would deteriorate gradually with pig meat being the single commodity with a net export position in 2020.

3.1 Recent market developments

The EU meat sector has been affected by a number of factors that have mutually lead to constrained production over 2008 and 2009. Such were the beclouded macroeconomic environment that has lead to reduced demand for meats, rising production and investment costs reducing producers' margins and animal health related issues (most notably African swine fever virus and bluetongue disease) affecting production volumes and consumer confidence.

With respect to input costs, prices for energy and compound feed have remained considerably above historical levels. Furthermore, the cost of roughage feed for ruminants is estimated to have increased, particularly due to relatively high fertilizer, fuel and land prices. The profitability of the meat sector has also been affected by rising costs for primary factor use, with labour, land and capital costs increasing by an estimated 9.3%, 9% and 19.8% respectively over the period 2005-2009. The recent rise in capital costs could have negative implications on the feasibility and profitability of necessary investments into more efficient and/or legally prescribed animal husbandry technologies, limiting production prospects at competitive prices.

Total meat production declined in both 2008 and 2009, with only poultry meat managing to maintain a growing trend, albeit at marginal annual growth rates. Sheep and goat as well as beef and veal meat production have been subject to animal disease related constraints and the impact of the decoupling of direct payments. Pig meat producers in particular have bore the brunt of high input costs.

External trade conditions have been affected by exchange rate movements, sanitary regulations and supply developments in exporting countries. In general, EU meat exports have increased substantially in the first semester of 2010, while imports have fallen remarkably, reflecting a lower EU internal demand and the depreciation of the EUR vis-à-vis the USD. As a consequence, trade developments over 2008-2009 and early 2010 have displayed a break in the gradual declining trend of the EU net export position.

3.2 Market prospects

The market prospects remain conditional upon a number of factors linked to the general economic and policy setting, animal health related issues, the global market environment and increasingly the consumer perception of meat consumption with relation to its environmental impact and animal welfare concerns.

Bullish demand to drive world market perspectives

Aggregate world demand for meat is projected to recover from the setback induced by the economic crisis and world export of aggregate meats would reach beyond the pre-crisis level by 2013. Over the long term global meat exports would increase at an annual rate of around 2%, driven by strong poultry and pig meat exports and a modest growth in ruminant trade. On

aggregate, meat exports would exceed the 2009 level by 22% in 2020, with pig meat at 31%, poultry meat at 26%, beef and veal at 14% and sheep and goat at 4% above the 2009 level.

Macroeconomic environment has mixed impact on meat market prospects

The underlying macroeconomic assumptions suggest a gradual weakening of the EU export potential as the EUR continues to strengthen against the USD over the outlook. In addition, the assumed exchange rate developments dampen the positive world commodity price prospects when expressed in EUR. On the other hand the economic recovery and continued (albeit declining rate of) population growth imply improved prospects for total meat consumption in the EU. One of the most important factors determining meat production prospects is the gradual increase of the crude oil price through its impact on input costs (energy, fertilizer and feed costs in particular).

Domestic policy setting has limited effects on meat markets

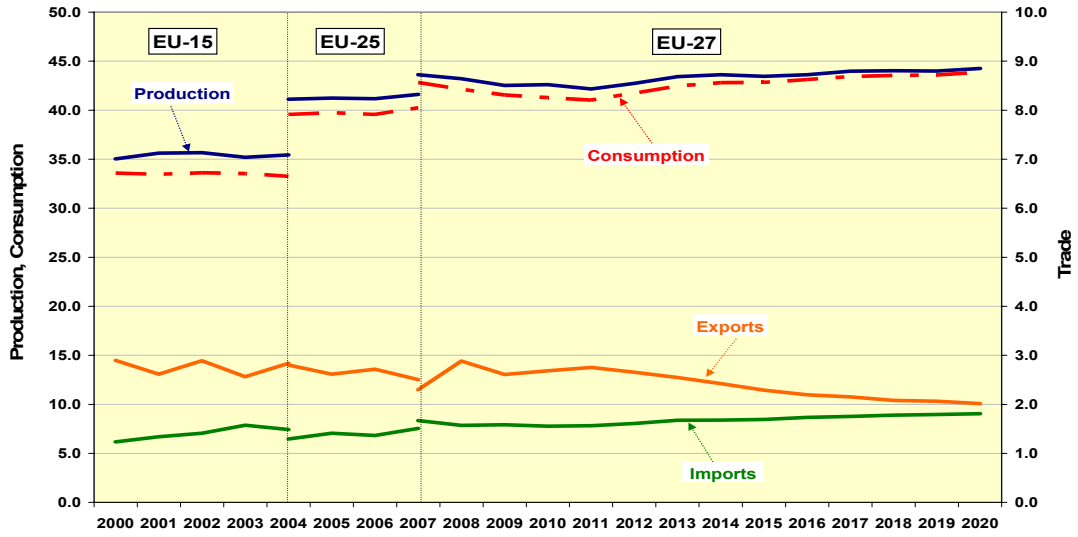
The status quo policy assumptions for the outlook imply a continuation of the restructuring of sheep, goat and cattle herds stemming from the past decoupling of direct payments. Beef production would have an indirect impact from the phasing out and abolition of the milk quota system, through its impact on the dairy cow herd.

Against this setting, the prospects for EU meat commodity markets depict a mixed picture, with a relatively favourable outlook for non-ruminants but a continued decline in the production of ruminant species. Poultry meat consumption would grow the most, but pig meat would remain the most preferred meat in the EU. The net trade position of the EU would show a gradual weakening over the medium term.

Aggregate meat production recovers but the net trade position deteriorates

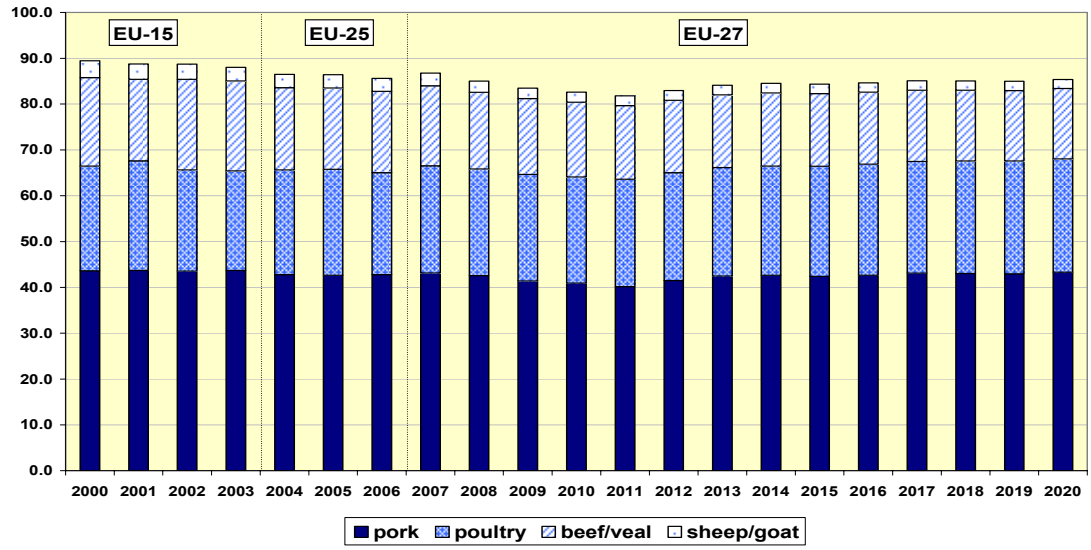
Meat production is projected to recover over the near term from the decline suffered in the wake of the economic crisis. Longer term prospects depict a more modest growth pattern, below an annual rate of 0.3% on average. Aggregate meat production would reach 44.4 mio t in 2020, exceeding the 2009 level by 4%. The situation differs between ruminant and non-ruminant production, as beef/veal and sheep/goat meat production drops by 7% and 11% respectively while pig and poultry meat production expands by 7%.

Graph 3.1 Aggregate meat market developments (mio t), 2000-2020



The net trade position of the EU is projected to deteriorate over the outlook driven by a steady increase in meat imports (of beef and poultry meats) and a parallel decline in meat exports (of beef, pig and poultry meats). Aggregate meat imports would grow by 14% altogether while meat exports decline by almost 23% by 2020, leaving the EU with net exports of around 200 thousand t, with pig meat as the single commodity with a positive net trade balance.

Graph 3.2 Total meat consumption developments (kg/capita), 2000-2020

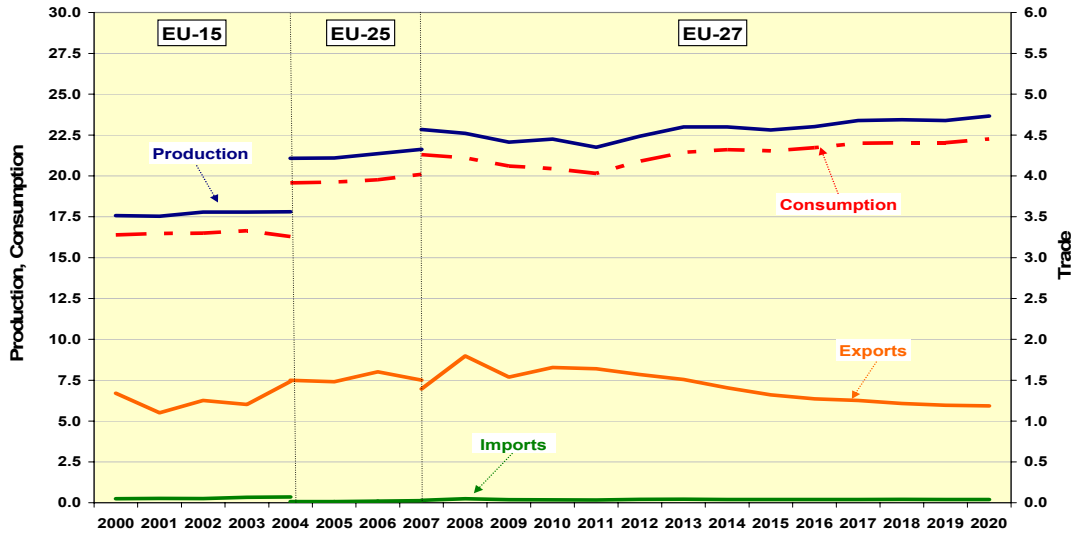


Meat production is driven by increasing poultry and pig meat consumption. On a per capita basis, EU meat consumption would reach 85.4 kg in 2020, just 2% higher than 2009. Poultry meat consumption would increase the most, by more than 6% while pig meat growth would remain below 5% on aggregate between 2009 and 2020. Nevertheless, pig meat would remain the most preferred meat in the EU at 43.3 kg/capita in 2020, compared to 24.7 kg for poultry, 15.4 kg for beef and veal and less than 2 kg for sheep and goat meat. Consumption would grow faster in the EU-12 at almost 4% on aggregate (compared to less than 2% in the EU-15), but total per capita meat consumption at 76.4 kg would remain below the EU-15 level of 87.6 kg in 2020. The consumer perception of meat consumption with relation to its environmental impact and animal welfare concerns remains an important factor to influence future demand patterns.

Pig meat prospects driven by a recovery in demand

The considerable increase in production costs during 2007 and 2008 led to a strong reduction in the pig herd in 2008, which fell 4.4% below the 2007 level, driven by strong herd de-stocking in the EU-12. EU pig carcass prices remained below the 2008 level throughout 2009 while piglet prices were at relatively high levels, implying favourable market expectations of the fattening sector. Pig meat production dropped below 22.2 mio t in 2009, driven by a sharp (-6%) decline in the EU-12. Pig meat exports staged a sharp drop (exceeding -14%) from the exceptional highs of 2008, due to lower world import demand and the suspension of export refunds for pig carcasses and cuts, but exports of live pigs increased substantially (+55%). Consumption of pig meat declined for a second consecutive year, to 41.4 kg/capita.

Graph 3.3 Pig meat market developments (mio t), 2000-2020



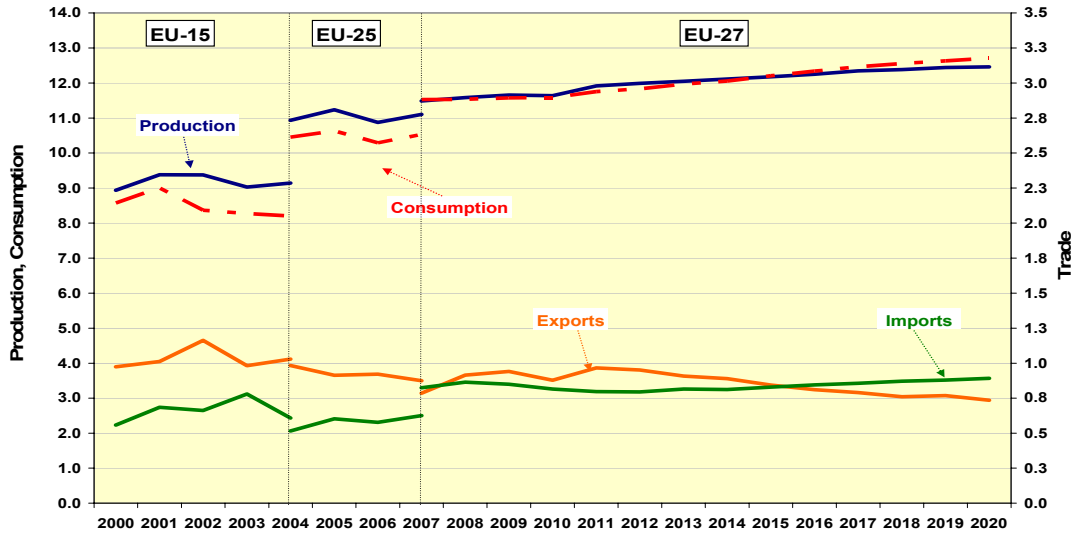
Demand for pig meat is projected to recover over the medium term, increasing 8% on aggregate to reach 22.3 mio t in 2020. Consumption per capita is projected to stand at 43.3 kg in 2020, exceeding the 2009 level by almost 5%. Pig meat production is depicted to grow 7% on aggregate from 2009 to 2020, reaching 23.7 mio t by the end of the outlook. This increase remains below the growth rates achieved during previous decades, as the projected increase in production costs would limit the potential growth of the sector. Prospects for pig meat exports are constrained by the strengthening EUR, leading to a gradual reduction in EU exports to below 1.2 mio t in 2020, by -23% on aggregate. EU imports would remain constrained by sanitary issues and border protection and show but a modest increase of 6% to remain at a marginal level of 41 thousand t in 2020. The EU will gradually lose world market share, falling to 16% of global exports by 2020, compared to 27% in 2009.

Despite the relatively favourable market outlook for pig meat, production prospects would remain conditional on a recovery in EU demand and limited interest from major exporters to fulfil EU sanitary requirements. The speed and efficiency of the Russian authorities to implement the development of their domestic production capacity would have strong implications on EU export potential. On the short-term, a possible spread of the African swine fever virus from Russia into the EU remains a critical issue.

EU to become a net importer of poultry meat

Similarly to the situation of 2008, poultry remained the only meat sector with an expanding output in 2009, driven by its relative price-competitiveness and advanced degree of convenience (meeting the preferences of processors, retailers and consumers) compared to other meat products. However, in order to remain competitive in the wake of constrained consumer demand and the relatively low and increasingly competitive pig meat prices, EU broiler market prices declined substantially in the last quarter of 2009. While production reached slightly below 11.7 mio t in 2009, the annual rate of increase remained marginal at 0.7%. The impact of recession was visible in poultry meat imports that declined below 850 thousand t (by almost -2%) with the product mix displaying a switch from more expensive breast meat to cheaper meat cuts. Despite a cut in the specific EU refund rates, EU poultry meat exports increased by 3% to the level of 940 thousand t in 2009. Domestic consumption appears to have remained fairly stable at slightly below 11.6 mio t.

Graph 3.4 Poultry meat market developments (mio t), 2000-2020



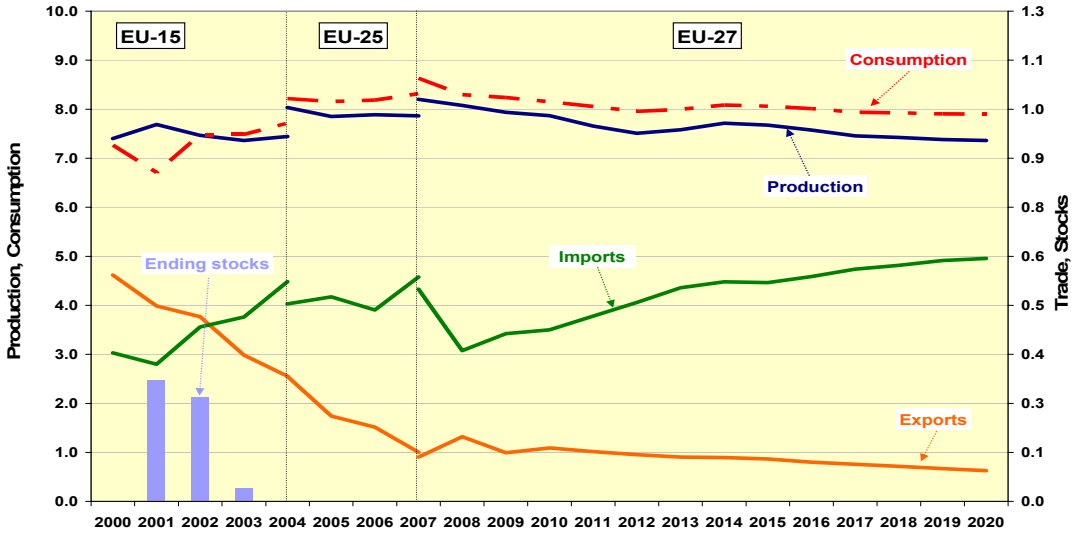
Demand for poultry meat is projected to recover over the medium term, increasing by almost 10% on aggregate to exceed 12.7 mio t in 2020. Consumption per capita is projected to stand at 24.7 kg in 2020, exceeding the 2009 level by more than 6%. Poultry meat production is depicted to grow by almost 7% on aggregate from 2009 to 2020, reaching 12.5 mio t by the end of the outlook. Prospects for poultry meat exports are constrained by the assumed strengthening of the EUR, leading to a gradual reduction in EU exports to below 740 thousand t in 2020, by -22% on aggregate. EU imports would increase over the outlook by 6% on aggregate and exceed 890 thousand t in 2020. The EU will therefore gradually lose its net exporter status over the outlook, with net imports reaching 155 thousand t in 2020. Beside the stronger EUR currency and growing domestic demand, another factor supporting the gradual transformation of the net trade status is the relatively high EU poultry price in the face of firm production costs over the outlook.

Overall, prospects for the EU poultry market remain fairly upbeat despite the gradual reversal in the net trade position. But similarly to the pig meat sector, the poultry production prospects would remain conditional on a strong recovery in EU demand. Animal disease related concerns remain a key uncertainty regarding the outlook for the poultry sector.

Beef and veal net imports would expand further

The EU beef market is strongly influenced by evolutions in the dairy sector, given that around 66% of all cows held in the EU are dairy cows. As such, the impact of the *milk crisis* was reflected in the 2009 cattle herd figures with a decrease in the number of cows in the overall cattle herd. Animal disease related issues further aggravated the cattle herd developments with bluetongue disease taking its toll in France and Spain, who suffered a rather pronounced fall in their bovine herd numbers. Reflecting the impact of herd de-stocking and disease related losses, EU beef and veal production is estimated to have fallen by almost 2% in 2009, below the level of 8 mio t. Meat exports fell by 25% to 124 thousand t as a combination of generally lower export demand, higher competition on world markets and a more restricting Russian import policy. On the other hand, exports of live cattle increased to 61 thousand t, by an annual rate of almost 20%, driven by higher demand in Russia, the Balkan States, the Near East and North Africa. Notwithstanding the ongoing supply constraints from Brazil, beef and veal imports reached 428 thousand t, corresponding to an increase of around 11%. Higher imports were driven by sustained EU demand for higher quality cuts, mainly from Argentina and Uruguay. The overall EU beef and veal consumption in 2009 is estimated to have shrunk to slightly above 8.2 mio t.

Graph 3.5 Beef meat market developments (mio t), 2000-2020



Demand for beef and veal meat is projected to shrink further over the medium term, decreasing by 4% on aggregate to below 7.9 mio t in 2020. Consumption per capita is projected to stand below 15.4 kg in 2020, more than 7% lower than the level in 2009. Beef and veal meat production is depicted to decline by 7% on aggregate from 2009 to 2020, to stand slightly above 7.4 mio t by the end of the outlook. Prospects for beef and veal meat exports are constrained by lower production volumes and the assumed strengthening of the EUR, leading to a gradual reduction in EU exports to below 80 thousand t in 2020, by -37% on aggregate. Assuming a gradual resolution of the Brazilian supply constraints, EU meat imports would increase over the outlook by 45% on aggregate to almost 620 thousand t in 2020. The net import position of the EU will therefore gradually increase over the outlook, with net imports exceeding 540 thousand t in 2020[1].

Similarly to the pig meat sector, an additional factor to support growing imports, besides the assumed strengthening of the EUR, would be the increasing EU beef and veal prices in the face of firm production costs. Similarly to other meat sectors, animal disease related concerns

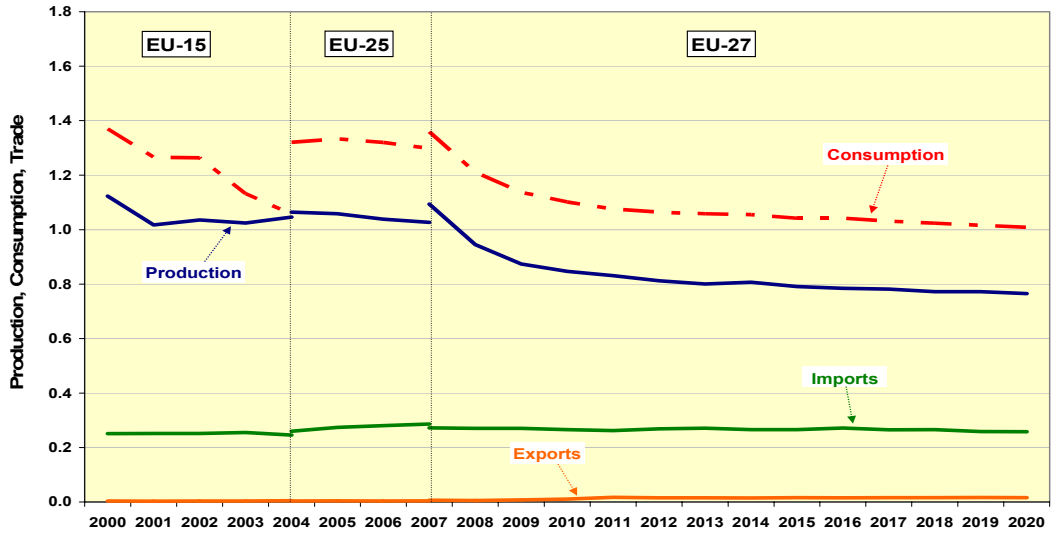
[1] This long-term trend remains plausible despite the likely net export status in 2010 resulting from short-term export performance.

remain a key uncertainty regarding the outlook for the beef market, within the context of production disruption, consumer preference and EU imports from third countries.

Sheep and goat meat production declines further

EU sheep meat production continued its fast contraction in 2009, falling below 880 thousand t, resulting from a combination of partial decoupling of direct aid to producers, structural change accompanied by production abandonment, as well as higher mortality and lower productivity rates following the outbreaks of bluetongue disease. Nevertheless, the almost 8% fall in production was less pronounced than the 14% drop in 2008. EU sheep meat imports decreased to 271 thousand t (-1.3%), with slightly lower import quota fill-rates recorded for New Zealand and Australia (driven by limited product availability in these countries), while Uruguay used its import quota almost to the full extent. EU sheep meat consumption is estimated to have fallen by 6% to 1.1 mio t, due to tight supplies, relatively high prices and weaker domestic demand.

Graph 3.6 Sheep and goat meat market developments (mio t), 2000-2020



Sheep and goat meat production is depicted to continue its declining trend, falling by more than 11% on aggregate from 2009 to 2020, to stand below 780 thousand t by the end of the outlook. Prospects for sheep and goat meat imports depict a variation around the level of 266 thousand t, subject to the availability of supplies from the Oceania region. This implies that the available import quotas will not be fully met over the outlook. As EU meat exports would remain limited at around 16 thousand t, the EU will remain a large net importer of sheep meat throughout the projection period. Demand for sheep and goat meat is projected to contract further over the medium term, decreasing by more than 11% on aggregate to 1 mio t in 2020. Consumption per capita is projected to stand below 2 kg in 2020, more than 14% lower than the level in 2009.

The fairly steady path of decline in EU production remains conditional upon animal disease related issues that have had a strong impact over recent years. As such, further outbreaks or spread of bluetongue disease could have serious implications on the current projections.

4 Milk and dairy products

Long-term prospects for EU dairy commodity markets appear favourable in light of growing demand for value added commodities and a stabilisation in the absolute level of butter consumption, but the short-term outlook remains sensitive to global supply-demand developments, particularly for the SMP market. Relatively constrained EU commodity price prospects and a steady increase in milk production costs would limit incentives for a strong expansion in milk production that would remain below the potential growth rate provided by the gradual elimination of the quota regime.

4.1 Recent market developments

The dairy sector has witnessed extremely turbulent times over the recent past, with commodity prices reaching unprecedented high levels in 2007 but falling gradually over 2008 and early 2009 causing a milk crisis in the EU and world wide. The dairy sector has since recovered from the lows of 2009. The price swings on the commodity markets were reflected in the farm gate price paid to milk producers, albeit with a certain delay and not to the full extent. The situation deteriorated for milk producers as input costs remained at relatively elevated levels, leading to a considerable squeeze on the gross margins of producers leading to the milk crisis and eventual actions by the European Commission to stabilise markets and provide a safety net to milk producers over the short term and establish longer term solutions in the framework of the *High Level Expert Group on Milk*.

Recommendations of the High Level Expert Group on Milk

The High Level Expert Group on Milk (HLG) was established with the purpose of discussing mid-term and long-term arrangements for the dairy sector given the expiry of milk quotas on 1 April 2015. The objective of the HLG was to work on a regulatory framework contributing to stabilizing the market and producers' income and to enhance market transparency without compromising the outcome of the Health Check. On 15 June 2010 the group finalised the report on its deliberations, including recommendations to the Commission on the following seven issues[2].

Enhancement of *contractual relations between milk producers and milk processors* through guidelines or a legislative proposal on formal written contracts made in advance to cover deliveries of raw milk, and maybe made compulsory by the Member State. Enhancement of the *collective bargaining power of producers* through a possible provision to allow milk producer organisations to negotiate jointly their contract terms with a dairy. Examine the *possible role of interbranch organisations in the dairy sector*. Improve *transparency in the dairy supply chain* through further elaboration of the European Food Price Monitoring Tool, and a look at the provision of collecting more information. Consider *"green box compatible" instruments* to reduce income volatility, including possibly *facilitating the use of futures markets*, in particular via targeted training programmes. Consider the feasibility of different options for *origin labelling* for dairy products and seeking distinct labelling for imitation dairy products. Improvement in communicating existing possibilities for *innovation and research* within the existing framework of Rural Development and research framework programmes.

[2] The full report is available on http://ec.europa.eu/agriculture/markets/milk/hlg/report_150610_en.pdf

Despite the increased price volatility, milk delivered to dairies at the aggregate EU level did not produce considerable swings over the same period. While the annual change for the EU weighted average farm gate milk price was +14.5% in 2007, +8.7% in 2008 and -24.1% in 2009, milk deliveries displayed an annual variation of +0.2%, +1.2% and -0.6% respectively. The relatively inelastic behaviour of milk deliveries contributed to the magnitude of the price swings as the increased demand for dairy commodities was met with limited supplies and the eventual supply increase came at a period of deteriorating demand as a consequence of higher consumer prices and aggravated by the financial and economic crisis. EU intervention stocks quickly reached levels well beyond the quantitative limits at guaranteed prices in 2009 and significant quantities were bought in through the tendering procedure for butter and SMP. By the end of 2009, intervention stocks stood at 77 thousand t for butter and 257 thousand t at for SMP.

Commodity markets staged a fast recovery throughout the last quarter of 2009 and the second and third quarter of 2010, driven by strong world demand and relatively limited milk supply from the Southern Hemisphere. As a consequence, the release of EU intervention stocks under the *food programme for the most deprived persons* and through the tender procedure in 2010 did not cause supply pressure on the butter and SMP markets.

Farm gate milk prices have followed the increase in commodity prices over the same period with the weighted average EU milk price reaching 31.5 euro/100 kg in August 2010[3], 29% above the May 2009 low but 19% below the November 2007 peak. Even so, this price level exceeds any historical average price level registered between 2003 and 2006. Milk deliveries to dairies were falling below the 2009 level during the first four months of 2010 but have recovered over the subsequent months, encouraged by the aforementioned price recovery and favourable weather conditions.

4.2 Market prospects

The market prospects remain conditional upon a number of factors linked to the general economic and policy setting, the global market environment and climate conditions.

Longer term world market perspectives remain favourable

It remains uncertain whether the factors contributing to the strong price recovery of 2009-2010 will persist over the outlook, particularly as a number of these factors have been linked to adverse climate conditions, such as lower supplies in the Southern Hemisphere and higher import demand in Russia. Over the near term, a modest downward correction is projected for dairy prices in general, influenced by higher production from major exporting and certain importing countries, the negative demand effects of recent high prices and the gradual reduction of public stocks in the EU and USA. On the other hand, the potential for further demand growth in developing countries remains the key driver for longer term market prospects, facilitated by economic growth, increasing population and urbanisation as well as continued preference towards dairy consumption.

Macroeconomic environment has diverse implications on dairy markets

The underlying macroeconomic assumptions suggest a gradual weakening of the EU export potential as the EUR is assumed to continue to strengthen against the USD over the outlook. In addition, the assumed exchange rate developments dampen commodity price prospects when expressed in EUR. On the other hand, the economic recovery and continued (albeit declining rate of) population growth imply improved prospects for higher value added dairy

[3] Note that the weighted average masks a significant variation in prices between Member States, the August 2010 milk price ranging from 51.4 euro/100kg in Cyprus to 21.2 euro/100kg in Romania.

consumption in the EU. One of the most important factors determining milk supply prospects is the gradual increase of the crude oil price through its impact on input costs (energy, fertilizer and feed costs in particular). At the same time, the higher crude oil price could have a positive impact on the dairy import potential of oil producing countries.

Domestic policy setting provides for increased potential for milk supply

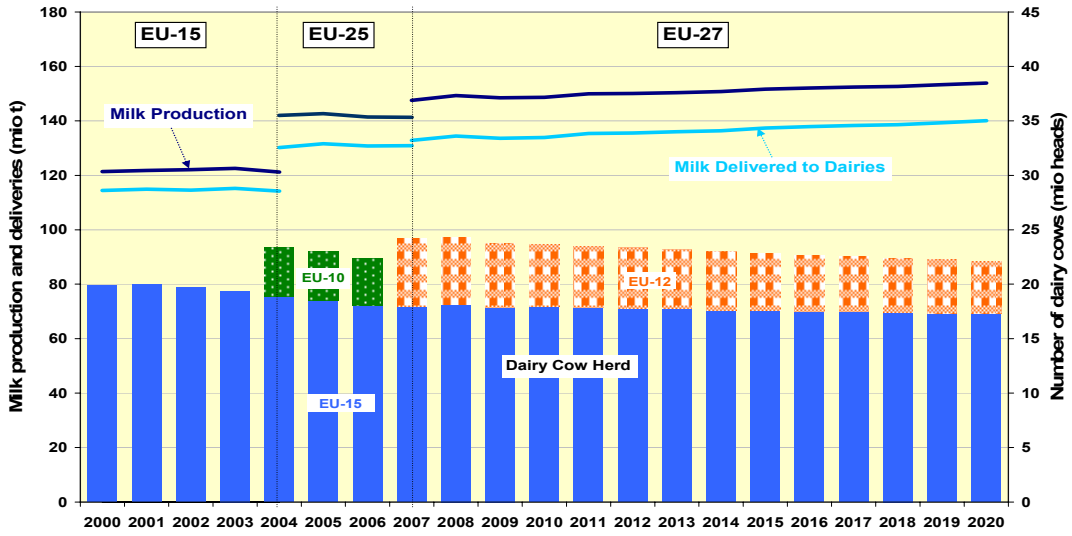
The status quo policy assumptions for the outlook imply an increased potential for milk production through the phasing out and abolition of the milk quota system by 2015. The market intervention mechanisms available following the CAP Health Check, notably intervention buying-in for SMP and butter at guaranteed prices for pre-determined quantities and through a tender system for additional volumes, as well as the possible use of export refunds until 2013 do not play a role in the baseline projections, as commodity prices remain above intervention levels throughout the outlook. On the other hand, the release of intervention stocks under the *food programme for the most deprived persons* is assumed to continue over the outlook, providing for additional supply on the SMP market over the near term.

Against this setting, the prospects for EU dairy commodity markets depict a mixed picture, with a relatively vulnerable outlook for protein markets over the near term, but a balanced butter market and favourable perspectives for higher value added dairy commodities.

Cow's milk production expands below potential

Milk production is projected to return to an increasing path from 2010 onwards, but remain below the potential growth rate provided by the gradual elimination of the quota regime, as constrained EU commodity price prospects are met with a gradual increase in milk production costs, limiting incentives for a stronger expansion. EU milk production is projected to reach 153.9 mio t in 2020 that accounts for a cumulative increase from 2009 at slightly below 4%. This increase comes as a result of a slightly higher growth rate (at almost 5%) for milk delivered to dairies and a continuous decline of production for on-farm use (by 7% altogether).

Graph 4.1 Cow's milk supply and dairy herd developments, 2000-2020



Milk deliveries would reach 140 mio t in 2020, while production for on-farm consumption would decline below 14 mio t. The latter is mainly driven by a gradual contraction of subsistence production in the EU-12 that is to decline by 8% over the projected period.

The increase in milk production would be driven by a continued increase in the average yield per dairy cow that would almost reach 7 thousand kg by 2020 (a cumulative growth of 11%) while the EU dairy herd is projected to contract by almost 7% to the level of 22 mio animals in

2020. Developments would be more pronounced in the EU-12, where the number of dairy cows are projected to decline by almost 18% (compared to -3% in the EU-15) as a result of continuous restructuring of milk production. By contrast, the average yield per cow is projected to grow by 17% in the EU-12, compared to a 9% increase in the EU-15. Despite the higher growth rate, average EU-12 cow productivity at 5.6 thousand kg will remain below the EU-15 level of 7.4 thousand kg.

Milk deliveries and quota abolition

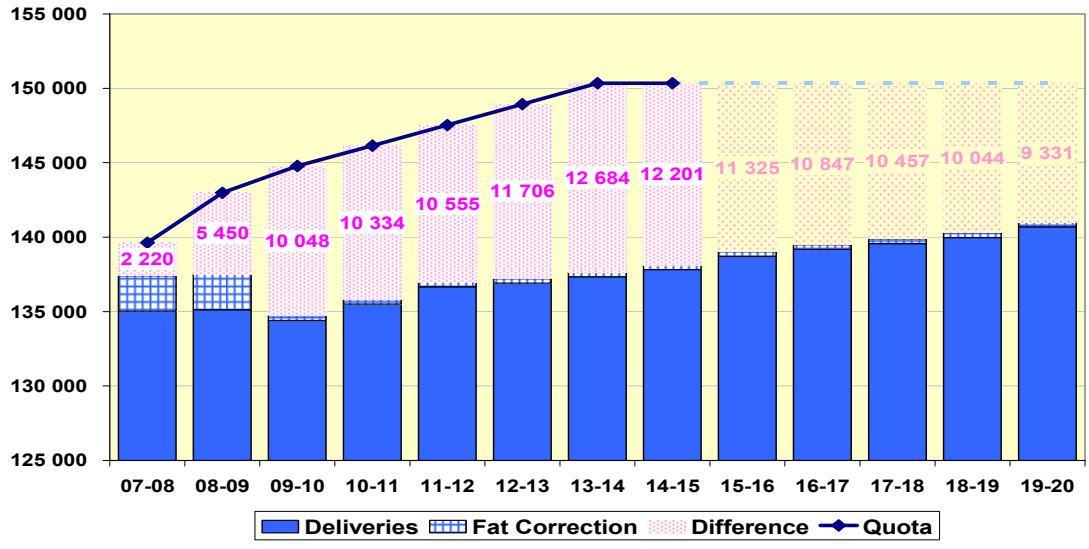
The utilisation of available milk quotas at the aggregate EU level has declined considerably over the recent quota years, from -1.6% in 2007/2008 to -7% in 2009/2010 due to the aforementioned developments in milk deliveries and the increase in available delivery quotas. These percentages correspond to a 2.2 mio t underutilisation in 2007/2008 and 10 mio t in 2009/2010. The situation differs considerably at disaggregated levels, with EU-15 under-use at -6% and EU-12 at -13% in the 2009/2010 quota year. At Member State level the differences are even more pronounced, ranging from a marginal quota overshoot in Cyprus, Denmark and the Netherlands to an almost -38% underutilisation in Romania.

The current projections imply that milk deliveries would not be able to keep up with the annual increase in quotas over the phasing out period, leading to a steady decline in quota utilisation at the aggregate EU level. In 2014/2015, which is the last quota year before abolition, EU milk deliveries would be 12.2 mio t (or -8%) below the quota level. The EU-15 underutilisation would exceed -6% and EU-12 would almost reach -18%.

From the perspective of the surplus levy applicable for Member States who have produced above their respective quotas, only three Member States triggered such levy for the quota year 2009/2010, compared to five in the quota year 2008/2009. The production prospects suggest that future overshoot, and therefore surplus levy payments, will remain limited to a few Member States.

Quota abolition is projected to have a limited impact on milk deliveries at the aggregate EU level, and as the following graph shows, milk deliveries at the end of the projection period would remain considerably below the (expired) quota level.

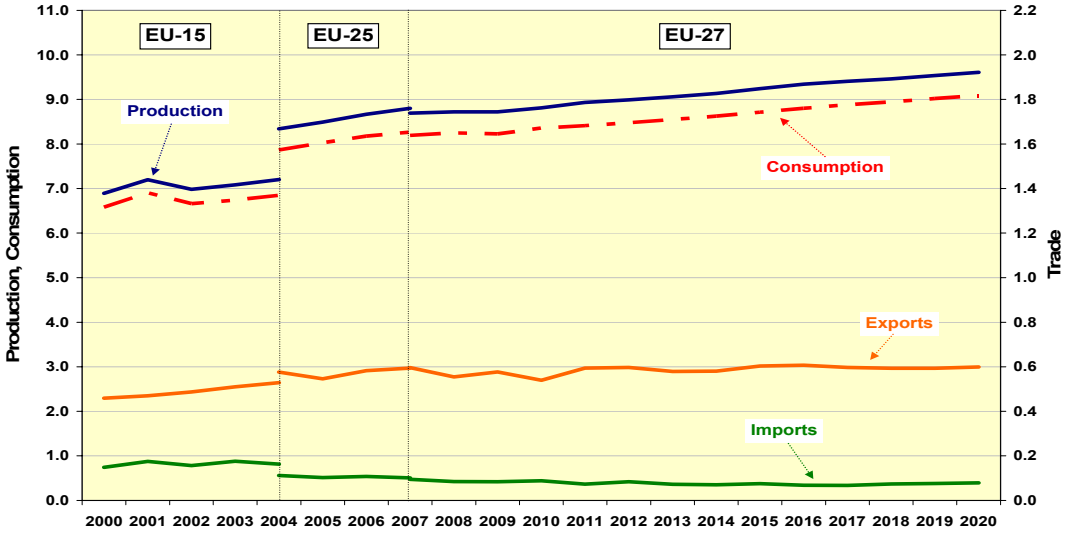
Graph 4.2 Quota utilisation for cow's milk delivered to dairies, quota years ('000 t)



Demand for value added commodities recover

Demand growth of fresh dairy products and cheese suffered a setback over recent years due to the price boom in 2007-2008 and the economic crisis in 2009. Cheese consumption per capita reached 16.5 kg in 2009, which is a 1% decline from the 2006 level, compared to an aggregate growth of 6% over 2003-2006. Cheese exports were at 577 thousand t, 4% above the 2008 level, supported by the recovery of world import demand and partly by refunds over 2009. Production remained stable at 8.7 mio t and EU imports contracted to 84 thousand t in 2009.

Graph 4.3 Cheese market developments, 2000-2020



Consumption of these higher value added dairy commodities have already shown signs of recovery in 2010 and the outlook depicts a return to the growth trend observed prior to 2007, albeit at a much lower rate, as consumer prices would remain at relatively elevated levels. Cheese consumption per capita is projected to reach 17.7 kg in 2020, exceeding the 2009 level by almost 7%. Cheese output is depicted to grow 10% on aggregate from 2009 to 2020, reaching 9.6 mio t by the end of the outlook. While prospects for cheese exports are constrained by the strengthening EUR, substantial import demand from the world market would allow for relatively stable EU exports around the level of 600 thousand t. However, the EU will gradually lose world market share, but remain above 31% of global exports in 2020.

Production of fresh dairy products is projected to increase by almost 8%, driven by a continuous strong expansion in the EU-12, as the consumption of on-farm products are substituted by fresh products from dairies.

World demand growth supports WMP production

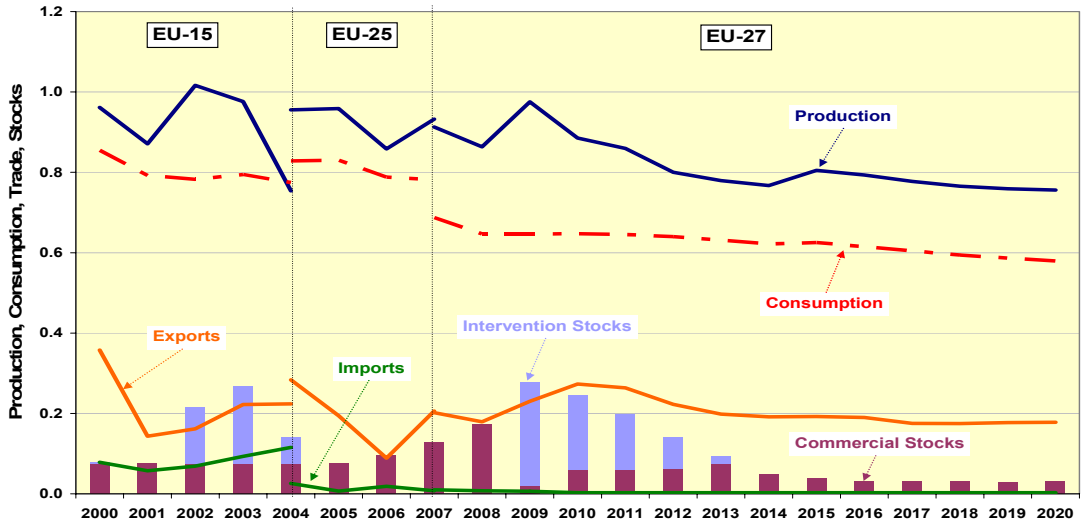
Recent production fluctuations for whole milk powder reflected the important role that export potential plays for this commodity, as a 10% increase of EU production in 2008 was followed by a decline in the same order in 2009, driven by reduced exports and higher SMP output eligible for intervention. Although the 2009 decrease in exports came at a time when world import demand was increasing and support was available through export refunds, the long term prospects for EU WMP exports are supported by a steady increase in world demand and a stronger orientation by the competing exporters towards cheese, butter and SMP. Nevertheless, short term prospects are less favourable, with an initial decline in EU exports, and even over the long term the EU market share of global exports would decline gradually to 21% by 2020 (from 24% in 2009). EU exports are projected to fluctuate around the level of 450 thousand t from 2015 onwards, and consumption would stabilise above 350 thousand t over most of the outlook. EU production is projected to vary around the level of 800 thousand t.

SMP market remains balanced but vulnerable over the near term

The SMP market was under considerable supply pressure in 2009 driven by a significant increase in production in addition to the large commercial stocks cumulated over the previous years. Supported by refunds, EU exports reached 230 thousand t to exceed the 2008 level by 28.5%, but EU demand remained limited at around 647 thousand t, despite the low prices over most of the year. Intervention stocks stood at 258 thousand t at the end of 2009, while commercial stocks were reduced by an estimated 150 thousand t.

Market conditions over January-September 2010 have been rather favourable due to strong import demand on the world market and limited export supply following constrained production in the drought inflicted Southern Hemisphere. SMP prices remained at elevated levels over this period and enabled the release of 62 thousand t of intervention stocks under the *food programme for the most deprived persons* without placing supply pressure on the markets. EU production has declined markedly over the same period in 2010 while exports have remained considerably above 2009 levels.

Graph 4.4 SMP market developments, 2000-2020



The outlook for SMP exports are less favourable given the assumed strengthening of the EUR and increasing supply from other exporting countries. Exports would decline continuously from 2011 onwards to levels below 180 thousand t by the end of the outlook. Feed use would also continue its contraction, driving a steady decline in EU SMP use to 580 thousand t by 2020, which is 10% below the level of 2009. As the overall demand prospects are fairly weak for SMP, the outlook for price growth is rather constrained over most of the projection period. Notwithstanding the assumed gradual release of intervention stocks until 2014, supply pressure would be alleviated by reduced EU production that is projected to contract throughout the outlook, except for a moderate (5%) increase in the year of quota abolition. Production is projected to stand at 756 thousand t in 2020, almost 23% below 2009.

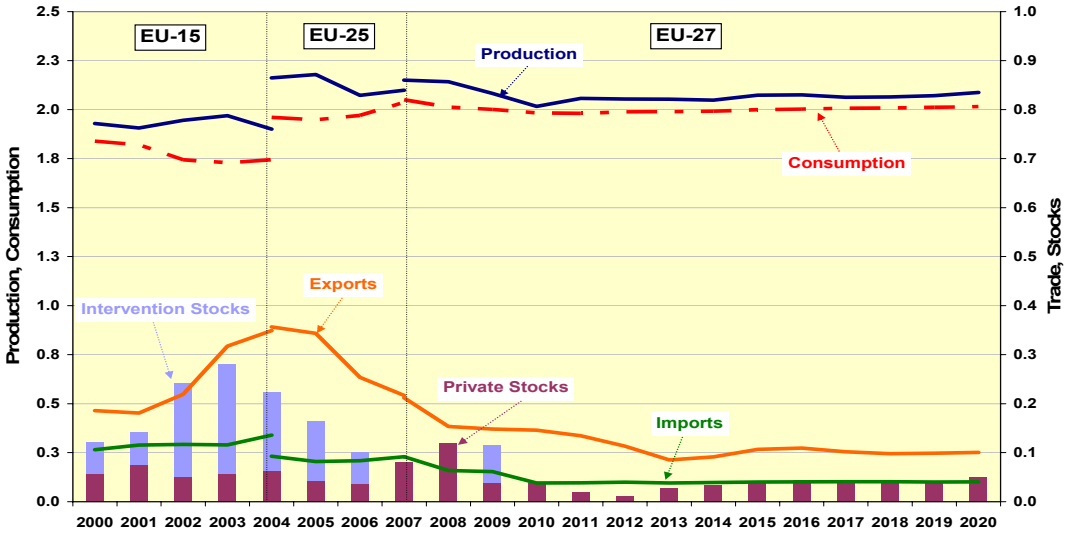
Despite these projections of a relatively well balanced SMP market without the need for market intervention and at prices comfortably above the intervention level, the nearer term prospects remain sensitive to global supply-demand developments and the market's ability to absorb the release of intervention stocks.

Butter market balance remains conditional upon firm demand

The EU butter market came under supply pressure in 2009 but to a much lower extent than the protein market, as the steep decline in production in the latter months of 2009 eased the tension on the market. As demand remained relatively firm, the butter price staged a steep recovery from September 2009 onwards. Despite the re-activation of export refunds, export volumes remained slightly below the 2008 level. Intervention stocks stood at 77 thousand t by the end of 2009 but private stocks were reduced to an estimated 38 thousand t.

Continued contraction in butter supply and firm demand have kept butter prices at elevated levels throughout 2010 so far and enabled an almost full release of intervention stocks (of which 51 thousand t under the *food programme for the most deprived persons* and 24 thousand t under the tender procedure) without creating supply pressure on the market.

Graph 4.5 Butter market developments, 2000-2020



The release of the remaining 1.5 thousand t of intervention stocks in 2011 would be easily absorbed by the market. The projections depict continued market stability for butter, driven by firm EU demand at around 2 mio t. Even so, the long term trend of declining consumption per capita would continue, reaching 3.92 kg by the end of the outlook, almost 3% below the level of 2009. The relatively stable consumption is supported by a higher increase in the price of vegetable oils vis-à-vis butter. The outlook for butter exports is less favourable, and particularly over the near term, given the assumed strengthening of the EUR and increasing supply from other exporting countries. Exports would decline to around 90 thousand t between 2010 and 2014, but recover slightly following quota abolition and stabilise around the level of 100 thousand t by the end of the outlook. EU production is projected to increase in 2011 and display minor annual variations thereafter, except for a limited (1%) increase in the year of quota abolition. Production is projected to stand slightly below 2.1 mio t in 2020, the same level as in 2009.

While the outlook displays continued market stability for butter, it remains conditional on stable health related dietary preferences. The effect of a change towards low(er)-fat commodities would have a direct (negative) effect on butter consumption and an indirect (positive) effect on butter production, resulting from less milk fat used in the production of other dairy commodities (notably cheese and fresh products).

5 Agricultural income

5.1 Historical developments

Over the last decade, agricultural income per (annual) worker in the EU-27 has grown both in nominal and in real terms. On average, however, the increase in real terms has been very modest (0.6% per year) and the trend in real income has been volatile. After increasing by 15% between 2000 and 2004, agricultural income fell by 10% in 2005 as a consequence of the strong contraction in the larger EU-15 Member States. During 2006 and 2007, income increased by a total of 15% due to soaring commodity prices, before dropping sharply after 2008 with the end of the price bubble and the beginning of the economic recession. This brought income in the EU-27 down to close to the level of the year 2000.

The development of agricultural income has not been the same in the EU-12 and the EU-15. After a strong increase following the McSharry reform, real income in the EU-15 followed a basically stable path until 2006. But the pronounced increase in real income in 2007 was followed by two successive declines, including a fall in 2009, which caused income to plummet to 1994 levels. By contrast, in the EU-12 income has grown significantly. Although the 2009 decline in income was slightly stronger in the EU-12, real income per worker has increased by 34% since accession. This is mainly due to the higher market prices prevailing in the single market and the increase in public support for the farm sector.

The 11.6% drop in EU-27 real agricultural income per worker observed in 2009 resulted from a reduction in agricultural labour input (-2.3%) and in real agricultural income (-13.6%). This fall in EU-27 real agricultural income resulted mainly from a strong decrease in the value of agricultural output (-10.9%), linked to the sharp drop in the value of crop production (-13%, due essentially to the price drop) as well as for animal output (-9.3%, again largely due to the price decline) in spite of the strong decrease in the cost of production which dropped by 9.2% on average in real terms driven by the sharp decline in the real prices of feedingstuffs, energy and fertilizers (estimated at -16.7%, 14.5% and 11.5% respectively).

In the *crop sector* the strong decline in average producer prices (-11.9%) was not compensated by higher volumes, which actually declined slightly by 0.9%. Prices of most crops fell substantially in 2009 as compared to 2008 notably those of cereals (-25.2%), oilseeds (-23.8%), olive oil (-16%), fruit (-15%) and potatoes (-10.1%). The pronounced decline in the value of *animal output* in 2009 is the result of a decline in production volumes (-1% on average) and a stronger decline in real producer prices (-8.2%). The stability in output volumes of pig production and lower real producer prices (-4.2%) led to a reduction of output value of 3.8% for pig production. *Milk output* volume decreased slightly by 0.4% in spite of the 2% quota increase decided in 2008 and used only to a limited extent so far in most Member States. Real milk prices declined sharply (-20.3%) in 2009 as the drop in dairy commodity prices of 2008 is gradually transmitted to the milk producers.

Whereas the volume of input costs (intermediate consumption) declined by 2.7% (driven by essentially by the lower use of fertilisers (-14.7%)), their prices in real terms exhibited a more substantial decrease. This is notably the case for feedinstuffs (-15.1%) and energy (-12.3%). However, the real prices of fertilizers are reported to have increased in 2009 (+3.7%) in spite of the decline in energy prices (with wide variations between Member States, ranging from +38.8% in France to -30.7% in neighbouring Belgium).

These developments led to a strong and continued deterioration of the terms of trade of the agricultural sector in the EU and constitute the main factor behind the pronounced decline in farm income in 2009.

5.2 Income prospects

The medium-term prospects for the income of the agricultural sector have been compiled on the basis of the medium-term projections for the main agricultural markets. The economic accounts for agriculture constitute the statistical basis of the outlook for agricultural income[4].

Whereas the medium-term changes in the price and volume components of the arable crops and major livestock sectors have been established in line with the market projections presented in the previous chapters, those of the remaining agricultural sectors –such as fruit, vegetables, wine and olive oil- have been assumed to return to historical trends.

The subsidy component of agricultural income has been established on the basis of:

- the evolution of direct payments estimated for 2010-2013 and assumed for the post-2013 period (single payment scheme and other direct payments as provided following the Health Check decisions);
- the rural development component from the EAFRD as adopted for the 2007-2013 period for the EU-27. Only the current transfers to agricultural producers as other subsidies on production have been accounted for in the income calculation (thus excluding all the capital grants and investment aids as well as the support to operators outside agriculture). Member States have been assumed to fully use the rural development funds available to them (including the co-financing component of rural development funds);
- the main provisions of the Act of Accession regarding direct payments for the EU-10 and EU-2 (progressive introduction, SAPS and the complementary national direct payments (CNDP or "top-ups")) have been accounted for. The possibility for financing the CNDP from the national budget or from co-financing with rural development EU funds has also been taken into account where relevant. In this context Member States respect the upper limit on the financial envelopes.

On the basis of these hypotheses, the projections for income display a gradual, albeit slow improvement over most of the outlook period. Compared to a five year average of the period 2005-2009, the aggregate EU agricultural income in real terms and per labour unit would be around 20% above this base period in 2020. However, this overall gain would mask marked differences between the EU-15 and EU-12 aggregates.

Agricultural income in the EU-15 would show a more moderate development over the projection period and increase almost 10% above the level of the base period over the entire outlook. The value of agricultural production would show a steady recovery and exceed the 2009 level by almost 24% in 2020, driven by the increasing value of crops, milk and meat production and supported by the expected growth in the value of fruit and vegetables in line with historical trends (and supported by increasing demand linked to economic growth).

Taking into account a steady, albeit overall lower increase in input costs, as well as the assumed rate of fixed capital consumption and stable level of subsidies, factor income in nominal terms would exceed the 2009 level by around 24% in 2020. However, when taking into account inflation, factor income would be only 3% higher in real terms.

On the other hand, structural adjustment is expected to continue in agriculture, with the reduction in total agricultural labour input for the EU-15 assumed to stabilise at a rate of 1.6%

[4] Agricultural income is defined as the factor income of the agricultural sector expressed in real terms and per annual work unit.

per year on average over the projection period, resulting in an aggregate decline of labour input by almost 16%.

Consequently, agricultural income in real terms and per labour unit (i.e. full-time equivalent), is estimated to exceed the 2009 level by 30% in 2020.

Table 5.1 Outlook for agricultural income in the EU

	average 2005-2009	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Factor income in nominal terms											
EU-27	100.0	108.6	109.1	107.9	107.4	107.1	108.5	110.7	110.6	113.7	114.5
EU-15	100.0	108.8	108.9	107.2	106.1	105.3	106.4	108.2	107.5	110.4	110.5
EU-12	100.0	107.2	109.8	111.7	114.6	117.1	120.3	124.4	127.4	132.2	136.3
Labour input											
EU-27	100.0	91.9	89.9	87.9	85.9	84.0	82.2	80.4	78.6	76.9	75.2
EU-15	100.0	93.1	91.6	90.2	88.7	87.3	85.9	84.6	83.2	81.9	80.6
EU-12	100.0	90.9	88.3	85.8	83.4	81.1	78.8	76.6	74.4	72.3	70.3
Agricultural income in real terms per labour unit											
EU-27	100.0	110.3	111.3	110.6	110.8	110.2	112.2	115.2	114.9	119.0	119.7
EU-15	100.0	109.9	110.0	108.1	106.8	105.6	106.4	108.0	107.1	109.6	109.6
EU-12	100.0	108.2	110.8	114.2	119.9	119.5	125.8	133.4	133.9	142.8	144.9

Agricultural income in the EU-12 is foreseen to display a more pronounced growth, climbing 45% above the 2005-2009 average income level by 2020. The increase would be driven by a higher value of agricultural production (+35% from 2009) and supported by a continuous rise in the funds granted to agricultural producers in the EU-12 (with the available funds being directed to the agricultural sector in the form of direct payments and national top-ups and rural development funds that aim at facilitating and promoting the restructuring and modernisation of the agricultural sector and the rural areas).

Factor income in nominal terms would stand around 43% above the 2009 level by the end of the outlook and even after correcting for deflation factor income would exceed the 2009 level by almost 16%in real terms. The agricultural labour input in the EU-12 countries is assumed to fall by an annual average of 2.8% (almost 25% on aggregate) over the outlook period in line with the continued restructuring of the agricultural sector. As a result, agricultural income in real terms and per labour unit is projected to exceed the 2009 level by almost 54% in 2020.

While the outlook for agricultural income provides an overall indication of the prospects for the EU agricultural sector, the results discussed in this chapter have to be interpreted in the context of the market projections and their underlying economic and policy setting presented in the earlier chapters as well as the additional assumptions and expectations specific to the income estimation. Notably, the prospects for agricultural sectors not covered by the modelling tools used for the baseline projections, the assumptions on the rate of fixed capital consumption, the level of subsidies (established on the basis described above) and the pace of future structural change. These elements have far reaching implications on the prospects for agricultural income, in addition to the general uncertainties surrounding the current medium-term projections described in the subsequent chapter.

6 Uncertainties

The outlook for EU agricultural markets and income remains subject to a number of important uncertainties, most of which constitute downside risks to the present projections. The uncertainties relate mainly to future economic, market and policy developments, elements that form a fundamental basis of the projections as described in the introduction (chapter 1) earlier. They concern in particular the path of recovery from the financial and economic crisis with its impact on exchange rates, disposable income, labour market, asset values, access to credit and energy prices. Other factors such as future changes in agricultural and trade policies as well as the outcome of the current Doha Development Round of trade negotiations and bilateral/regional trade discussions, the policies on renewable energy, the path of technological change and future climatic conditions as well as animal health issues and changing consumer preferences could also have far reaching implications for the future pattern of EU agricultural markets.

Part II of the publication aims to address a number of these uncertainties by providing a quantitative assessment of alternative assumptions on supply and demand drivers, the macroeconomic environment and crude oil price developments.

7 STATISTICAL ANNEX

Table A 1 Total cereal market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**294.7**	**280.7**	**294.2**	**289.4**	**293.4**	**295.3**	**298.6**	**302.0**	**304.8**	**307.4**	**310.6**	**312.9**
of which	EU-15	212.2	200.0	211.5	207.5	209.9	210.9	212.8	214.8	216.4	217.8	219.7	220.9
	EU-12	82.6	80.7	82.7	81.9	83.5	84.5	85.8	87.2	88.4	89.6	90.9	92.0
Consumption		**279.5**	**277.9**	**276.0**	**277.9**	**280.6**	**283.5**	**287.5**	**290.6**	**293.6**	**296.5**	**298.8**	**300.9**
of which	EU-15	212.5	211.7	209.4	211.0	213.3	215.9	219.5	222.1	224.6	227.1	229.0	230.9
	EU-12	67.0	66.1	66.5	66.9	67.3	67.6	68.0	68.5	69.0	69.4	69.8	70.0
of which food and industrial		64.9	64.3	65.4	65.5	65.8	65.9	66.0	66.2	66.4	66.5	66.7	66.9
of which feed		172.3	170.6	166.5	168.3	169.1	169.4	169.5	169.7	170.1	171.4	171.4	172.3
of which bioenergy		7.8	8.7	9.1	9.1	10.7	13.3	16.9	19.9	22.1	24.0	25.6	26.4
Imports		8.0	8.6	9.0	10.6	10.4	10.4	10.6	10.7	11.2	11.5	11.5	11.5
Exports		27.2	28.9	28.1	23.2	22.6	22.3	22.4	22.6	22.4	22.1	22.5	22.5
Beginning stocks		57.1	53.1	36.7	35.6	34.6	35.1	35.0	34.1	33.4	33.1	33.2	33.8
Ending stocks		54.2	37.3	36.4	35.4	36.0	35.9	35.0	34.3	34.0	34.1	34.7	35.4
of which intervention		6.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 2 Total wheat market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**138.5**	**135.9**	**146.4**	**141.1**	**143.2**	**143.4**	**145.3**	**147.1**	**148.6**	**149.7**	**151.3**	**152.3**
of which	EU-15	105.6	104.4	112.1	107.9	109.3	109.1	110.3	111.4	112.2	112.7	113.6	114.1
	EU-12	32.9	31.5	34.2	33.2	34.0	34.3	35.0	35.8	36.4	37.0	37.7	38.2
Consumption		**128.7**	**125.3**	**126.0**	**126.6**	**128.5**	**130.2**	**132.6**	**134.1**	**135.5**	**136.3**	**137.4**	**138.1**
of which	EU-15	104.4	102.3	102.2	102.8	104.4	105.9	108.1	109.4	110.6	111.2	112.2	112.8
	EU-12	24.3	23.1	23.8	23.8	24.1	24.3	24.5	24.7	24.9	25.0	25.2	25.2
of which food and industrial		55.4	54.9	55.9	56.0	56.3	56.3	56.4	56.6	56.8	56.9	57.1	57.2
of which feed		56.6	54.0	53.0	53.7	54.3	54.4	54.5	54.5	54.8	55.1	55.2	55.4
of which bioenergy		3.9	3.8	3.7	3.3	4.3	5.8	7.8	9.2	10.1	10.6	11.1	11.0
Imports		5.3	4.4	3.8	4.4	4.5	4.5	4.5	4.3	4.2	4.1	3.9	3.8
Exports		21.4	20.2	22.8	18.5	18.0	17.7	17.8	17.9	17.7	17.5	17.8	18.1
Beginning stocks		22.3	16.1	11.3	12.5	12.7	13.9	14.0	13.4	12.9	12.5	12.5	12.5
Ending stocks		17.2	11.9	13.3	13.6	14.8	14.9	14.3	13.8	13.4	13.4	13.4	13.4
of which intervention		0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 3 Total coarse grain projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**156.2**	**144.7**	**147.9**	**148.3**	**150.2**	**151.9**	**153.3**	**154.8**	**156.2**	**157.7**	**159.3**	**160.6**
of which	EU-15	106.6	95.6	99.3	99.6	100.7	101.7	102.5	103.4	104.2	105.1	106.1	106.8
	EU-12	49.6	49.1	48.5	48.8	49.5	50.2	50.8	51.4	52.0	52.6	53.2	53.8
Consumption		**150.8**	**152.5**	**149.9**	**151.3**	**152.0**	**153.3**	**155.0**	**156.6**	**158.1**	**160.3**	**161.4**	**162.9**
of which	EU-15	108.1	109.5	107.2	108.2	108.9	110.0	111.4	112.8	114.1	115.9	116.8	118.1
	EU-12	42.7	43.1	42.7	43.0	43.1	43.3	43.5	43.8	44.1	44.4	44.6	44.8
of which food and industrial		9.5	9.4	9.5	9.5	9.5	9.6	9.6	9.6	9.6	9.6	9.6	9.7
of which feed		115.7	116.5	113.5	114.6	114.8	115.1	115.0	115.1	115.4	116.3	116.2	116.9
of which bioenergy		3.9	4.9	5.4	5.8	6.4	7.5	9.2	10.7	12.0	13.3	14.5	15.4
Imports		2.8	4.3	5.2	6.2	6.0	5.9	6.1	6.4	7.0	7.4	7.6	7.7
Exports		5.7	8.7	5.3	4.6	4.7	4.7	4.7	4.7	4.7	4.5	4.8	4.4
Beginning stocks		34.7	37.0	25.3	23.1	21.8	21.2	21.0	20.6	20.5	20.6	20.7	21.2
Ending stocks		37.0	25.3	23.1	21.8	21.2	21.0	20.6	20.5	20.6	20.7	21.2	22.0
of which intervention		5.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 4 Soft wheat market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**129.8**	**127.6**	**137.3**	**132.2**	**134.3**	**134.4**	**136.2**	**137.9**	**139.3**	**140.3**	**141.8**	**142.7**
of which	EU-15	97.0	96.2	103.2	99.2	100.5	100.3	101.3	102.3	103.0	103.5	104.3	104.7
	EU-12	32.8	31.4	34.0	33.0	33.8	34.1	34.9	35.6	36.2	36.8	37.5	38.0
Consumption		**118.8**	**115.9**	**116.4**	**116.8**	**118.7**	**120.3**	**122.7**	**124.2**	**125.6**	**126.4**	**127.4**	**128.1**
of which	EU-15	94.9	93.3	93.1	93.4	95.0	96.5	98.7	100.0	101.2	101.8	102.7	103.4
	EU-12	23.9	22.7	23.4	23.4	23.7	23.8	24.0	24.2	24.4	24.5	24.7	24.7
of which food and industrial		47.0	46.6	47.3	47.4	47.6	47.7	47.8	47.9	48.0	48.1	48.3	48.4
of which feed		56.0	53.7	52.7	53.3	53.9	54.0	54.2	54.2	54.4	54.8	54.8	55.1
of which bioenergy		3.9	3.8	3.7	3.3	4.3	5.8	7.8	9.2	10.1	10.6	11.1	11.0
Imports		3.1	2.5	2.0	2.5	2.5	2.6	2.6	2.6	2.5	2.4	2.3	2.3
Exports		20.4	18.9	21.7	17.5	17.0	16.6	16.7	16.8	16.6	16.4	16.6	17.0
Beginning stocks		22.3	16.1	11.3	12.5	12.7	13.9	14.0	13.4	12.9	12.5	12.5	12.5
Ending stocks		16.1	11.3	12.5	12.7	13.9	14.0	13.4	12.9	12.5	12.5	12.5	12.5
of which intervention		0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 5 Barley market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**62.0**	**54.4**	**56.8**	**56.7**	**57.0**	**57.4**	**57.7**	**58.0**	**58.2**	**58.5**	**59.0**	**59.0**
of which	EU-15	50.7	44.3	46.3	46.1	46.4	46.6	46.7	46.9	47.0	47.2	47.5	47.4
	EU-12	11.3	10.1	10.5	10.6	10.7	10.8	10.9	11.1	11.2	11.3	11.4	11.5
Consumption		**54.7**	**55.6**	**54.5**	**54.7**	**54.6**	**54.7**	**54.8**	**54.9**	**54.9**	**55.3**	**55.2**	**55.4**
of which	EU-15	45.3	46.0	45.0	45.1	45.0	45.1	45.1	45.2	45.2	45.5	45.4	45.6
	EU-12	9.4	9.6	9.5	9.6	9.6	9.6	9.6	9.7	9.7	9.8	9.8	9.9
of which food and industrial		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
of which feed		42.3	43.0	41.8	42.1	42.0	42.0	41.8	41.7	41.6	41.8	41.6	41.7
of which bioenergy		0.4	0.7	0.8	0.8	0.9	1.0	1.3	1.5	1.7	1.9	2.0	2.2
Imports		0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Exports		3.6	5.4	3.9	3.5	3.5	3.5	3.5	3.4	3.5	3.2	3.5	3.1
Beginning stocks		14.1	17.9	11.5	10.1	8.9	8.0	7.5	7.1	7.0	7.0	7.2	7.6
Ending stocks		17.9	11.5	10.1	8.9	8.0	7.5	7.1	7.0	7.0	7.2	7.6	8.2
of which intervention		5.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 6 Maize market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**57.8**	**58.2**	**57.6**	**58.2**	**59.6**	**60.8**	**61.9**	**63.0**	**64.1**	**65.3**	**66.4**	**67.6**
of which	EU-15	37.1	35.1	35.9	36.4	37.3	38.1	38.8	39.5	40.2	40.9	41.6	42.4
	EU-12	20.8	23.1	21.7	21.8	22.3	22.7	23.1	23.5	23.9	24.3	24.7	25.2
Consumption		**60.7**	**62.9**	**62.0**	**62.9**	**63.8**	**64.8**	**66.3**	**67.7**	**69.1**	**70.7**	**72.0**	**73.2**
of which	EU-15	42.5	44.2	43.3	44.0	44.8	45.6	46.9	48.1	49.3	50.7	51.7	52.8
	EU-12	18.1	18.7	18.7	18.9	19.0	19.2	19.4	19.6	19.8	20.1	20.3	20.5
of which food and industrial		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.9	4.9	4.9
of which feed		47.5	49.1	47.8	48.5	48.9	49.2	49.4	49.7	50.1	50.7	51.0	51.4
of which bioenergy		2.3	3.0	3.3	3.6	4.1	4.8	6.0	7.1	8.1	9.1	10.1	10.9
Imports		2.4	3.5	4.9	5.7	5.5	5.4	5.6	5.8	6.3	6.7	7.0	7.0
Exports		2.1	3.2	1.3	1.1	1.1	1.1	1.1	1.2	1.1	1.2	1.2	1.1
Beginning stocks		17.7	15.2	10.8	10.1	10.0	10.2	10.5	10.5	10.5	10.7	10.8	11.0
Ending stocks		15.2	10.8	10.1	10.0	10.2	10.5	10.5	10.5	10.7	10.8	11.0	11.2
of which intervention		0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 7 Total oilseeds market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**29.6**	**28.9**	**29.4**	**30.0**	**30.3**	**30.8**	**31.2**	**31.6**	**32.1**	**32.5**	**33.0**	**33.3**
of which	EU-15	19.5	18.3	18.7	19.1	19.2	19.5	19.7	20.0	20.2	20.5	20.8	21.0
	EU-12	10.0	10.5	10.7	10.9	11.1	11.3	11.4	11.6	11.8	12.0	12.2	12.4
Consumption		**45.2**	**44.9**	**45.6**	**46.2**	**46.7**	**47.1**	**47.5**	**48.0**	**48.4**	**48.9**	**49.4**	**49.8**
of which	EU-15	38.7	38.4	39.1	39.6	39.9	40.2	40.7	41.0	41.4	41.8	42.2	42.6
	EU-12	6.5	6.5	6.6	6.7	6.7	6.8	6.9	7.0	7.0	7.1	7.2	7.3
Imports		16.5	16.3	16.8	16.8	16.9	16.8	16.9	16.9	16.9	16.9	17.0	17.0
Exports		0.8	0.7	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Beginning stocks		4.7	4.7	4.3	4.4	4.4	4.3	4.3	4.2	4.2	4.1	4.0	4.0
Ending stocks		4.7	4.3	4.4	4.4	4.3	4.3	4.2	4.2	4.1	4.0	4.0	3.9

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 8 Total oilseed meals market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**25.9**	**26.0**	**26.4**	**26.8**	**27.0**	**27.2**	**27.4**	**27.7**	**27.9**	**28.1**	**28.4**	**28.7**
of which	EU-15	22.6	22.6	23.1	23.3	23.5	23.7	23.9	24.1	24.3	24.5	24.7	24.9
	EU-12	3.3	3.4	3.4	3.4	3.5	3.5	3.6	3.6	3.6	3.7	3.7	3.8
Consumption		**50.4**	**50.4**	**51.1**	**51.6**	**51.9**	**52.3**	**52.7**	**53.1**	**53.5**	**53.8**	**54.2**	**54.6**
of which	EU-15	43.2	43.1	43.7	44.2	44.4	44.7	45.0	45.3	45.6	45.9	46.2	46.5
	EU-12	7.2	7.3	7.4	7.4	7.5	7.6	7.7	7.8	7.9	7.9	8.0	8.1
Imports		25.2	24.4	25.3	25.7	26.0	26.1	26.1	26.1	26.3	26.4	26.6	26.8
Exports		0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7
Beginning stocks		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Ending stocks		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 9 Total oilseed oils market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**14.2**	**14.1**	**14.5**	**14.8**	**15.0**	**15.2**	**15.4**	**15.6**	**15.8**	**16.0**	**16.2**	**16.5**
of which	EU-15	11.9	11.7	12.2	12.4	12.5	12.7	12.9	13.0	13.2	13.4	13.6	13.8
	EU-12	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.7
Consumption		**16.0**	**16.3**	**16.5**	**16.7**	**17.1**	**17.4**	**17.7**	**17.9**	**18.2**	**18.3**	**18.3**	**18.1**
of which	EU-15	13.7	13.9	14.1	14.4	14.8	15.0	15.3	15.5	15.7	15.9	15.9	15.7
	EU-12	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.5	2.4	2.4
Imports		2.4	2.6	2.5	2.5	2.7	2.9	3.1	3.3	3.3	3.4	3.1	2.7
Exports		0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6
Beginning stocks		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Ending stocks		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 10 Total vegetable oils market projections for the EU, 2009-2020 (mio t)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production		**14.2**	**14.1**	**14.5**	**14.8**	**15.0**	**15.2**	**15.4**	**15.6**	**15.8**	**16.0**	**16.2**	**16.5**
of which	EU-15	11.9	11.7	12.2	12.4	12.5	12.7	12.9	13.0	13.2	13.4	13.6	13.8
	EU-12	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.7
Consumption		**23.5**	**23.8**	**24.2**	**24.6**	**25.2**	**25.7**	**26.2**	**26.6**	**27.0**	**27.3**	**27.4**	**27.3**
of which	EU-15	20.8	21.2	21.5	21.9	22.4	22.9	23.4	23.7	24.1	24.3	24.4	24.3
	EU-12	2.6	2.7	2.7	2.7	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.0
of which bioenergy		8.9	9.1	9.5	9.9	10.4	10.8	11.4	11.7	12.1	12.3	12.4	12.1
Imports		9.9	10.3	10.4	10.5	11.0	11.3	11.8	12.1	12.4	12.5	12.3	12.0
Exports		0.9	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Beginning stocks		1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Ending stocks		1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 11 Area under arable crops in the EU, 2009-2020 (mio ha)

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cereals		**58.5**	**56.3**	**57.7**	**57.1**	**57.4**	**57.4**	**57.6**	**57.8**	**57.9**	**58.0**	**58.2**	**58.3**
of which	EU-15	35.5	34.3	35.1	34.8	34.9	34.9	35.0	35.1	35.2	35.3	35.4	35.4
	EU-12	23.1	22.0	22.5	22.3	22.5	22.5	22.6	22.7	22.7	22.8	22.9	22.9
Soft wheat		22.9	23.0	23.8	23.3	23.5	23.4	23.5	23.7	23.8	23.8	23.9	24.0
Durum wheat		2.8	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Barley		13.9	12.4	12.8	12.8	12.8	12.8	12.8	12.7	12.7	12.7	12.7	12.7
Maize		8.4	8.1	8.1	8.3	8.4	8.5	8.6	8.7	8.8	9.0	9.1	9.2
Rye		2.8	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5
Other cereals		7.7	7.3	7.4	7.3	7.3	7.3	7.3	7.2	7.2	7.2	7.2	7.1
Oilseeds		**10.8**	**10.9**	**10.8**	**10.9**	**10.9**	**11.0**	**11.0**	**11.0**	**11.0**	**11.0**	**11.1**	**11.1**
of which	EU-15	6.0	5.9	5.9	6.0	5.9	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	EU-12	4.8	5.0	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Rapeseed		6.5	6.9	6.9	7.0	7.0	7.1	7.1	7.1	7.2	7.2	7.3	7.3
Sunseed		3.9	3.7	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.4	3.4	3.4
Soyabeans		0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4
Sugar beet		**1.5**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.3**	**1.3**
Protein crops		**0.9**	**1.1**	**1.1**	**1.1**	**1.1**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Total selected arable crops		**71.8**	**69.8**	**71.0**	**70.5**	**70.7**	**70.8**	**71.0**	**71.2**	**71.3**	**71.4**	**71.6**	**71.6**
Total utilized agricultural area		**188.8**	**188.3**	**187.7**	**187.2**	**186.6**	**186.1**	**185.5**	**185.0**	**184.4**	**183.9**	**183.3**	**182.8**

Note: years refer to campaign years (e.g. 2009 refers to the marketing period of the Summer 2009 harvest, i.e. July 2009 to June 2010)

Table A 12 Beef and veal market projections for the EU, 2009–2020 ('000 t cwe)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gross Indigenous Production	**7 995**	**7 956**	**7 745**	**7 594**	**7 659**	**7 791**	**7 750**	**7 647**	**7 529**	**7 492**	**7 445**	**7 425**
of which EU15	7 149	7 124	6 951	6 818	6 874	6 990	6 966	6 888	6 789	6 759	6 718	6 701
of which EU12	847	833	794	775	784	801	784	758	740	733	727	724
Imports of live animals	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Exports of live animals	**61**	**89**	**88**	**84**	**80**	**77**	**75**	**73**	**71**	**69**	**66**	**64**
Net Production	**7 936**	**7 868**	**7 657**	**7 510**	**7 579**	**7 714**	**7 675**	**7 574**	**7 458**	**7 424**	**7 379**	**7 361**
Imports (meat)	**428**	**438**	**473**	**507**	**545**	**560**	**558**	**574**	**592**	**602**	**614**	**619**
Exports (meat)	**124**	**136**	**127**	**119**	**113**	**112**	**108**	**100**	**95**	**90**	**84**	**78**
Consumption	**8 240**	**8 151**	**8 055**	**7 957**	**7 997**	**8 086**	**8 060**	**8 014**	**7 939**	**7 925**	**7 906**	**7 899**
of which EU15	7 657	7 568	7 499	7 402	7 427	7 506	7 482	7 440	7 369	7 355	7 335	7 326
of which EU12	583	583	556	556	569	580	578	574	571	571	570	572
per capita consumption (kg)	**16.55**	**16.35**	**15.96**	**15.69**	**15.87**	**16.11**	**15.99**	**15.80**	**15.58**	**15.50**	**15.42**	**15.37**
of which EU15	19.42	19.09	18.83	18.50	18.48	18.60	18.47	18.30	18.06	17.96	17.86	17.79
of which EU12	5.64	5.65	5.39	5.39	5.53	5.63	5.62	5.59	5.56	5.57	5.57	5.60

Table A 13 Pig meat market projections for the EU, 2009–2020 ('000 t cwe)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gross Indigenous Production	**22 186**	**22 333**	**21 836**	**22 491**	**23 060**	**23 062**	**22 880**	**23 083**	**23 455**	**23 508**	**23 455**	**23 725**
of which EU15	18 836	18 976	18 609	19 170	19 680	19 736	19 638	19 825	20 154	20 235	20 228	20 466
of which EU12	3 350	3 356	3 227	3 322	3 380	3 326	3 242	3 257	3 301	3 273	3 227	3 260
Imports of live animals	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Exports of live animals	**120**	**79**	**81**	**67**	**67**	**67**	**67**	**67**	**67**	**66**	**66**	**66**
Net Production	**22 066**	**22 255**	**21 756**	**22 425**	**22 994**	**22 995**	**22 813**	**23 016**	**23 388**	**23 442**	**23 389**	**23 659**
Imports (meat)	**39**	**37**	**35**	**41**	**44**	**41**	**41**	**41**	**41**	**42**	**41**	**41**
Exports (meat)	**1 538**	**1 657**	**1 641**	**1 570**	**1 509**	**1 407**	**1 321**	**1 271**	**1 252**	**1 214**	**1 195**	**1 185**
Consumption	**20 600**	**20 445**	**20 150**	**20 896**	**21 439**	**21 610**	**21 533**	**21 730**	**22 001**	**22 029**	**22 033**	**22 265**
of which EU15	16 333	16 217	15 973	16 651	17 137	17 299	17 226	17 420	17 667	17 695	17 700	17 909
of which EU12	4 267	4 228	4 177	4 246	4 302	4 311	4 307	4 311	4 334	4 334	4 334	4 355
per capita consumption (kg)	**41.39**	**40.92**	**40.18**	**41.52**	**42.46**	**42.66**	**42.39**	**42.66**	**43.08**	**43.03**	**42.95**	**43.31**
of which EU15	41.41	40.91	40.10	41.61	42.64	42.87	42.52	42.84	43.30	43.22	43.10	43.48
of which EU12	41.29	40.94	40.49	41.18	41.75	41.87	41.87	41.95	42.22	42.27	42.32	42.60

Table A 14 Poultry meat market projections for the EU, 2009–2020 ('000 t cwe)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gross Indigenous Production	**11 663**	**11 646**	**11 922**	**11 996**	**12 058**	**12 116**	**12 181**	**12 256**	**12 352**	**12 387**	**12 448**	**12 466**
of which EU15	8 939	8 932	9 145	9 209	9 256	9 298	9 345	9 399	9 476	9 498	9 570	9 582
of which EU12	2 724	2 714	2 777	2 786	2 803	2 818	2 836	2 856	2 876	2 888	2 878	2 884
Imports of live animals	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Exports of live animals	**7**	**7**	**8**	**8**	**8**	**8**	**8**	**8**	**7**	**7**	**7**	**7**
Net Production	**11 657**	**11 639**	**11 915**	**11 989**	**12 052**	**12 109**	**12 174**	**12 249**	**12 346**	**12 380**	**12 442**	**12 460**
Imports (meat)	**849**	**814**	**796**	**794**	**815**	**811**	**829**	**845**	**856**	**871**	**880**	**891**
Exports (meat)	**940**	**878**	**966**	**951**	**908**	**889**	**844**	**810**	**790**	**761**	**768**	**736**
Consumption	**11 572**	**11 584**	**11 753**	**11 832**	**11 970**	**12 057**	**12 204**	**12 338**	**12 464**	**12 559**	**12 630**	**12 707**
of which EU15	8 896	8 916	9 047	9 103	9 226	9 296	9 437	9 560	9 676	9 762	9 824	9 894
of which EU12	2 677	2 668	2 706	2 729	2 744	2 761	2 767	2 777	2 789	2 797	2 806	2 813
per capita consumption (kg)	**23.25**	**23.18**	**23.44**	**23.51**	**23.71**	**23.80**	**24.02**	**24.22**	**24.41**	**24.53**	**24.62**	**24.72**
of which EU15	22.56	22.49	22.71	22.75	22.96	23.03	23.29	23.51	23.71	23.85	23.92	24.02
of which EU12	25.90	25.84	26.23	26.47	26.63	26.82	26.90	27.03	27.17	27.28	27.40	27.51

Table A 15 Sheep and goat meat market projections for the EU, 2009–2020 ('000 t cwe)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gross Indigenous Production	**878**	**854**	**844**	**824**	**812**	**818**	**803**	**796**	**794**	**785**	**785**	**777**
of which EU15	791	771	762	742	732	738	725	718	716	707	707	700
of which EU12	87	82	82	82	80	80	79	78	78	77	77	77
Imports of live animals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Exports of live animals	**4**	**7**	**13**	**12**	**11**	**11**	**12**	**11**	**12**	**12**	**12**	**12**
Net Production	**874**	**847**	**831**	**812**	**800**	**807**	**791**	**785**	**782**	**773**	**772**	**765**
Imports (meat)	**271**	**266**	**262**	**269**	**271**	**266**	**266**	**272**	**265**	**265**	**259**	**259**
Exports (meat)	**8**	**11**	**17**	**16**	**16**	**15**	**16**	**15**	**16**	**16**	**16**	**16**
Consumption	**1 137**	**1 101**	**1 076**	**1 064**	**1 058**	**1 055**	**1 042**	**1 042**	**1 032**	**1 023**	**1 016**	**1 009**
of which EU15	1 057	1 023	998	986	982	979	966	967	957	950	943	936
of which EU12	80	79	78	78	76	76	76	75	74	74	74	73
per capita consumption (kg)	**2.28**	**2.20**	**2.15**	**2.11**	**2.10**	**2.08**	**2.05**	**2.04**	**2.02**	**2.00**	**1.98**	**1.96**
of which EU15	2.68	2.58	2.50	2.46	2.44	2.43	2.39	2.38	2.35	2.32	2.30	2.27
of which EU12	0.78	0.76	0.76	0.76	0.74	0.74	0.73	0.73	0.72	0.72	0.72	0.72

Table A 16 Aggregate meat market projections for the EU, 2009–2020 ('000 t cwe)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gross Indigenous Production	**42 722**	**42 789**	**42 346**	**42 904**	**43 590**	**43 787**	**43 614**	**43 781**	**44 130**	**44 171**	**44 133**	**44 394**
of which EU15	35 715	35 804	35 467	35 940	36 543	36 763	36 673	36 831	37 135	37 200	37 224	37 449
of which EU12	7 007	6 986	6 880	6 965	7 047	7 024	6 941	6 950	6 995	6 971	6 909	6 945
Imports of live animals	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Exports of live animals	**191**	**182**	**189**	**170**	**166**	**163**	**161**	**158**	**157**	**154**	**152**	**150**
Net Production	**42 533**	**42 609**	**42 159**	**42 736**	**43 425**	**43 626**	**43 454**	**43 624**	**43 974**	**44 019**	**43 982**	**44 245**
Imports (meat)	**1 586**	**1 554**	**1 566**	**1 612**	**1 674**	**1 678**	**1 694**	**1 732**	**1 754**	**1 780**	**1 794**	**1 810**
Exports (meat)	**2 610**	**2 683**	**2 750**	**2 655**	**2 545**	**2 424**	**2 289**	**2 197**	**2 153**	**2 080**	**2 063**	**2 015**
Consumption	**41 549**	**41 281**	**41 033**	**41 750**	**42 464**	**42 807**	**42 840**	**43 123**	**43 436**	**43 536**	**43 585**	**43 879**
of which EU15	33 942	33 723	33 516	34 141	34 773	35 080	35 111	35 386	35 669	35 761	35 802	36 065
of which EU12	7 607	7 558	7 517	7 609	7 691	7 727	7 728	7 737	7 767	7 775	7 783	7 814
per capita consumption (kg)	**83.48**	**82.65**	**81.72**	**82.84**	**84.13**	**84.67**	**84.46**	**84.72**	**85.08**	**85.07**	**84.96**	**85.36**
of which EU15	86.07	85.07	84.14	85.32	86.52	86.93	86.67	87.02	87.41	87.35	87.18	87.56
of which EU12	73.60	73.19	72.86	73.80	74.65	75.06	75.13	75.29	75.66	75.83	76.02	76.43
of which Beef and Veal meat	16.55	16.35	15.96	15.69	15.87	16.11	15.99	15.80	15.58	15.50	15.42	15.37
of which Sheep and Goat meat	2.28	2.20	2.15	2.11	2.10	2.08	2.05	2.04	2.02	2.00	1.98	1.96
of which Pig meat	41.39	40.92	40.18	41.52	42.46	42.66	42.39	42.66	43.08	43.03	42.95	43.31
of which Poultry meat	23.25	23.18	23.44	23.51	23.71	23.80	24.02	24.22	24.41	24.53	24.62	24.72

Table A 17 Milk production, deliveries and dairy herd in the EU, 2009–2020

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Dairy cows (mio heads)	**23.7**	**23.7**	**23.5**	**23.4**	**23.2**	**23.0**	**22.9**	**22.7**	**22.6**	**22.4**	**22.3**	**22.1**
of which EU15	17.9	18.0	17.9	17.8	17.7	17.6	17.6	17.5	17.5	17.4	17.4	17.3
of which EU12	5.8	5.7	5.6	5.6	5.5	5.3	5.3	5.2	5.1	5.0	4.9	4.8
Milk yield (kg/dairy cow)	**6 256**	**6 284**	**6 379**	**6 422**	**6 484**	**6 557**	**6 633**	**6 707**	**6 747**	**6 808**	**6 887**	**6 965**
of which EU15	6 738	6 773	6 865	6 900	6 947	7 007	7 091	7 155	7 170	7 215	7 281	7 347
of which EU12	4 780	4 744	4 837	4 893	4 980	5 069	5 100	5 180	5 283	5 380	5 487	5 591
Milk production (mio t)	**148.5**	**148.6**	**149.9**	**150.0**	**150.4**	**150.7**	**151.7**	**152.1**	**152.4**	**152.6**	**153.3**	**153.9**
of which EU15	120.6	121.6	122.7	122.8	123.2	123.7	124.8	125.4	125.7	125.9	126.4	127.0
of which EU12	27.9	27.1	27.3	27.2	27.2	27.1	26.8	26.7	26.7	26.8	26.8	26.9
Delivered to dairies (mio t)	**133.6**	**133.9**	**135.4**	**135.6**	**136.0**	**136.4**	**137.4**	**137.9**	**138.3**	**138.6**	**139.3**	**140.0**
of which EU15	115.3	116.4	117.6	117.8	118.2	118.6	119.8	120.4	120.7	120.8	121.4	122.0
of which EU12	18.3	17.5	17.8	17.8	17.8	17.8	17.6	17.6	17.7	17.8	17.9	18.0
On-farm use and direct sales (mio t)	**14.9**	**14.7**	**14.6**	**14.5**	**14.4**	**14.3**	**14.3**	**14.2**	**14.1**	**14.0**	**13.9**	**13.9**
of which EU15	5.3	5.2	5.1	5.1	5.1	5.1	5.1	5.0	5.0	5.0	5.0	5.0
of which EU12	9.6	9.5	9.5	9.4	9.4	9.3	9.2	9.1	9.1	9.0	8.9	8.9
Fat content of milk (in %)	**4.03**	**4.04**	**4.04**	**4.04**	**4.04**	**4.04**	**4.04**	**4.03**	**4.03**	**4.03**	**4.03**	**4.03**
Non-fat solid content of milk (in %)	**9.28**	**9.29**	**9.29**	**9.29**	**9.29**	**9.29**	**9.29**	**9.29**	**9.29**	**9.29**	**9.29**	**9.29**

Table A 18 Cheese market projections for the EU, 2009–2020 (‘000 t)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Production	**8 721**	**8 811**	**8 934**	**8 990**	**9 057**	**9 134**	**9 242**	**9 340**	**9 411**	**9 465**	**9 537**	**9 607**
of which EU15	7 583	7 685	7 766	7 797	7 847	7 909	7 993	8 066	8 116	8 150	8 199	8 249
of which EU12	1 138	1 126	1 167	1 193	1 210	1 225	1 250	1 274	1 294	1 315	1 337	1 359
Imports	**84**	**88**	**73**	**84**	**73**	**70**	**75**	**68**	**68**	**74**	**76**	**79**
Exports	**577**	**539**	**594**	**597**	**579**	**580**	**603**	**607**	**596**	**593**	**593**	**599**
Consumption	**8 228**	**8 360**	**8 413**	**8 476**	**8 551**	**8 624**	**8 714**	**8 802**	**8 882**	**8 945**	**9 019**	**9 088**
of which EU15	7 133	7 234	7 267	7 313	7 366	7 418	7 482	7 542	7 600	7 642	7 693	7 739
of which EU12	1 095	1 126	1 146	1 163	1 185	1 206	1 232	1 259	1 282	1 303	1 326	1 349
per capita consumption (kg)	**16.53**	**16.73**	**16.78**	**16.84**	**16.94**	**17.03**	**17.15**	**17.28**	**17.39**	**17.47**	**17.58**	**17.68**
of which EU15	18.09	18.25	18.24	18.28	18.33	18.38	18.47	18.55	18.63	18.67	18.73	18.79
of which EU12	10.60	10.91	11.11	11.28	11.50	11.72	11.98	12.25	12.49	12.71	12.95	13.19

Table A 19 Butter market projections for the EU, 2009–2020 ('000 t)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Production	**2 083**	**2 016**	**2 057**	**2 054**	**2 053**	**2 049**	**2 073**	**2 075**	**2 064**	**2 065**	**2 071**	**2 088**
of which EU15	1 849	1 803	1 841	1 842	1 840	1 837	1 864	1 867	1 857	1 858	1 864	1 882
of which EU12	234	214	216	213	213	212	210	208	207	207	207	206
Imports	**62**	**38**	**38**	**40**	**38**	**39**	**40**	**40**	**40**	**41**	**40**	**40**
Exports	**148**	**146**	**134**	**113**	**85**	**91**	**107**	**109**	**102**	**98**	**99**	**101**
Consumption	**2 001**	**1 984**	**1 981**	**1 989**	**1 990**	**1 992**	**1 999**	**2 003**	**2 008**	**2 008**	**2 012**	**2 016**
of which EU15	1 803	1 792	1 792	1 799	1 800	1 802	1 809	1 812	1 817	1 817	1 820	1 824
of which EU12	199	192	189	190	190	190	190	190	191	191	191	192
per capita consumption (kg)	**4.02**	**3.97**	**3.95**	**3.95**	**3.94**	**3.93**	**3.94**	**3.93**	**3.93**	**3.92**	**3.92**	**3.92**
of which EU15	4.57	4.52	4.50	4.50	4.48	4.47	4.47	4.46	4.45	4.44	4.43	4.43
of which EU12	1.92	1.86	1.83	1.84	1.84	1.84	1.85	1.85	1.86	1.86	1.87	1.88
Ending Stocks	**115**	**40**	**20**	**12**	**28**	**32**	**40**	**44**	**39**	**38**	**38**	**50**
of which private	38	38	20	12	28	32	40	44	39	38	38	50
of which intervention	77	2	0	0	0	0	0	0	0	0	0	0

Table A 20 SMP market projections for the EU, 2009–2020 ('000 t)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Production	**976**	**886**	**860**	**800**	**780**	**767**	**805**	**794**	**778**	**765**	**759**	**756**
of which EU15	813	765	745	690	674	667	708	701	691	682	680	680
of which EU12	162	121	115	111	106	100	97	92	87	83	80	76
Imports	**6**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Exports	**230**	**273**	**264**	**223**	**199**	**192**	**192**	**190**	**175**	**175**	**177**	**178**
Consumption	**647**	**647**	**645**	**640**	**631**	**622**	**625**	**615**	**605**	**594**	**587**	**580**
of which EU15	571	572	570	565	556	547	550	539	530	519	512	505
of which EU12	75	76	75	75	75	75	75	75	75	75	75	75
Ending Stocks	**278**	**246**	**199**	**140**	**93**	**49**	**39**	**31**	**32**	**31**	**29**	**31**
of which private	20	60	60	61	74	49	39	31	32	31	29	31
of which intervention	258	186	139	79	19	0	0	0	0	0	0	0

Table A 21 WMP market projections for the EU, 2009–2020 ('000 t)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Production	**790**	**785**	**781**	**794**	**792**	**792**	**801**	**804**	**803**	**798**	**803**	**796**
of which EU15	736	734	730	739	738	738	746	750	748	744	748	741
of which EU12	54	51	51	55	54	54	54	54	55	55	55	54
Imports	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Exports	**456**	**451**	**437**	**442**	**440**	**442**	**450**	**451**	**448**	**446**	**452**	**446**
Consumption	**335**	**336**	**346**	**353**	**353**	**351**	**353**	**356**	**357**	**355**	**353**	**352**
of which EU15	299	301	309	316	316	314	316	319	320	318	316	316
of which EU12	36	34	37	37	37	37	37	37	37	37	37	37

Table A 22 Biofuels market projections for the EU, 2009–2020 (billion litres)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Usable production	**15.3**	**15.9**	**16.5**	**17.0**	**18.2**	**20.0**	**22.3**	**24.4**	**26.3**	**28.3**	**30.9**	**34.2**
of which Ethanol	5.7	6.1	6.3	6.4	7.1	8.4	10.0	11.5	12.7	13.9	15.4	17.2
of which 2nd generation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.8	1.6	3.0
Biodiesel	9.6	9.8	10.2	10.6	11.1	11.6	12.2	12.9	13.6	14.4	15.5	17.1
of which 2nd generation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.1	2.1	4.0
Consumption	**17.1**	**18.8**	**20.1**	**22.8**	**25.2**	**28.3**	**31.5**	**34.7**	**37.3**	**39.8**	**41.6**	**42.7**
Ethanol	7.1	7.8	9.1	11.1	12.5	13.8	15.5	17.9	19.8	21.5	22.1	21.8
Biodiesel	10.0	11.1	11.0	11.7	12.7	14.5	16.0	16.8	17.5	18.4	19.5	20.9
other use of ethanol	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Energy share	2.3	3.1	3.4	4.0	4.7	5.5	6.2	6.8	7.3	7.8	8.2	8.5
Ethanol	2.3	2.6	3.3	4.3	5.0	5.6	6.5	7.8	8.7	9.6	9.9	9.8
Biodiesel	4.1	4.4	4.4	4.6	4.9	5.5	6.0	6.3	6.6	6.9	7.3	7.9
Net trade	**-1.9**	**-2.9**	**-3.6**	**-5.8**	**-6.9**	**-8.3**	**-9.3**	**-10.3**	**-11.0**	**-11.6**	**-10.7**	**-8.4**
Ethanol	-1.4	-1.7	-2.8	-4.7	-5.4	-5.4	-5.5	-6.4	-7.1	-7.6	-6.7	-4.6
Biodiesel	-0.5	-1.3	-0.8	-1.1	-1.5	-2.9	-3.8	-3.9	-3.9	-4.0	-4.0	-3.8

PART II Scenarios: Quantitative analysis of uncertainties

8 Introduction - baseline projections and uncertainties

The outlook for EU agricultural markets and income presented in Part I of the publication (the baseline) is an overview of longer term prospects based on a certain set of assumptions (described in Chapter 1) regarding the future economic, market and policy environment. In addition, the baseline considers normal weather conditions, no disruptions linked to animal health related concerns as well as steady demand and yield trends. As such, the baseline projections depict rather smooth market developments, while in reality markets tend to move along a more volatile path as observed in the past and particularly over recent years.

The drivers of volatility can be linked to the uncertainties described in Chapter 7. Among these issues, the economic outlook faces a particularly high uncertainty as regards the length and path of economic recovery. Downside risks remain on the agenda, such as the existing global economic and financial imbalances that could further trigger disruptive exchange-rate developments and the use of trade-distorting policy measures in some countries cannot be ruled out. Alterations of the economic situation could change agricultural market projections also with their impact on asset values, access to credit, energy prices and demand prospects. Apart from macroeconomic aspects, there are other factors that can have far reaching implications for the future pattern of EU agricultural markets, such as,the path of technological change and future climatic conditions.

In our previous publications, uncertainties were dealt with in a more qualitative way, but given the relevance of the current projections it has been decided to address a selection of these issues on a quantitative basis in the form of sensitivity and scenario analyses. Part II of the publication provides an analysis of how alternative assumptions regarding drivers of demand and supply, the general macroeconomic setting and prospects for biofuel markets could influence the projected agricultural market developments.

The analysis has been carried out at the IPTS[5] by using three different agricultural sector models, namely AGLINK-COSIMO[6], CAPRI and ESIM.

Chapter 9 presents analyses on supply drivers. The analysis considers alternative assumptions regarding crop yield growth rates in the EU and worldwide in order to demonstrate the effects of different paths of technological progress and possible implications of climate change. Another supply oriented analysis addresses the impacts of changes in specific input costs.

The analysis on demand drivers in Chapter 10 focuses on the sensitivity of EU agricultural markets to demand growth coming from emerging economies.

Chapter 11 analyses how different macroeconomic settings in selected countries can influence the EU agricultural markets. Based on historical growth rates, the developed scenarios assume slower and faster economic growth with correlated adjustments of the GDP deflator and exchange rates, combined with lower and higher crude oil prices respectively.

Chapter 12 presents the effects of higher and lower crude oil prices and discusses the impacts on the EU biofuel and feedstock markets.

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5 Contributing authors include Stephan Hubertus Gay, Aikaterini Kavallari as well as Maria Blanco Fonseca, Alison Burrell, Thomas Fellmann, Sophie Helaine, Martin Henseler, Mihály Himics and Robert M'barek.

6 The results of any analysis based on the use of the AGLINK-COSIMO model by parties outside the OECD are not endorsed by the Secretariat, and the Secretariat cannot be held responsible for them. It is therefore inappropriate for outside users to suggest or to infer that these results or interpretations based on them can in any way be attributed to the OECD Secretariat or to the Member countries of the Organisation.

9 Uncertainties of supply

The baseline presented in Part I of this report features limited growth for the main crop yields. While yield growth rates remain positive for almost all crops, a significant slowdown in the annual growth rate has been observed over the past decade and this lower growth is expected to continue over the baseline projection.

Technological improvement (as a result of research, innovation, investments, training, etc) has a strong bearing on yield developments[7]. However there is uncertainty on whether over the next decade yield will grow faster or slower than expected in the baseline.

To quantify the relevance of the uncertainty on yield growth, two scenarios were chosen using assumptions of a higher and a lower yield growth compared to the baseline, in the first case applied for Europe only (chapter 9.1 Yield growth in the EU) and in the second case applied for Europe and the rest of the world (chapter 9.2 Yield growth worldwide).

Input cost developments in the baseline are linked to the general macroeconomic assumptions, in terms of inflation, exchange rates and crude oil price developments, and simulation results on feed prices and production volumes. Input costs have increased substantially over recent years and despite a downward correction in the wake of the economic crisis, are expected to maintain the upward trend in the current baseline, limiting the potential for production growth in a number of sectors and dampening the effect of increasing commodity prices on producers' margins and agricultural income in general.

Chapter 9.3 aims to address the impact that an alternative input cost trend might have on the present baseline projections, by considering higher and lower energy and maintenance costs for EU agricultural production.

9.1 Yield growth in the EU

In the scenario addressing yield growth for Europe only, the technological improvement was captured from both the input side and the output side of the agricultural activities. At the EU level the necessary data are available to follow this approach and to adjust input costs and crop yields according to the technological progress. In the scenarios addressing the uncertainty on yield growth worldwide, a more general approach was taken - that is easily extendable for the regions outside Europe – by creating a direct link between technological progress rate and yields.

9.1.1 Scenario setting

The present scenario was carried out using the CAPRI model, assuming higher and lower yield growth developments for Europe.

In the scenario, cereal yields were assumed to be 5% and oilseed yields by 10% above/below the respective baseline levels in 2020 for the EU27 member states, Norway, West-Balkan countries and Turkey. The assumption on higher crop yields is induced by a higher rate of technological progress which also implies an increase in the efficiency of directly yield dependent inputs. The more efficient input use was taken into account assuming an increased annual saving in yield dependent input use: 0.75% for cereals and 1% for oilseeds in volume terms.

As the two simulations on higher and lower yield growth produced rather symmetric results, only those obtained from the higher yield growth scenario are presented below.

[7] Weather remains the main driver for crop yields, affecting all phases of plant development from sowing to harvesting. This effect is neutralised in the baseline with the assumption of "normal weather conditions" that limits any weather related supply volatility over the outlook period.

9.1.2 Results

Impact on prices

The impact of an increase in cereal yields by 5% and oilseed yields by 10% is an almost 4% decline in the aggregate EU cereal price and a more pronounced drop in the aggregate EU oilseed price, above 7% (Table 9.1).

Table 9.1 Impact on EU producer prices for cereals and oilseeds, Higher yield scenario

	Higher yield scenario
	Percentage change
Cereals	**-3.9**
Soft Wheat	-4.0
Rye and meslin	-4.3
Barley	-4.2
Oats	-4.1
Grain maize	-4.0
Other cereals	-3.4
Oilseeds	**-7.3**
Rape seed	-7.4
Sunflower seed	-7.3
Soybeans	-4.9

The impact of higher crop yields and resulting lower crop prices can also be seen on the livestock sector where producer prices show a similar direction of change but to a lesser extent (Table 9.2). The lower crop prices imply lower feed costs for the livestock sector, increasing profitability that induces higher supply, leading ultimately to lower producer prices.

Table 9.2 Impact on EU producer prices for meats and milk, Higher yield scenario

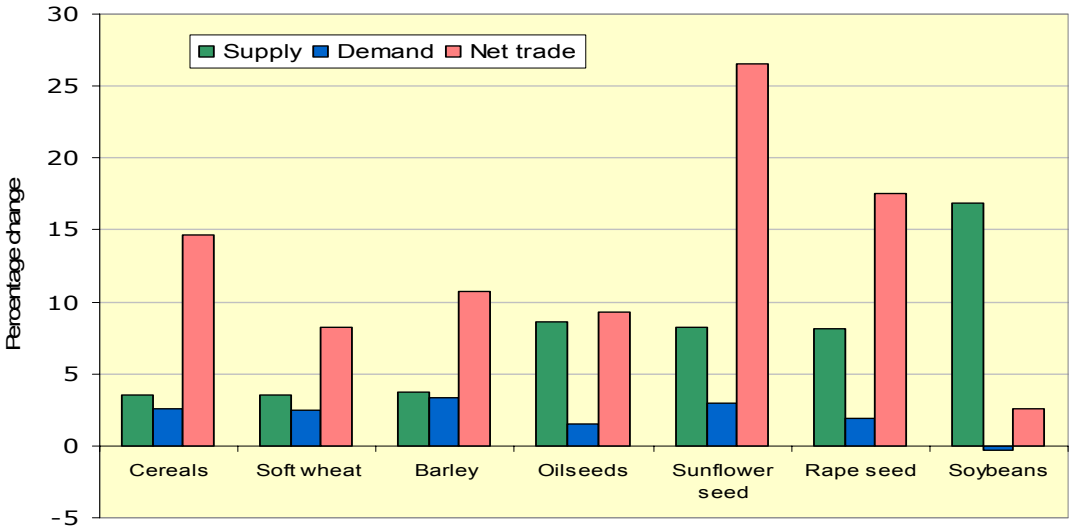
	Higher yield scenario
	Percentage change
Pork meat	-0.9
Beef	-0.8
Poultry meat	-1.2
Sheep and goat meat	-0.9
Cow and buffalo milk	-0.5

Impact on commodity markets

The EU agricultural markets try to adjust to the higher supply in the crop sectors. As stated earlier, a higher supply leads to a decrease in producer prices for cereals and oilseeds, which in turn increases the demand for these commodities. While the potential for EU demand growth is limited (generally below +5%), the lower prices improve the export competitiveness of the EU on world markets, leading to an improvement in the EU net trade position as shown on Graph 9.1. It has to be noted that for oilseeds the EU remains in a net import position, so the reported improvement below refers to decreasing net imports.

In the livestock sectors, the supply of meat and dairy products are slightly increasing (below 0.5%) in parallel with an even smaller increase in demand.

Graph 9.1 Impact on EU cereal and oilseed commodity balances, Higher yield scenario

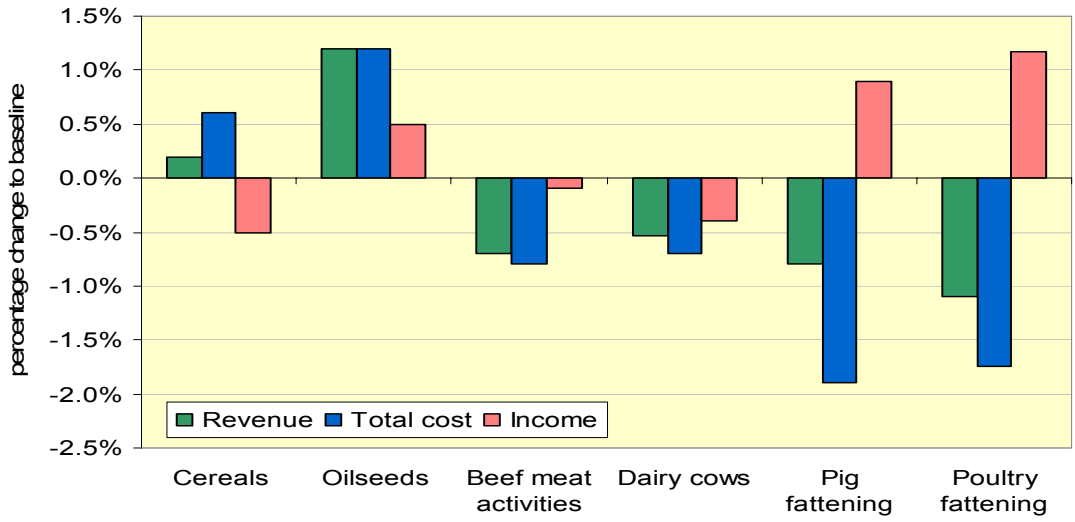


Impact on income and overall welfare

In spite of the higher yields, total agricultural income remains stable. This is due to the fact that the return from a higher output is offset by lower producer prices and higher production costs.

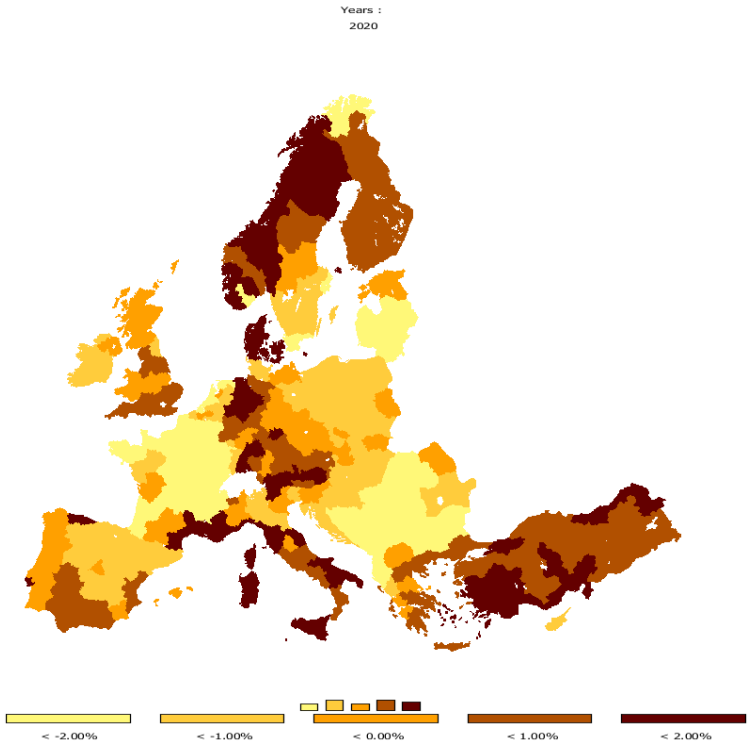
In the cereal and oilseed sectors, the positive effect of higher yields on revenues per hectare is levelled off by increasing costs. On average, the impact on crop sector income remains below 0.5%, with a slight decline on the cereal sector but a small increase on the oilseed sector (Graph 9.2). The most pronounced impact can be observed in the livestock sector, where the income for both the pig and the poultry sectors increases by around 1% (thus remaining very modest) as producers gain on lower feed prices. Average feed costs for the non-ruminants shrink by 2.6%, inducing a modest increase in income.

Graph 9.2 Impact on the income position of selected EU sectors, Higher yield scenario



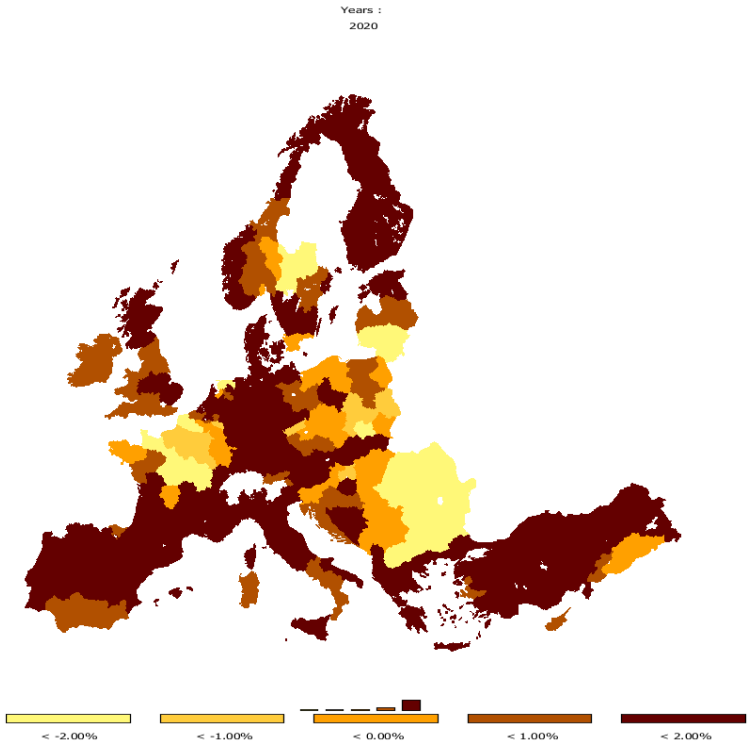
The impact on income differs across regions, as presented for cereals and oilseeds in the following maps (at NUTS2 level). In the case of cereal production the magnitude of change on income ranges from -2% to 2% (see Map 9.1).

Map 9.1 **Regional impact on the income from cereal production, Higher yield scenario**



In the oilseed sector, while the magnitude of changes is similar to that of cereals, the regional pattern is substantially different, in line with the geographical distribution of crop production (see Map 9.2).

Map 9.2 **Regional impact on the income from oilseed production, Higher yield scenario**



While EU consumers benefit from the lower agricultural commodity prices, the overall impact of higher crop yields on total welfare is hardly noticeable. Total welfare displays a marginal gain below 0.02%.

Impact on land use

The relative competitiveness of the specific crop activities highly depends on the initial relationships between yields, prices, and costs. As a result, a substitution effect may take place which induces a different land allocation pattern. Total agricultural land use, however, remains stable, no significant changes in total land use can be observed.

Implications for the lower yield scenario

As indicated in the introduction to this section, the higher and lower yield scenarios produced rather symmetric results but with different directions. The results for the higher yield scenario presented above imply that in case of lower yield prospects, crop production would fall below the baseline level, leading to higher crop prices in the EU and a loss of competitiveness on the world markets. The net trade position would deteriorate for animal products as well, because higher feed costs would lead to lower meat production levels, particularly for poultry meat. On the other hand, the impact on agricultural income and the overall welfare would remain limited.

9.2 Yield growth worldwide

9.2.1 Scenario setting

In a second stage of the analysis of yield growth uncertainties, the assumptions on higher and lower yield growth trends was enlarged to cover global yield developments. The model used for this analysis (ESIM) addresses the yield changes by increasing the annual rates of technological progress. It is assumed that such a technological improvement would not be limited to Europe. The assumptions on cereal and oilseed yield variations remained identical to those in the previous scenario (in chapter 9.1), but in addition to Europe, they were introduced in all other geographical regions of the world). On the other hand, the assumptions were introduced only on technological progress and not the actual yield growth *per se*. This implies that the 5% change in technological progress does not lead to an equivalent 5% change in yields. This is mainly due to the negative effect that lower producer prices have on yields (farmers use less inputs when crop prices are low).

In this scenario, the 5% additional technological progress for cereals resulted in an increase of average EU cereal yields by 3.4% to 3.9% in comparison to the baseline (Table 9.3). For oilseeds the 10% higher technological progress implies a yield increase by around 8%.

Table 9.3 Impact of assumed technological progress on EU crop yields

in 2020	Soft wheat	Durum wheat	Barley	Grain maize	Rye	Other cereals	Silage maize	Rape seed	Soya seed	Sunflower seed
Technical progress	5%					10%				
Yield	3.6%	3.5%	3.8%	3.4%	3.6%	3.7%	3.9%	8.0%	7.6%	7.6%

It is to be underlined that the intermediate costs per hectare were kept constant, therefore no cost increase linked to the potentially higher price of seeds was taken into account. On the other hand, a yield increase linked to a higher technological progress is supposed to be achieved without using additional fertilisers or pesticides. The ESIM model was chosen for this scenario.

Similarly to the scenario in chapter 9.1, the impact of higher and lower yield growth rates were quite symmetric respective to the sign of the percentage change. Therefore only the results of an

increased technological progress, and thus higher yield growth, are presented below, in the form of a comparison against the baseline results for the year 2020.

9.2.2 Results

Impact on prices

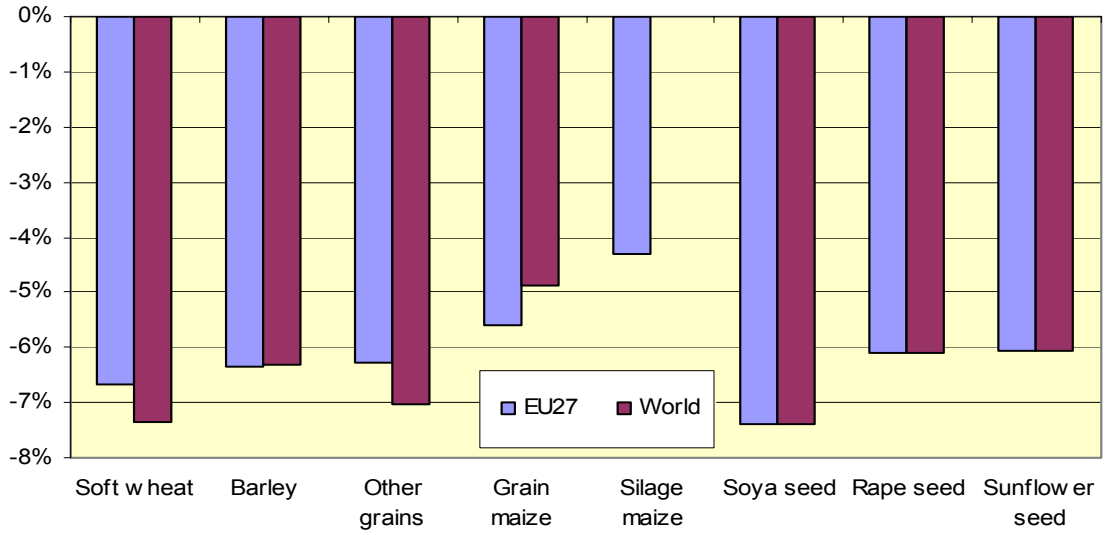
Given the increase in crop yields, the global supply of cereals and oilseeds increases driving commodity prices below the baseline level as illustrated in Graph 9.3.

The EU producer prices of soft wheat, barley and grain maize are below the 2020 baseline prices by 6.7%, 6.3% and 5.6% respectively. For sunflower seed and rape seed the price decline is slightly above 6% and for soya seed it is higher (-7.4%).

In this analysis, the price decline for cereals in the EU is more pronounced than the decrease under the earlier scenario (in chapter 9.1) assuming higher yield growth only in Europe. This comes as a result of a higher increase in overall global supply, leading to a more pronounced supply pressure on world markets and hence greater downward impact on world prices. The main effect comes indeed from the change in world prices transmitted to the EU market partially or totally depending on the commodity as shown in Graph 9.3.

In the meat sector the change of producer price in comparison to the baseline is linked to the impact on feed costs. For pork, poultry and laying hens, whose feed is based on grains, the feed cost index is about 5 percentage points smaller with an increased technological progress for crops in comparison to the baseline. For ruminants, the share of cereals and protein feed is less significant in the feed mix, therefore the feed cost decrease is more limited: from 2.0 to 3.3 percentage points below the baseline index.

Graph 9.3 Impact of an increase in technological progress on EU and world crop producer prices



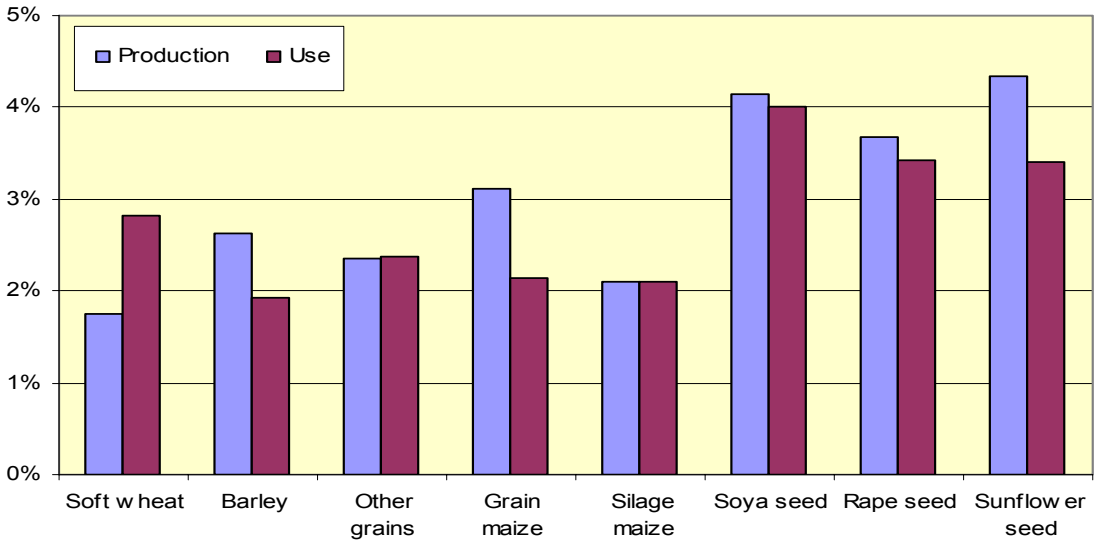
Impact on commodity markets

Increased technological progress results in changes of supply and use. Graph 9.4 presents the impact on EU supply and use in 2020 compared to the baseline. Driven by the higher technological progress, the supply of cereals is higher by 2%. Feed demand is the main area of increase in uses as human consumption remains stable in the scenario and seed demand decreases because of higher yields. In addition, EU soft wheat exports diminish due to a larger reduction in world price than in EU price and an increased use of wheat for biofuel production in Europe. Barley supply and exports increase since barley is not used for biofuel production and the increase in feed demand is limited

by the rather small increase in livestock production. Because of higher supply, corn imports are reduced while the use of corn for fodder and biofuel production rises.

For oilseeds, EU demand growth triggered by lower prices leads not only to a 3.9% increase in EU production but higher imports as well. The total use of oilseeds for feed and for processing is higher than in the baseline by 3.6%.

Graph 9.4 Impact of an increase in technological progress on EU supply and use of crops



In the livestock sector, the lower feed cost implies an increased competitiveness of pork and poultry on the world market and also provides these meats a comparative advantage against beef and sheep. However given that human demand for meat remains stable in the scenario and the prices of beef and sheep are driven down, there is little substitution between meats on the EU market. The most significant impact is indeed the increase in EU exports of pig meat. The impact on the milk sector is very limited.

9.3 Input costs

9.3.1 Scenario setting

In the following sensitivity analysis, the effects of alternative input costs on EU agricultural production are examined. To address this uncertainty, positive and negative changes were introduced in the CAPRI model for the energy and repair costs of agricultural production activities. Geographically, the changes were introduced inside Europe (EU27 member states, Norway, West-Balkan countries, Turkey) and are always meant as relative compared to the baseline figures.

The corresponding scenarios contained higher and lower input costs compared to the baseline figures, generally for all sectors and regions. Technically, a 10% shock was introduced on the energy and repair costs (see technical annex for more on how input costs are represented in CAPRI). The results show a symmetric pattern of changes under higher and lower input cost scenarios and hence, only the results under the higher input cost scenario are provided here. As the geographical resolution in this modelling exercise is at the NUTS 2 region, some selected regional results are also provided below.

9.3.2 Results

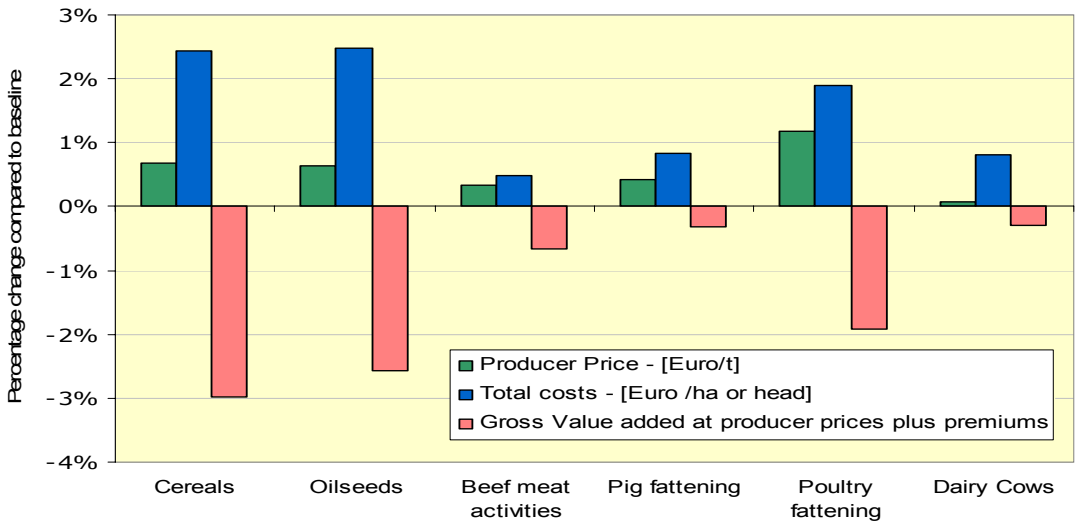
In the following paragraphs, changes in revenues, prices, welfare and trade balances under the higher input costs scenario is presented and analysed.

Impact on revenues

Introducing a positive shock on input costs has a direct negative effect on marginal revenues.

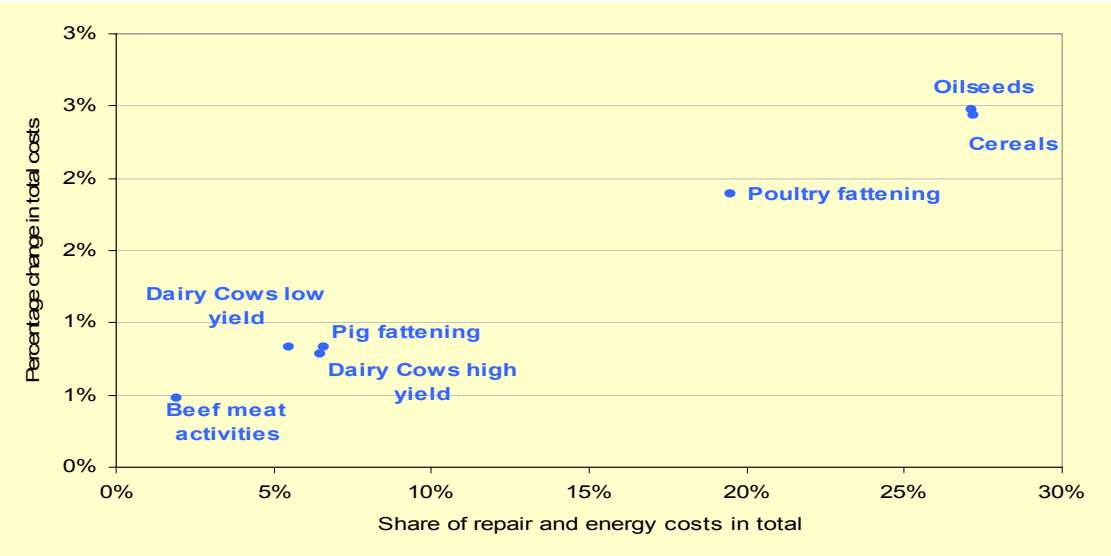
Gross value added[8], as a proxy for profitability in the sectors, is decreased due to the fact that the increase in input costs is clearly higher than the increase in producer prices (see Graph 9.5).

Graph 9.5 Impact on gross value added for selected EU sectors, higher input cost scenario



The share of energy and maintenance costs within total costs is different between the sectors. At the aggregated EU level, the shares for the average cereal and oilseed sectors are between 25% and 30%. The induced effect of the exogenous cost change on total costs is around 2.5%. For the animal sectors the share is much lower so the effect of the introduced shock on input costs is lower as well (see Graph 9.6[9]).

Graph 9.6 Impact on total costs for aggregated sectors in the EU, higher input cost scenario



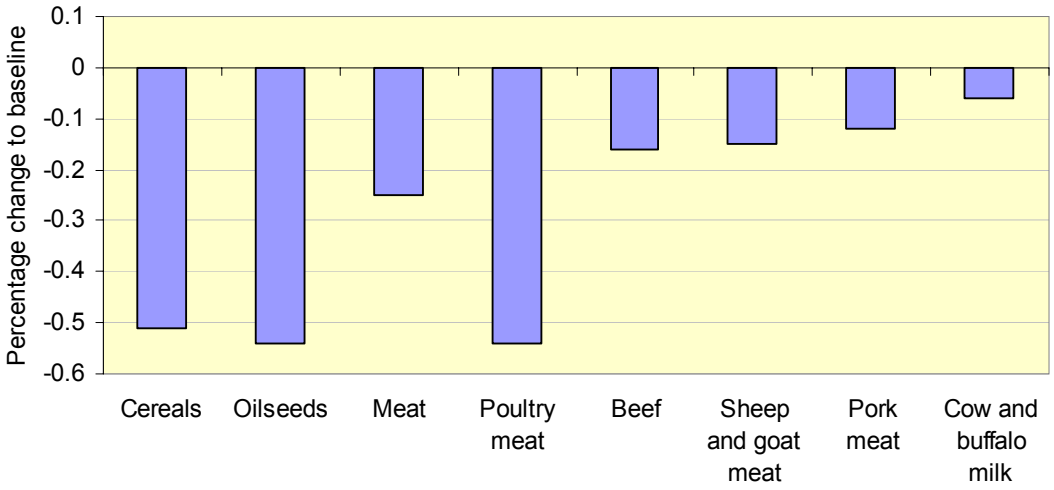
8 Gross value added = value of total output at producer prices with premiums, minus costs of total input use

9 As the proportion of the two technology variants can be different from the one in the baseline, the resulting difference in aggregated sector level energy- and maintenance costs can be slightly smaller/higher than 10%. Accordingly, the data points in the chart below (Graph 9.8) can deviate from the linear trend line.

Impact on prices

Decreasing profitability slightly drives down agricultural supply. The impact on supply however remains below 1% (Graph 9.7). Accordingly, land use patterns at the aggregated EU level remain stable.

Graph 9.7 Impact on agricultural supply in the EU, higher input cost scenario



As the supply is only slightly affected, and the demand side is relatively inelastic, producer prices remain stable, only a very small increase is observed (Table 9.4).

Table 9.4 Impact on EU producer prices, higher input cost scenario

	Percentage changes in Producer Price
Cereals	0.7%
Oilseeds	0.6%
Beef	0.3%
Pork meat	0.4%
Poultry meat	1.2%
Butter	0.3%
Cheese	0.1%
Fresh milk products	0.1%

Welfare effects

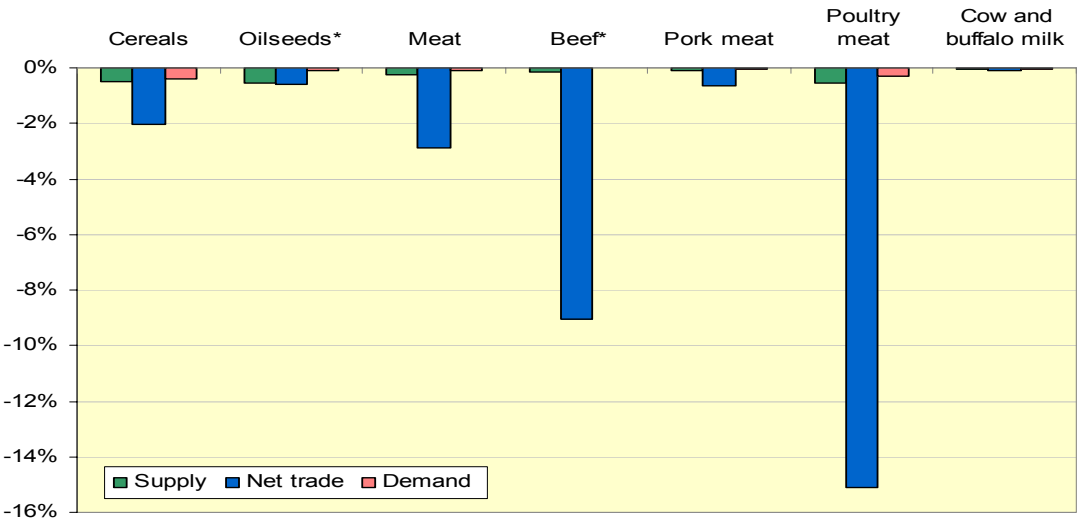
Total agricultural income decreases by about 1.4% at the EU27 level. The cost effect, therefore, overrides the price effect, i.e. income decreases due to the higher costs despite the increasing revenues (due to higher commodity prices).

Total welfare, in general, will decrease due to the increasing agricultural commodity prices. This will slightly drive human demand downwards. But, because the impact on agricultural commodity prices is relatively, these changes occur in a marginal scale (-0.05% change in total welfare).

Impact on commodity markets

As stated above, agricultural supply is shrinking, and the higher internal prices drive domestic demand down (Graph 9.8). At the same time, imports are slightly increased since world market prices have become relatively more competitive. For the exports the reverse applies; a small decrease in exported quantities takes place. As a result, the net trade position of the EU in the agricultural commodity markets is likely to worsen.

Graph 9.8 Impact on EU commodity balances, higher input cost scenario



Implications for the lower input cost scenario

As indicated in the introduction to this section, the higher and lower input cost scenarios produced rather symmetric results but with different directions. The results for the higher input cost scenario presented above imply that in case of lower input costs, EU agricultural production could slightly increase above the baseline level, leading to lower commodity prices in the EU and a gain in competitiveness on the world markets, leading to an improvement in the net trade position. While a slight increase in agricultural income takes place in this case, the impact on the overall welfare remains limited.

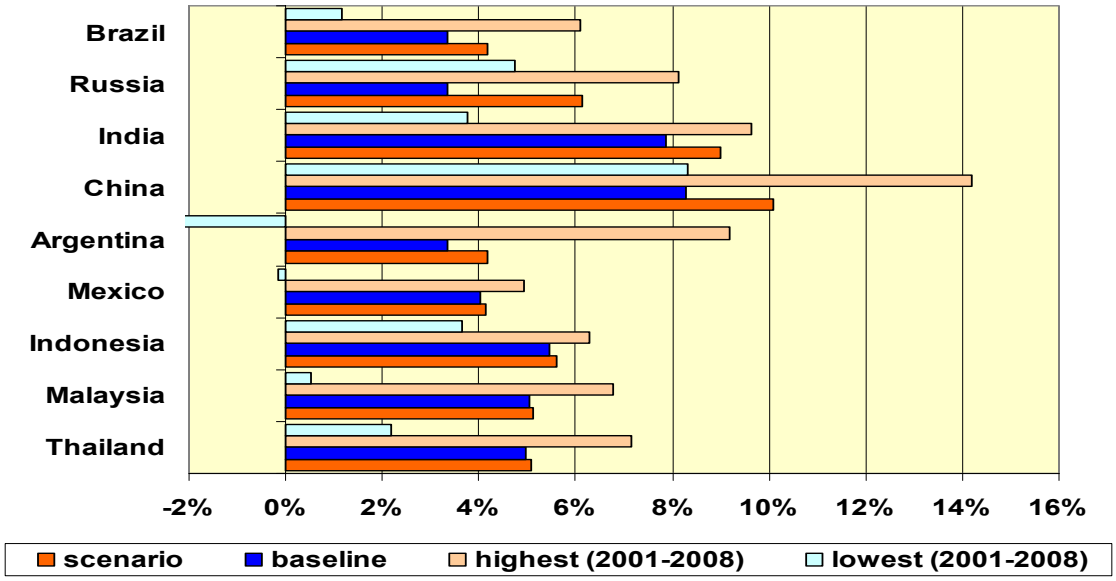
10 Uncertainties of demand

10.1 Introduction and scenario setting

Economic conditions and particularly economic growth influence food demand, which is one of the main driving factors for the demand side. Under ceteris paribus assumptions, one could expect that higher economic growth will result in growing demand and an increase in prices. Thus, changes in economic growth affect commodity balances and prices. However, and especially in the light of recent experiences, there is uncertainty in any projection of economic growth and consequently uncertainty of demand expectations.

In order to analyse the effects of a change of the economic growth assumptions for selected countries, a scenario that focuses on the developments in large emerging markets was run. The countries concerned are Brazil, Russia, India and China (also known as BRIC countries), as well as Argentina and Mexico for Latin America, and Indonesia, Malaysia and Thailand for South-East Asia. These countries have a combined population of 3.3 billion or close to half of world population. Some of these countries have experienced a fast rate of growth in the first decade of this century. The medium-term prospects discussed in the first part of this report assume continued growth in these countries albeit at a slightly lower rate than in the previous decade. In the scenario reported here, it is assumed that the growth rate will be higher than in the baseline and is set closer to the rate observed in the years before the recent recession. The following figure shows the growth rates assumed in this demand sensitivity scenario.

Graph 10.1 Scenario assumptions on GDP growth rates, demand scenario



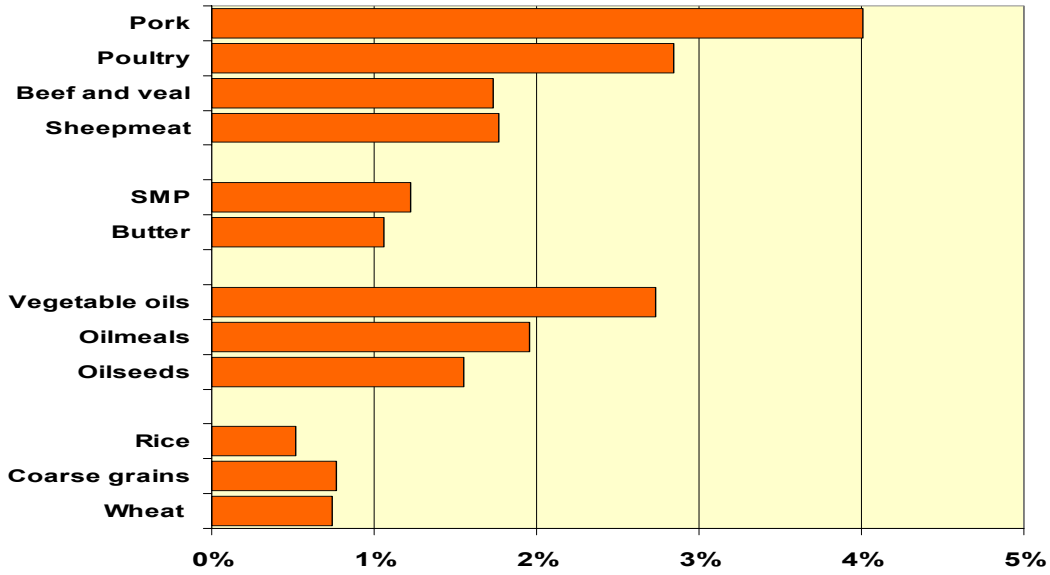
* note: In case of Argentina the lowest GDP growth rate was lower than minus 2%.

The figure illustrates that the selected scenario and the medium-term prospects are between the lowest and highest growth rates experienced during the years 2001 to 2008. In case of the BRIC countries and Argentina, the scenario is considerably more optimistic than the baseline with regard to economic growth. The assumed differential for the other countries is smaller, as the medium-term prospects are already rather positive compared with recent observations. This scenario is intended to illustrate the implications of higher demand growth resulting form plausible higher income growth than assumed in the baseline.

10.2 Results

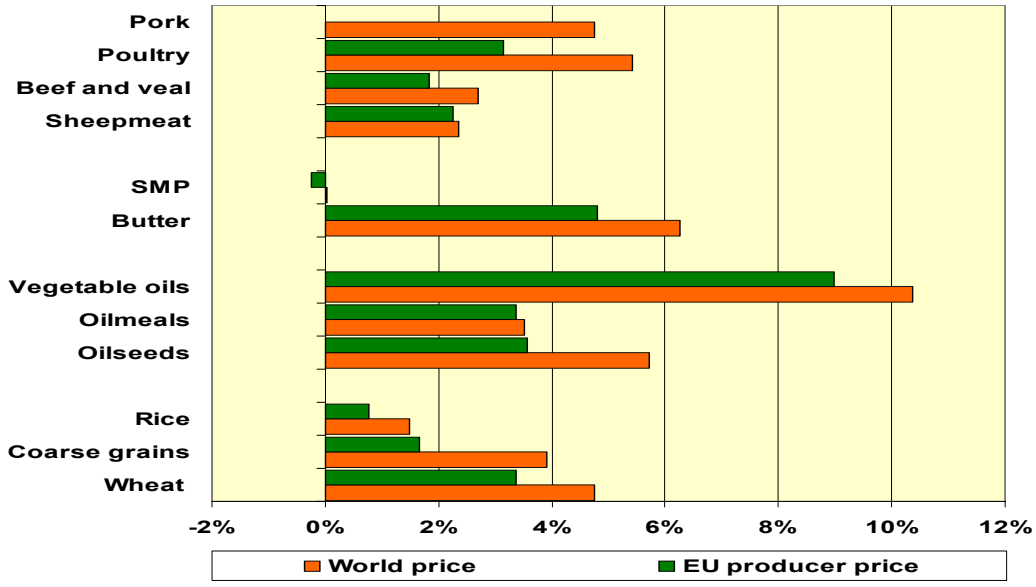
The results show that consumption in the respective countries expands substantially. Of recognisable magnitude is also the expansion of world consumption (Graph 10.2). For pork, poultry and vegetable oil the increase in world demand is larger than for the other major commodities as expected a priori.

Graph 10.2 Impact on world demand for selected commodities in 2020, demand scenario



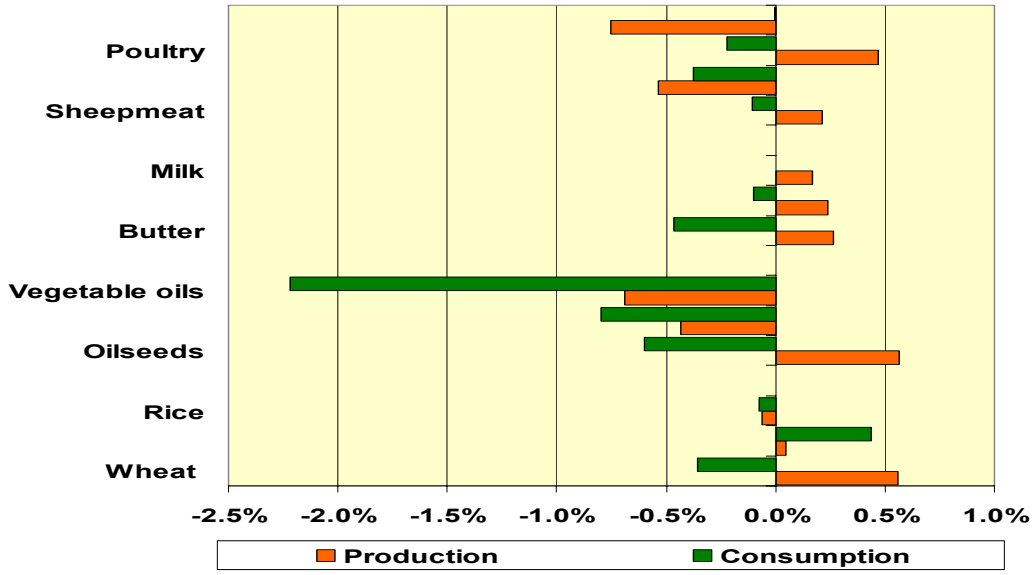
The increase in demand for major food commodities also implies an increase in commodity prices at the world level and, to a lower extent, in EU producer prices (Graph 10.3).

Graph 10.3 Impact on world prices and EU producer prices in 2020, demand scenario



In the case of butter and skim milk powder (SMP) the increase in butter prices is counteracted by a small decrease in SMP prices. For all commodities included, the changes in EU producer prices are smaller than on the world market. Consequently, demand and supply of commodities in the EU reacts to the price signals. These changes are generally small but nevertheless provide insight into the linkages in commodity markets (Graph 10.4).

Graph 10.4 Impact on EU production and consumption in 2020, demand scenario



Production of agricultural commodities in the EU generally benefits from the increase in prices, whereas the consumption is curbed. With regard to consumption, the only exception among the commodities shown is coarse grains. This is mainly because of a smaller change in EU prices compared to the competing feed ingredients wheat and oilmeals. The largest changes in consumption occur in oilseeds and oilseed products due to the closer link to the world market caused by a considerable higher share of imports in overall EU demand. Production of arable crops in the EU generally benefits from the higher prices. The exception is rice where the prices increase the least and thus the relative competitiveness is reduced. Due to the strong reduction in demand for oilseed products, the oilseed crush declines which implies reduced production of vegetable oils and oilmeals in the EU. Especially the strong increase in butter prices drives the increase in milk production, which also results in an increase in SMP even though its EU price declines as higher production is faced with limited demand potential. The production outlook for meats is mixed and depends to an extent on the relative change between meat prices and prices for the main feed ingredients. In the case of poultry and to a lesser extent also sheepmeat, the producer price increase in the EU exceeds the producer price increase in coarse grains, the main feed component.

In summary, the scenario shows that the increase in demand in the main emerging markets has notable effects on EU prices but the magnitude of the effects on domestic production and consumption is limited. Only a small share of the EU domestic consumption is sourced from the world market and this makes the EU domestic market to be less sensitive to changes in world markets.

11 Uncertainties of macroeconomic drivers

11.1 Introduction and scenario setting

The baseline depicted in section I is bound to a specific set of macroeconomic assumptions. However, global financial turbulences and the general economic downturn have made any projection on macroeconomic developments subject to growing uncertainty. The recent economic crisis in both developed and developing countries showed how consumer confidence can be sharply reversed, affecting the expectations on domestic demand, which in turn increases the uncertainty of existing macroeconomic projections. In parallel, expectations on global economic recovery are diverging from those projected as, for example, particular emerging economies like China and Brazil are growing at different rates from those expected some months ago. A further uncertainty concerns the trend in the crude oil price, which is influenced not only by demand and supply of crude oil but also expectations regarding future movements in exchange rates, financial markets and weather conditions.

A different macroeconomic setting is expected to have impacts on the world commodity markets and hence influence the EU markets. Against this background, this section explores how sensitive EU commodity markets are to different macroeconomic assumptions. Two scenarios are developed, one assuming slow economic growth and the other assuming a fast economic growth, based on historical growth rates.

The growth rates of 2006 have been used as those for a year characterised by high global economic growth and growth rates of 2001 as one that experienced an economic downturn. The changed assumptions have been implemented for developments of GDP growth, GDP deflator and exchange rate for the EU, USA, China and Brazil.

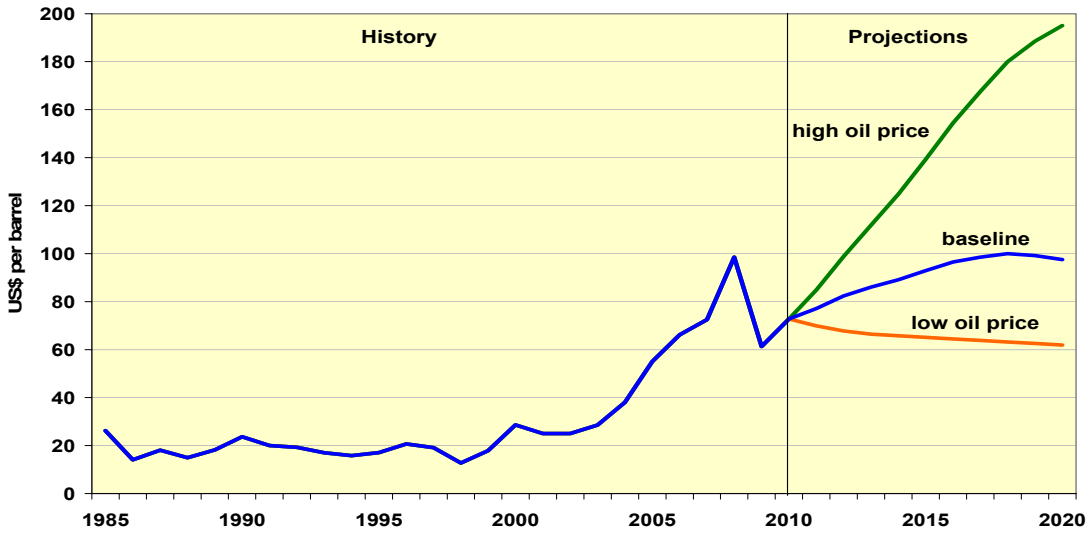
Regarding crude oil prices, the growth rates giving a low and a high crude oil price reflect assumptions on developments in future demand and production decisions by the Organisation of the Petroleum Exporting Countries (OPEC) as well as on the production decisions of non-OPEC countries. These assumptions are based on the low and high oil price scenarios as reported by US EIA (2010) [10] (Graph 11.1).

The reader should note that these two scenarios by no means should be considered as two alternative paths for assumptions on macroeconomic developments. Instead they should be seen as two rather extreme cases that encompass a broad range of possible economic developments and thereby enable us to analyse a variety of future and uncertain macroeconomic conditions in comparison to the baseline projections.

The following section presents the results focusing on how the relative changes on world markets can affect the EU trade position and further the domestic prices.

[10] US Energy Information Administration (EIA) (2010): Annual Energy Outlook 2010 with Projections to 2035, DOE/EIA-0383(2010), Energy Information Administration, Washington DC.

Graph 11.1 Scenario assumptions on crude oil price , macro scenario



Source: adapted from US EIA (2010)

11.2 Results

Impact on world market prices

The assumptions on faster and slower economic growth with correlated adjustments of the GDP deflator and exchange rates as well as of a higher and a lower crude oil price result in a different picture of the world commodity markets.

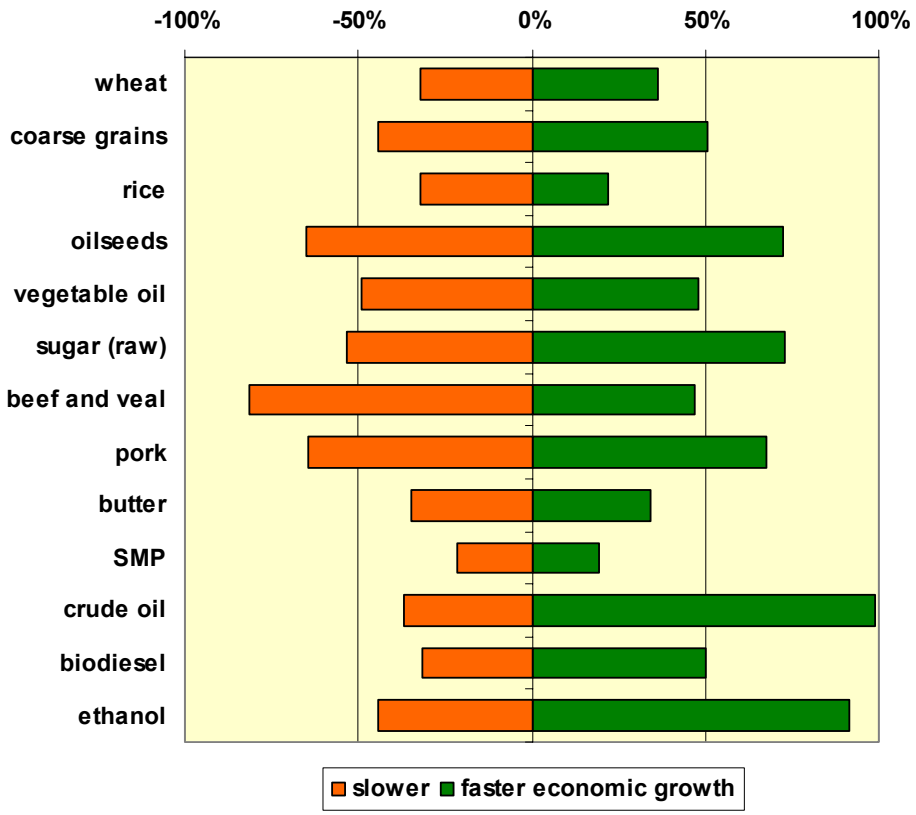
One would expect that under ceteris paribus and in a static framework faster economic growth would result in expansion of consumption and hence higher prices. On the other side, higher crude oil prices lead to higher production costs, which in turn drive up commodity prices but also biofuel consumption (biofuel competes in use with fossil fuels) and this should imply higher demand for feedstock and hence again, higher prices for agricultural commodities. Exchange rate changes also affect the import and export behaviour of traders. Appreciation of the EUR, for example, should make it more expensive to export and cheaper to import and the static effects on demand and supply should lead to higher world market prices. In a dynamic framework the expectations are slightly different, since the static equilibrium points serve as starting points for further loops.

Graph 11.2 shows the effects on the world market prices by the end of the simulation period. The scenario of faster economic growth plus high crude oil price results in higher world market prices, with the size of the increase varying among the commodity markets. The effects are driven by the simulated changes of the crude oil price and are the highest for ethanol (increase of +92%). The prices for biodiesel do not increase as much as those of ethanol and this because the lower energy content of ethanol means more ethanol is needed to replace a given amount of biodiesel. The price effects on crops are the result of the higher demand and, in particular, their use as biofuels as well as of the higher input costs. The price increases in livestock markets are smaller and are not only due to the effects in the crop markets but also due to the exchange rate developments. However, the reaction in the pig meat sector is more sensitive than that of beef because of the developments in the Chinese market i.e. increase of domestic consumption combined with increase of imports and decrease of exports (China's pork consumption is much higher than that of beef).

The effects of the slower economic growth-lower crude oil price scenario are, as expected, in the opposite direction. In this scenario, the changes are driven not only by the assumed crude oil price developments but also by the assumed depreciation of the local currencies. The oilseed market is again more reactive, while the notable decrease of beef and veal world market prices is traced back

to developments in South America. In particular, Brazilian beef and veal exports increase and are driven by depreciation of the Brazilian Real, while domestic consumption decreases because of the slower economic growth. The increase of the Brazilian exports is three times higher than the increase of the production, which is driven by lower input costs resulting from lower crude oil prices.

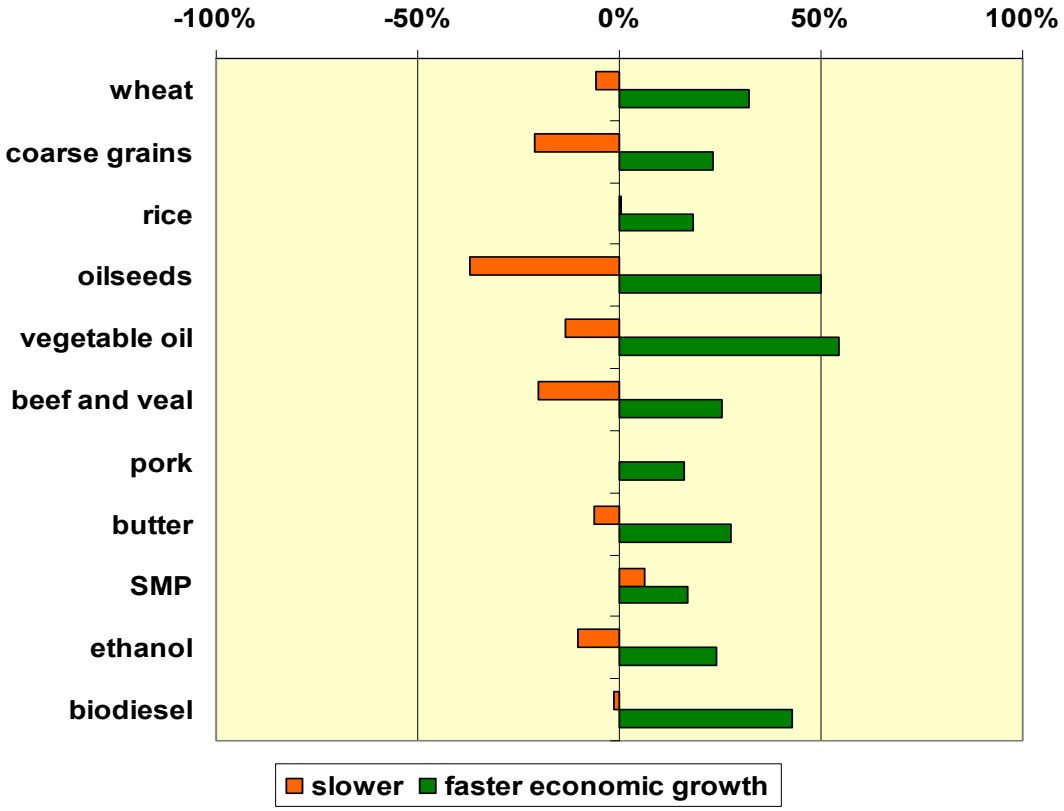
Graph 11.2 Impact on world market prices in 2020, macro scenario



Impact on EU markets

Graph 11.3 shows the impact on the EU producer prices in 2020 compared to the baseline. The prices develop in the same direction as the world markets and are driven by the crude oil prices and the exchange rate depreciation (appreciation). In the EU, the biodiesel market is more sensitive to the simulated changes because of the higher share of biodiesel production and this is in turn reflected into the higher differences of the vegetable oil and oilseed prices. Because throughout the simulations the baseline assumptions on the biofuel blending target are maintained unchanged, the price differences due to slower economic growth plus low crude oil prices scenario are limited.

Graph 11.3 Impact on EU producer price in 2020, macro scenario



Graph 11.4 and Graph 11.5 show the impact on the EU net trade for crops and livestock commodities in 2020 respectively. The effects are higher for those commodities where the trade volumes are higher in the baseline.

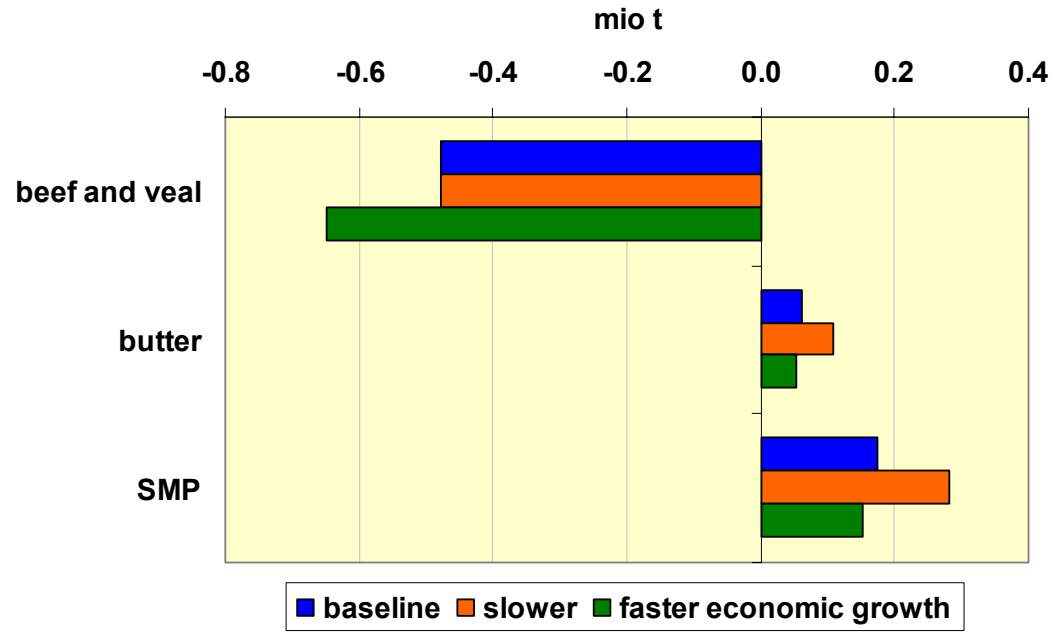
The faster economic growth plus higher crude oil prices scenario results in a decrease in EU net exports and an increase in net imports. It becomes clear that these reactions are driven by the higher crude oil price and EUR appreciation and not by the faster economic growth. The reader should note that the shocks on the EU GDP growth rate are not as high as on the GDP growth rate of emerging markets, such as Brazil or China and this is also a reason why the expected effects of economic growth are not evident for the EU. Moreover the reactions of the biofuel markets are due to the binding blending target and affect the developments in feedstock markets. In particular for the oilseed block, because more vegetable oil is imported, less imported oilseeds are needed to meet the EU consumption needs for vegetable oil.

The net trade effects in the scenario of slower economic growth plus low crude oil prices follow the opposite direction i.e the EU net exports increase and net imports decrease. The reverse effect is observed in the oilseed block and this because of the biofuel market, where the blending target is assumed to be binding (same assumption as in the baseline). Under this scenario the EU becomes a net exporter of coarse grains and this is the result of the reduced use of coarse grains as feedstock for the production of biofuels resulting into excess supply of coarse grains.

Graph 11.4 Impact on EU net trade for crops in 2020, macro scenario

Note: the net trade effects are given as exports – imports; negative (positive) values imply net imports (exports)

Graph 11.5 Impact on EU net trade for meat and dairy products in 2020, macro scenario



Note: the net trade effects are given as exports – imports; negative (positive) values imply net imports (exports)

To sum up, the exercise shows that different macroeconomic setting results in a different picture of agricultural markets worldwide. The magnitude of the effects depends on the importance of the individual countries as worldwide trade partners, where the macroeconomic development alters. In the EU prevailing are the effects because of changed crude oil price and EUR appreciation (or depreciation). The markets that react more sensitive are those that are traded the most such as vegetable oil and in general the oilseeds block.

12 Uncertainties of biofuels

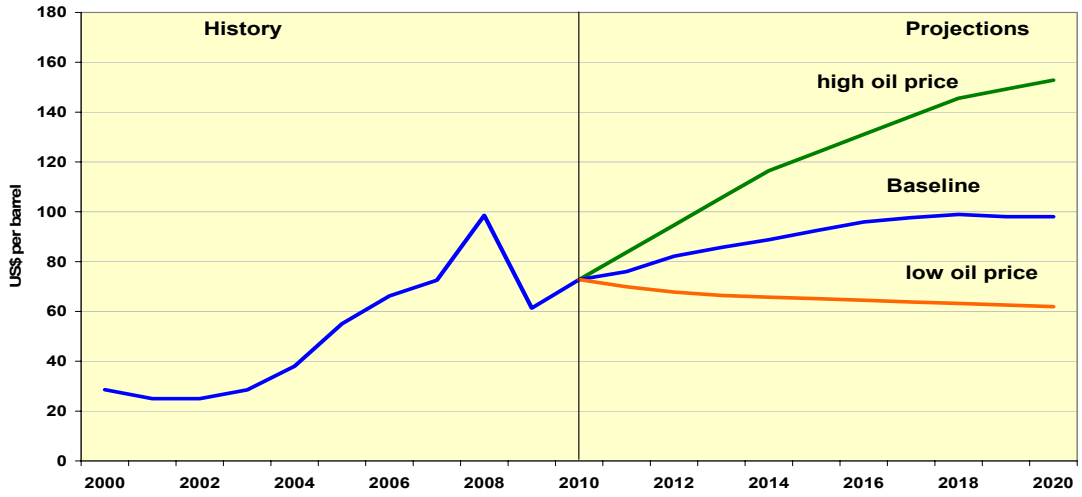
12.1 Introduction and scenario setting

The trend in crude oil prices affects agricultural markets, as it not only impacts on input costs, such as costs for fertilizers, fuel, electricity etc., but it also directly influences the demand for biofuels and hence the demand for feedstock. The recent price volatility of crude oil prices, combined with unclear decisions by crude oil producing countries on the volume of oil they intend to release to the market, create considerable uncertainty regarding the path crude oil prices will follow in the future.

Against this background, this section presents a sensitivity analysis on crude oil price and discusses its impacts on the biofuel and on the feedstock markets. The growth rates chosen for low and high crude oil price reflect assumptions about developments in future demand and production decisions by the Organisation of the Petroleum Exporting Countries (OPEC), as well as on the production decisions of non-OPEC countries. By 2020 crude oil price in the high oil price scenario is set to be of US$152/barrel and in the low oil price scenario of US$62/barrel. EU total fuel consumption, which is also an exogenous variable in the model, has been adjusted (increased or decreased by 15%) in order to match the assumed differences of the crude oil price (lower or higher price). The baseline assumption regarding the EU biofuel target remains unchanged. That is, the percentage of total transport fuel that must come from biofuel stays the same in all variants, but since total fuel use varies with the crude oil price, this means that the volumes of biofuel consumed by the EU transport sector changes in proportion to total fuel demand. It also implies that 2nd generation biofuel supply and use are as set in the baseline.

The reader should note that these two scenarios should by no means be considered as two alternative possible price paths but should be seen as two rather extreme cases that encompass a broad range of possible future crude oil paths.

Graph 12.1 Scenario assumptions on crude oil price, biofuel scenario



Source: adapted from US EIA (2010) [11]

The section below presents the results, focusing on how the relative changes on world markets affect the EU trade position in agricultural commodities and on the effects on the EU biofuel trade and feedstock markets.

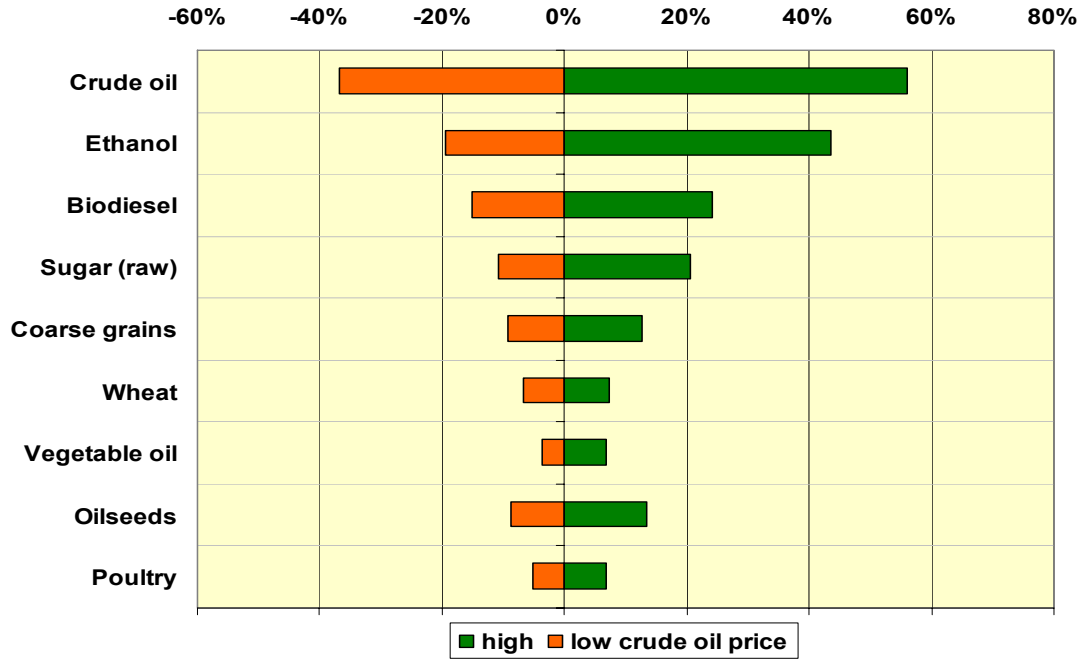
[11] US Energy Information Administration (EIA) (2010): Annual Energy Outlook 2010 with Projections to 2035, DOE/EIA-0383(2010), Energy Information Administration, Washington DC.

12.2 Results

Impact on world market prices

Graph 12.2 shows the effects on world market prices of biofuels and selected agricultural commodities. The crude oil price difference is clearly reflected in the biofuel markets, where the prices move into the same direction as the crude oil price. However, the size of those price differences is not the same, which is explained by the different energy content of ethanol and biodiesel. Because ethanol has a lower energy content, more ethanol needs to be consumed in order to give the same energy effect as biodiesel and this alone makes the ethanol market more reactive to changes of competitive markets (such as fossil fuel consumption and crude oil prices as it is here the case). The reaction of feedstock prices is more limited, since the demand for them as feedstocks is somewhat dampened by and is also linked to the increase (decrease) of input costs due to the higher (lower) crude oil prices.

Graph 12.2 Impact on world prices in 2020, biofuel scenario



Impact on the EU markets

Differences between the scenarios in world prices imply considerable differences in EU biofuel and agricultural markets. Table 12.1 summarises the effects on the EU biofuel markets for each of the extreme scenarios, in comparison with the baseline.

Table 12.1 Overview of the impact in EU biofuel markets, biofuel scenario

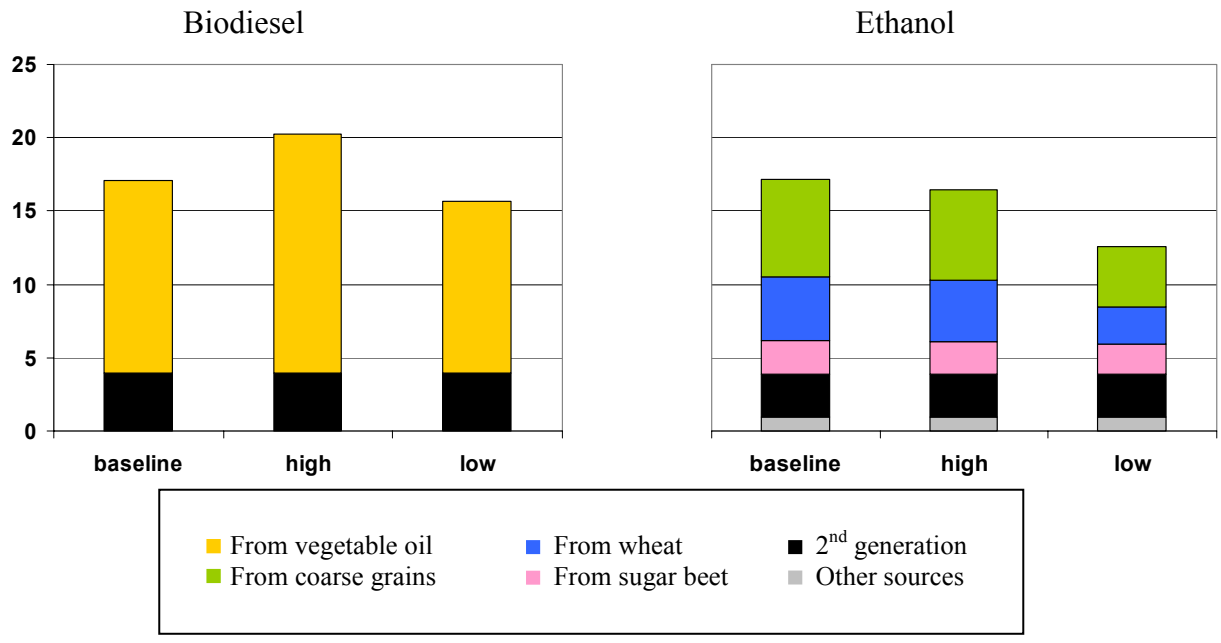
	High crude oil price	Low crude oil price
Fuel transport use	↓	↑
Biodiesel		
consumption (use for transport)	↑	↓
production	↑	↓
share of energy from biodiesel	↑	↓
Ethanol		
consumption (use for transport)	↓	↑
production	↓	↓
share of energy from ethanol	↓	↑

For biodiesel, the increase of the world market price in the scenario of high crude oil price results in increased production and consumption in the EU. The higher biodiesel production results in increased demand for vegetable oil in the EU, covered by imported vegetable oil. The reactions of the EU biodiesel and vegetable oil markets in the event of a lower crude oil price follow the opposite direction.

In the high oil price scenario, total fuel consumption, and hence also the biofuel quantities required to fulfil the target are lower. However due to the higher oil price the target will be overfilled in the EU by 2020, and the total biofuel share increases to 9.7% of total transport energy consumption (8.2% in case of ethanol and 10.5% in case of biodiesel). Moreover, since ethanol becomes relatively more expensive than biodiesel in comparison to the baseline, consumers substitute biodiesel for ethanol, to the extent that biodiesel consumption increases although total biofuel use is lower. In 2020, the contribution of ethanol to total fuel energy sourced from biofuels is just 28%. On the production side, biodiesel producers react to the higher price and higher domestic demand by increasing production. Even so, the greater domestic biodiesel production is not sufficient to satisfy internal demand, so biodiesel imports rise slightly. For ethanol, producers cannot take advantage of the higher prices so quickly because ethanol plants need time to adjust production capacity and in any case domestic demand is much weaker. Nonetheless, given the fall in domestic demand, the EU becomes a small net exporter of ethanol, whereas in the baseline the EU was importing 4.6 million tones.

In the low oil price scenario, the fall in ethanol prices is greater than that of biodiesel, and hence there is a significant shift in consumption in favour of ethanol, which now supplies (by 2020) 51% of the energy content coming from biofuels. Because of the capacity sluggishness in ethanol production already referred to, the much higher domestic demand cannot be met entirely by higher EU production, and net imports increase from 4.6 million tonnes in the baseline to around 19.6 million tonnes. This means that 60% of the ethanol consumed in the EU has to be imported. Biodiesel consumption and production both fall, as do biodiesel imports, in such a way that the imported content of total biodiesel domestic consumption is the same as under the high oil price scenario (namely, 18%).

Graph 12.3 EU biofuel production by feedstock in 2020 (in billion litres) , biofuel scenario



Graph 12.3 illustrates the changes in biodiesel and ethanol production in the EU by feedstock. Biodiesel production reacts faster to crude oil price changes than ethanol. This is because of the shorter time lag biodiesel refineries adjust to price signals compared to ethanol production plants as well as because of the importance biodiesel has in the EU (its share compared to ethanol is higher). The difference in the proportions of coarse grains and wheat used to produce 1st generation ethanol is equal among the two scenarios.

It is recalled that biodiesel is assumed to be produced only from vegetable oil, while ethanol can come from sugar and cereals. The feedstock can be either produced domestically (in the EU) or be imported and in the case of vegetable oil the crushing can take place either in the EU (from domestic or imported oilseed) or outside the EU. The latter means that vegetable oil can be imported directly.

The changes in feedstock biofuel use are covered by changed imports and exports. The consumption and the production of the feedstocks remain almost stable.

The land use effects in the EU as well as worldwide are limited. The differences of the harvested area for all feedstocks are +/- 1% for each of wheat, coarse grains, sugar beet and oilseeds. Worldwide it is only the world sugar cane area that reacts more sensitive to crude oil price changes, but again the deviations from the baseline are not higher than - 3% and +7% for low and high crude oil price respectively.