PBL Netherlands Environmental Assessment Agency

REFORM OF THE EU COMMON AGRICULTURAL POLICY: ENVIRONMENTAL IMPACTS IN DEVELOPING COUNTRIES

BACKGROUND STUDIES

Reform of the EU Common Agricultural Policy: Environmental impacts in developing countries

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Environmental impacts in developing countries

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Corresponding author
maria.witmer@pbl.nl

Authors
M. van den Berg, S. van der Esch, M.C.H. Witmer, K.P. Overmars & A.G. Prins

Supervisor
A.E.M. de Hollander

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English-language editing Findings
Derek Middleton
Annemieke Righart

Graphics
PBL Beeldredactie

Production coordination
PBL Publishers

Layout
Martin Middelburg, VijfKeerBlauw

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Summary

The EU Common Agricultural Policy (CAP) will be reformed for the period 2014–2020. As policy coherence for development is a guiding principle for EU policies, one of the touchstones of the CAP reform is whether it is in line with the objectives of development cooperation. The Dutch Government also highlights the importance of taking policy coherence with development objectives into consideration during the CAP reform process.

This report contains an analysis of the potential environmental impacts of the proposed CAP reform in developing countries and of the opportunities for a CAP reform that is more coherent with sustainable agricultural production in developing countries. The assessment is based on a literature review, results of agro-economic-environmental modelling and on interviews with experts in European agriculture, environment and development.

According to the reform proposals, released in October 2011[1], the current two-pillar structure will be maintained. The total level of direct payments – the main instrument under pillar I – will remain largely unchanged, but there will be a new, so-called greening component, added to the conditions for payment. In Pillar II the rural development concept of multi-annual schemes designed and co-financed by Member States or regions will remain, but with newly defined focus on six priorities: knowledge transfer and innovation, competitiveness, food chains and risk management, ecosystems, climate, and economic development. Other proposed changes to existing CAP instruments include extended options for coupled payments to all major agricultural commodities, the ending of quotas for milk and sugar (both Pillar I), and the introduction of an enhanced risk management toolkit (Pillar II).

The CAP reform will hardly change the environmental impacts of the CAP in developing countries

The three main causalities between the EU Common Agricultural Policy and the environment in developing countries are not expected to be influenced much by the proposed CAP reform. These causalities are: (i) via global markets, in which a change in EU production levels affects global market prices and demand for exports from developing countries, inducing changes in land use or production practices affecting the environment; (ii) CAP funded innovations that could influence production methods in developing countries; and (iii) direct environmental effects of EU agriculture outside the EU, particularly greenhouse gas emissions.

The CAP reform will have little impact on the global agricultural market

The proposed reform of direct payments will probably have some effect on agricultural production volumes in Europe, but hardly any effect on developing countries. The proposed changes in market measures are expected to have minor effects on developing countries, with the possible exception of the abolition of sugar quotas. The

proposed risk management toolkit in the rural development schemes has the potential to create new market distortions, but it is expected that budgets spent on this toolkit will be limited, and therefore any effects will also be limited.

Opportunities for dissemination of CAP funded innovations to developing countries are ignored
The CAP proposal includes measures to support applied agricultural research and development in the EU, but does not mention any possibility to facilitate the dissemination of knowledge and technologies to developing countries.

Greening of the CAP will not reduce greenhouse gas emissions
It is expected that the proposed greening of the CAP will not lead to a significant reduction in global greenhouse gas emissions or limitation of climate change. The small reduction in greenhouse gas emissions from reduced or adapted agricultural activities within the EU will probably be offset by an increase in emissions outside the EU from increased production for export to the EU.

Other EU policies and autonomous developments have more influence on the environment in developing countries than those strictly related to the CAP

Agriculture is influenced not only by the CAP, but also by other EU policies, most notably trade policy. Changes in trade measures, such as import tariffs, are projected to have far greater impacts on the EU agricultural sector, on world prices for agricultural products and on agricultural production in non-EU countries than an isolated CAP reform. Intellectual property rights and patents on crop varieties may affect the environment and agricultural biodiversity in developing countries. Incentives for bioenergy production will cause agricultural expansion, thus increasing the pressure on biodiversity and increasing greenhouse gas emissions.

Population and welfare growth, increasing food consumption and agricultural production in developing countries will have far greater consequences for the environment and biodiversity in these countries than the reform of the CAP.

The CAP reform could be more coherent with development goals

To be coherent with development objectives, the CAP reform would need to exploit potential synergies, rather than merely applying a 'do no harm' principle, and take account of the broader context of trade and food security policies:

- CAP measures should not exacerbate the price volatility of food products, something that could be the case with the remaining export subsidies and market intervention mechanisms, as well as with the proposed enhanced risk management toolkit.
- Direct payments could be better targeted at delivering public goods, such as reducing greenhouse gas emissions and increasing agricultural biodiversity. This would also reduce their market-distorting effects.
- Phasing out coupled support, instead of extending its scope as proposed, would improve market opportunities for some developing countries.
- CAP funding for innovation and technology development – for example, for soil conservation and restoration, and for good practices in agricultural water management – could also be made available to contribute to such activities in developing countries within the framework of the proposed European Innovation Partnership on Agricultural Productivity and Sustainability.
- A monitoring and reporting mechanism could be set up to identify the impacts of CAP measures on developing countries in the broader context of other EU policies, as proposed by Klavert et al.[2] and by the Dutch Government[3]. This would provide feedback and a basis for evidence-based decision-making on adjusting CAP measures when harmful consequences for developing countries are documented.

Introduction

Policy context: CAP reform and policy coherence for development

The European Common Agricultural Policy (CAP) will be reformed for the period 2014–2020. The objectives of the reform are to respond to the future challenges facing European agriculture and rural areas and to provide 'viable food production, sustainable management of natural resources and climate action, and balanced territorial development'.[4] On 18 November 2010 the Commission published a communication that sketched the reform path, challenges and objectives of the future CAP.[5] Formal proposals for new legislation and the corresponding impact assessment were issued on 12 October 2011. These proposals have to be approved by the Agriculture and Fisheries Council and by the European Parliament. According to the proposed timeline, the CAP legislation will be finalised in spring 2013, after the adoption of the 2014–2020 Multiannual Financial Framework in December 2012, and come into force on 1 January 2014.

Policy coherence for development is a basic principle of EU policies and therefore a touchstone of the CAP and its reform in 2014. The policy objectives of EU development cooperation are set out in the Treaty on the European Union (TEU articles 3 and 21)[6] and the Treaty on the Functioning of the European Union (TFEU, article 208).[7] The CAP is mentioned as an important policy in several policy documents issued by the Commission that deal with development objectives and policy coherence for development. For example, one of the targets in the Commission's Policy Coherence for Development Work Programme 2010–2013[8] is the preparation of a post-2013 CAP reform that respects global food security and development objectives. Also, the EU's Policy Framework for Food Security[9] states that 'Reform of the Common Agricultural Policy has enhanced coherence, and future reforms will continue to take global food security objectives into account.'

The Dutch Government has also stressed in letters to the House of Representatives[10] that the CAP should take policy coherence for development into consideration, pointing out the following:

- Food security, climate, energy, water and resource supply are global issues requiring a global response and consideration of the development opportunities of developing countries. The reform of the CAP should take this into account.
- Food security as a CAP objective should reflect the global issue of adequate food supply rather than the internal EU framing in the communication.
- Trade barriers for agricultural products should be reduced on a global scale to create an opportunity for agricultural development in developing countries. WTO negotiations should lead to a real reduction in tariffs and trade-distorting subsidies. Export subsidies should be completely phased out, irrespective of agreements in WTO negotiations.[11]
- Regular monitoring and evaluation of the external dimension of the CAP is advisable to ensure that the interests of developing countries are fully taken into account.

The Commission's EU Biodiversity Strategy to 2020[12] provides clear guidance on how changes to the CAP could contribute to mitigating biodiversity loss within Europe, but makes no mention of its effect outside EU borders.

The EC impact assessment on policy coherence for development is limited in scope and depth

The impact assessment on policy coherence for development (Annex 12 of the proposals) concludes that the proposals for CAP reform are in the spirit of continued market orientation in line with the EU's multilateral trade negotiations. It states that impacts on agriculture in developing countries will be further reduced, but does not substantiate this claim. The assessment highlights the removal of market distortions of past reforms, but does not attempt to quantify the effects of the current proposals on developing countries or analyse potential impacts of specific instruments on commodities, countries or different groups within countries. Furthermore, contrary to what is suggested in the introductory paragraphs, the impact assessment was made against a reference situation of 'do no (further) harm' without attempting to look into the potentials for synergy between the CAP reform and development goals.

Aim and scope of this study

The proposed reform of the CAP prompted the Directorate-General for International Cooperation (DGIS) of the Netherlands Ministry of Foreign Affairs to raise questions about the coherence of these proposals with development cooperation objectives. DGIS wanted to know what environmental impacts the proposed reform would have in developing countries and how the proposed reform could be made more coherent with the goal of sustainable agricultural production in these countries. In response, PBL Netherlands Environmental Assessment Agency (PBL) examined the possible environmental impacts of the proposed CAP reform in developing countries within the context of other drivers of change, especially demographic and economic growth and biofuel policies. In addition, PBL examined alternative approaches that could be more consistent with the objective of sustainable agricultural growth in

Table 1

Main changes to CAP instruments proposed by the European Commission that have potential external effects

Direct payments (72% of proposed budget, Pillar I)	Market measures (Pillar I)	Rural development (Pillar II)
• Convergence of direct payments across Member States • Green components: - 30% of Pillar I budget - ecological focus areas - crop diversification - permanent pasture • Extended options for coupled payments • New standards for cross-compliance	• Ending milk quotas (2015)*) • No extension of sugar quotas (after 2015) • Extended market disturbance clause • Measures to improve food chain • Measures to support quality production	• New priorities: - competitiveness - ecosystems - climate • Enhanced risk management toolkit • European Innovation Partnership (EIP) on Agricultural Productivity and Sustainability • Monitoring and evaluation

Sources: EU legal proposals for post-2013 CAP,[1] Matthews[15]

*) *Part of the Health Check*[14]

developing countries, not only for the CAP reform but also within a broader context of policies related to food and agriculture. The research questions were:

1. How does the current CAP influence the environment in developing countries, and what positive and/or negative impacts are to be expected from the reform of the CAP? Special attention was given to the influence of the Single Payment Scheme (in the reform proposal: 'Basic Payment Scheme').
2. While respecting the CAP's specific goals, what kind of reform would be most effective in improving coherence of the CAP with the goal of sustainable production in developing countries and safeguarding the environment and ecosystems as much as possible?

In this report we describe the web of interactions that links the CAP with environmental changes in developing countries. In this first part of the report, Findings, we describe the main findings that are relevant for policy-making. The second part (Full Results) contains a deeper analysis of the connections between CAP instruments and developing countries (Chapter 1), the effects of the CAP reform proposal and other drivers of change on developing countries (Chapters 2 and 3), and the opportunities for policy coherence between EU agricultural and related policies and EU international development objectives (Chapter 4). The assessment was based on a literature review, results of agro-economic-environmental modelling by LEI[13] and PBL, and on engagement with experts in European agriculture, environment and development (see Acknowledgements).

The reform will not alter the structure and budget of the CAP

According to the EC reform proposals released on 12 October 2011,[1] the total budget for the CAP will increase by 4% and the current two-pillar structure will be maintained. The main instruments of Pillar I are direct payments to farmers and market measures. Under the proposals, the level of direct payments will remain largely unchanged, but there will be new 'green' components added to the conditions for payment. The main changes with potential impacts on developing countries are listed in Table 1.

The CAP reform will hardly change the environmental impacts of the CAP in developing countries

The proposed CAP reform is not expected to have a significant effect on the environmental impacts of the CAP in developing countries. There are three indirect causalities between the CAP and the environment in developing countries: (i) via global markets and agricultural production, (ii) via the transfer of knowledge and innovations, and (iii) via greenhouse gas emissions. As pointed out further down this section, our analysis suggests that the reform will not significantly alter any of these mechanisms of change or the resulting environmental impacts in developing countries.

The CAP reform will have some effect on the global agricultural market

World trade in agricultural products can be influenced by the CAP. CAP reform could therefore lead to changes in agricultural production, world market prices, price

volatility and access to the European market by non-EU countries. These market mechanisms can in turn have environmental implications in developing countries. Changes in production volumes, crops produced and agricultural practices have direct effects on the physical environment (see Figure 2). Strong price volatility could indirectly have a negative effect on the environment if it hampers long-term investments in sustainable agricultural practices. The proposed changes in market measures and rural development are expected to have only minor effects on world agricultural markets, with the possible exception of the abolition of sugar quotas, which could affect sugar-producing countries if world market prices are low.

The greening measures will slightly depress EU production, but with little effect on developing countries

The greening measures in Pillar I are likely to cause a slight reduction in agricultural production in the EU, leading to an increase in imports and a decrease in exports (Van Zeijts et al., 2011). The most pronounced changes concern cereals and oil seeds. According to model calculations, imports of cereals will rise from 3.4% to 3.9%, expressed as a percentage of EU production, and exports will decrease from 13.5% to 12.5%. Oil seed imports will increase from 79% to 87%. However, the effect on agricultural production in developing countries will be slight, for two reasons. First, the volume of oil seed production in the EU is low. Second, the higher imports and lower exports of cereals will not benefit agriculture in developing countries as most of these cereals are produced in temperate zones. In general, the more advanced agricultural producers, such as Brazil and Argentina, are most likely to meet any additional demand generated by reduced EU production. The least developed countries are thus unlikely to gain significant additional export opportunities as a consequence of the proposed CAP reform.

The widened scope for coupled payments may negatively affect production in developing countries, but effects are likely to be small

The EC proposals for CAP reform include a loosening of the rules for coupled payments, both in terms of overall amounts and of the commodities affected. Coupled payments can stimulate higher production of certain commodities in Europe. This obviously puts producers outside the EU not receiving similar support at a disadvantage. Nevertheless, there are no reasons to assume that after 2013 the commodities concerned and the sizes of payments will change much compared with the current situation, because the total volume of payments remains limited to a relatively low percentage of overall EU direct payments. The objective of these payments is to avoid cessation of production, not to increase it.[15]

Changes in market measures may affect some sugar exporting countries

The proposed abolition of sugar quotas and the consequent effect on domestic EU sugar production could have a negative effect on sugar production in developing countries, especially in those countries that have preferential access to the EU market and if world market prices are low.[16] This could be seen as an example of incoherence, or rather as an adjustment to former distortive policies. The ending of milk quotas is not expected to have a significant impact on world dairy markets.[15]

The effects of changes in rural development programmes are likely to be mixed, but minor

If the proposed changes to the rural development programmes emphasise the competitiveness segment, agricultural production may increase, especially in eastern European Member States where productivity levels significantly lag behind those of most western Member States. Eastern European Member States are also likely to benefit more, relatively speaking, from EU Cohesion and Structural Funds, which also support modernisation and improved competitiveness. According to model calculations that assume a very strong stimulus to competitiveness ('50/50 targeted support' in Figure 1), production in the EU will indeed increase, causing a decrease in agricultural production in other regions, but the effects in specific non-EU regions will be small. An increased emphasis on environmentally oriented measures in the rural development programmes will have an opposite effect by reducing production intensity.

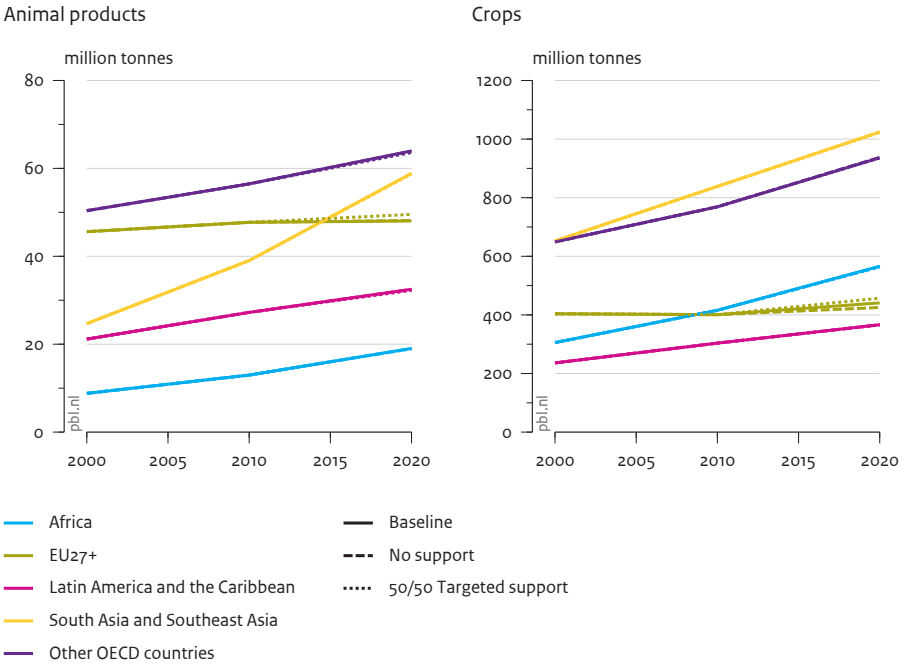
According to Tangermann (2011),[17] the proposed risk management toolkit under Pillar II has the potential to create new market and trade distortions, but he expects that budgets spent on this toolkit – and thus its effects – will be limited.

Autonomous growth in developing countries will dwarf the market effects of CAP reform

Model projections suggest that population and welfare growth, increasing food consumption and increasing agricultural production will have far greater consequences for the environment and biodiversity in developing countries than the reform of the CAP. While agricultural production in Europe is expected to nearly stabilise, production in Asia, Latin America and Africa will grow, reducing Europe's share of global production (Figure 1). If import barriers are kept in place, even total abolishment of Pillar I of the CAP ('no support' in Figure 1) will only slightly affect agricultural production in the EU,

Figure 1

Projected agricultural production



Source: Helming et al. (2010)[18]

Model projections suggest that autonomous growth in livestock and crop production in most world regions[19] will dwarf even the effects of far more drastic CAP reforms than those currently proposed by the EC. The effects of the No Support scenario are only large enough to be visible for the EU itself. The effects of the 50/50 Targeted Support scenario, in which 50% of CAP support is strongly targeted at improving competitiveness, are only visible for the EU and other OECD countries and Latin America. The Baseline scenario projects the growth in production under the current CAP (including the Health Check). NB Animal products are expressed in dry matter

with hardly any effect on production in developing countries. Note that the scenario variants in Figure 1 assume a CAP reform that is far more drastic than the reform proposed by the EC. We can therefore conclude from these model projections that the proposed reform will have minimal effects on global agricultural production, as long as EU import barriers remain unchanged.

The CAP proposals disregard dissemination of knowledge and innovation to developing countries

The EU could set the trend towards a global consensus on the necessity of good practices for agricultural production and sustainability standards. However, the proposals for the reformed CAP do not mention the dissemination of knowledge and technologies to developing countries, although the CAP does support applied agricultural research and development; for example, within the framework of the newly proposed European Innovation Partnership (EIP) on Agricultural Productivity and Sustainability.[20] The first objective of this EIP is 'to promote a resource efficient, productive, low emission, climate friendly and resilient agricultural sector, working in harmony with the essential natural resources on which farming depends'. It operates through groups that bring together farmers, researchers, advisors, businesses and other actors. Extending the benefits of such partnerships to developing countries could create significant opportunities. For example, most of the agricultural research priorities indicated by the EU Standing Committee for Agricultural Research SCAR,[21] such as those on soil conservation and restoration and good practices in agricultural water management, apply just as well to developing countries as to the EU.

Greening the CAP will not reduce net greenhouse gas emissions

A reduction in greenhouse gas emissions from EU agriculture could potentially mitigate climate change, with global environmental benefits. However, it is expected that the proposed greening of the CAP will not lead to a significant reduction in greenhouse gas emissions within the EU and even less so on a global scale. Some measures – notably the ecological focus

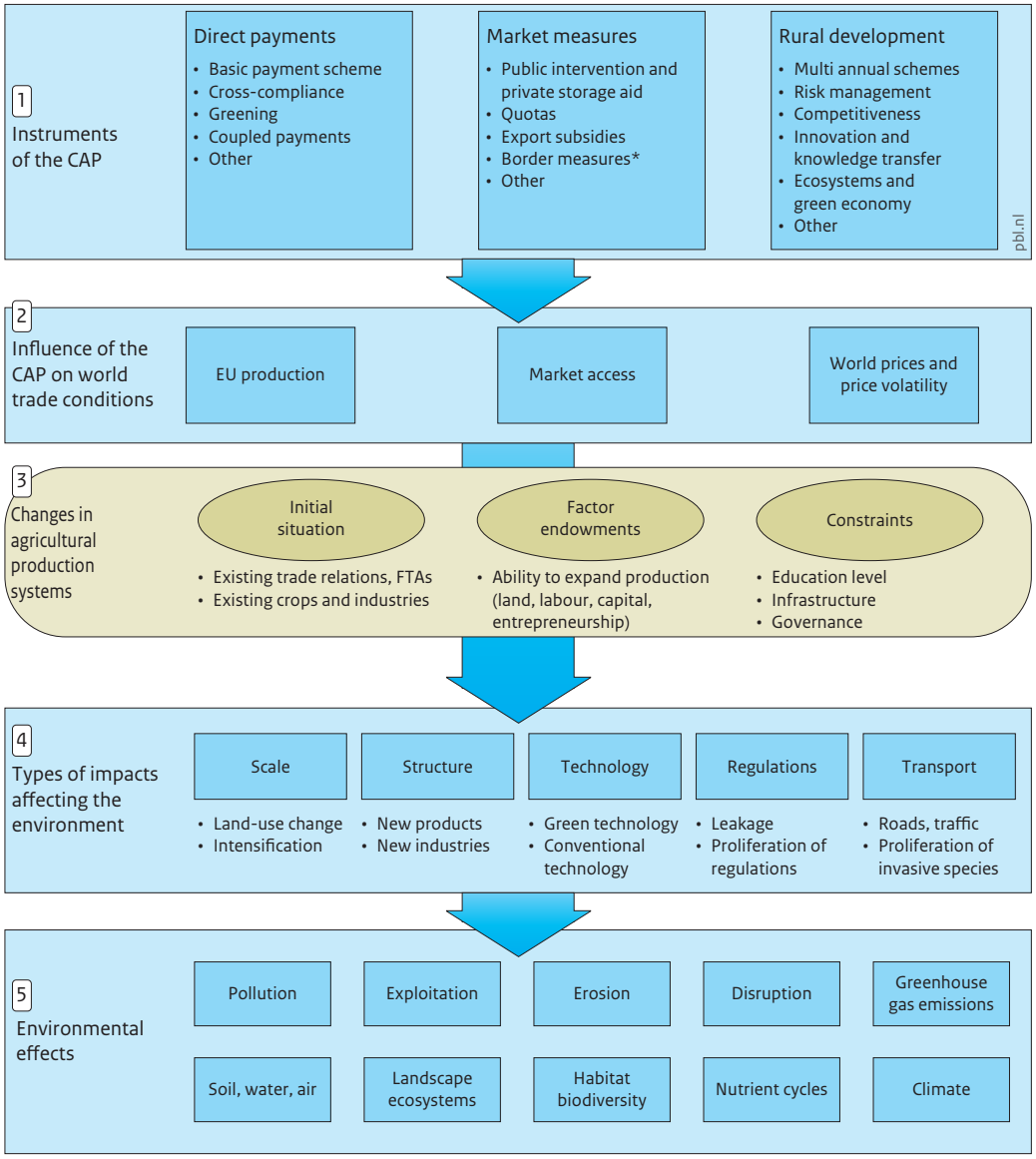
World trade connects EU CAP to developing countries

World trade in agricultural products is at the centre of a complex web of interactions that connects European agricultural policies with the environment in developing countries.

Because CAP instruments may influence world trade conditions via production, market access, prices and price volatility (Figure 2, layers 1 and 2), they may change trade conditions for developing countries. Coupled payments encourage the production of certain commodities in the EU, putting producers outside the EU at a

Figure 2

Impacts of the CAP on the environment in developing countries via market mechanisms



* Legally not CAP

Source: PBL

disadvantage. Decoupled 'basic' payments, although generally classified as 'non-distortive', do in fact influence production decisions by European farmers. These decisions may lead to an increase or decrease in the production of specific crops. A sizeable reduction in direct payments would have a serious effect on the structure of European farming systems, as many farms depend on them for a significant share of their income. However, that does not necessarily mean that the total output of the EU would change. Cross-compliance and greening criteria coupled with income support may influence the volume and composition of EU production, for example through the requirement for crop diversification. Market measures influence production and price levels and may increase price volatility outside the EU. The effects of rural development schemes may lead to a net increase or decrease in production levels: increased 'greening requirements' may reduce production intensity and output, whereas a shift in spending to eastern Member States, especially when targeted at competitiveness, will probably lead to an increase in output. Risk management may reduce price volatility within Europe, but exacerbate volatility outside Europe.

The effects on developing countries will vary, because developing countries differ in various respects: their current commodity trading, their trading relations with the EU and their imports and exports of products influenced by the modifications of the CAP (initial situation), and their ability to change production (factor endowments and constraints; layer 3 in Figure 2). Agricultural production and consumption patterns in several developing countries have in the past been influenced by the CAP. For example, cheap subsidised imports from Europe have inhibited local agricultural development, or have led to an urban consumer preference for European products that local producers cannot deliver. The agricultural sectors of some countries have become unbalanced, with an overemphasis on one or more crops to take full advantage of their free ('preferential') access to the profitable EU market (e.g. some sugar-producing countries).

Shifting trade conditions lead to changes in the agricultural production systems in developing countries: the scale and structure of agricultural production, the technology adopted, the regulations applied and the transport used (layer 4 in Figure 2). These changes affect the environment (layer 5 in Figure 2). The scale of these environmental effects and whether they are beneficial or damaging depend on the practices used and how agriculture develops. These are influenced by external drivers (e.g. growth rate and continuity of demand, competition, prices, price volatility, existence of certification standards) and on biophysical and socioeconomic conditions within the developing country (such as the vulnerability of the soil to erosion, the availability of renewable water resources, land tenure, education, poverty, access to human and financial resources, and governance).

areas – are expected to lead to an increase in imports and a reduction in exports. The resulting increased production and associated greenhouse gas emissions outside Europe would probably be of the same order of magnitude as the reduction in greenhouse gas emissions within Europe.[22]

The CAP is one of several EU policies that influence agriculture

Agriculture in Europe and abroad is also influenced by policies other than the CAP, particularly EU policies for trade, energy/bioenergy and intellectual property rights. Some of these are, in turn, influenced by agreements in the WTO on trade in agricultural products, rules on agricultural subsidies and ongoing negotiations in the WTO Doha Round (e.g. on the phasing out of export subsidies). These other policy areas may have a greater influence on agriculture and the environment in developing countries than any changes to the CAP.

Border measures are an important component of agricultural policies

Changing EU agricultural trade barriers, such as import tariffs, would have more impact on agricultural production and trade than changing the CAP itself. Import tariffs are not strictly part of the CAP, but are important components of agricultural market management and substantially affect agricultural price levels and production within the EU and, thus, the world market. It is not possible to make general statements about whether EU import tariffs are beneficial or harmful to developing countries. Many developing countries have preferential access to the EU and the least developed countries have free access under the 'Everything But Arms' programme. As prices for agricultural products within the EU are kept artificially high by the CAP and by protective measures against cheap imports, exporters

that do have free access to the EU also benefit from those high prices. However, many of the least developed countries lack the capacity to significantly expand their agricultural production and exports.[23] Moreover, strong reliance on preferential access can make countries dependent on EU markets, exposing them to the risk of losing market share if more countries gain free access (preference erosion) or as a consequence of the general tendency towards increased market liberalisation. The current intractability of the Doha trade negotiations make major changes to EU agricultural import barriers unlikely in the short term.

Property rights and patents may affect the genetic resource base for agricultural production

Intellectual property rights and patents on crop varieties and animal breeds may also affect the environment and agricultural biodiversity in developing countries. For example, they prevent farmers and local breeders from crossing high-yielding varieties bred by large companies with locally bred varieties, which are often more resilient to drought, pests and diseases. This could eventually lead to the extinction of locally bred varieties and a narrowing of the genetic resource base. A solution to this problem would necessarily involve both public and private parties, as property rights and patents are privately owned.

Bioenergy policies are part of the cause of agricultural land expansion

Incentives to produce bioenergy crops will – directly or indirectly – cause agricultural expansion into natural areas, increasing pressures on biodiversity and greenhouse gas emissions related to land-use change. Bioenergy policies are not part of the CAP, but do affect agriculture in the EU and elsewhere. Bioenergy production competes with food crops for land and water and has also been associated with land grabbing, but it can also present developing countries with development opportunities.

Opportunities for a CAP more coherent with sustainable development objectives

The CAP reform proposals do not explicitly refer to development objectives, despite the legal obligation to take these into account. Nor do they explicitly mention the global scope of measures that have potential for synergy with development targets, such as improving food chains, creating innovation partnerships for productivity and sustainability, and impact monitoring. To be coherent with development objectives, the CAP reform would need to take the global dimension of agriculture and food supply into account and exploit potential synergies with development objectives, rather than merely 'do no harm'.

A long-term perspective on coherence between the CAP and EU development objectives

Discussion about a CAP that would be more coherent with development objectives is hampered by the lack of a clear definition of such a development-friendly CAP. One reason for this are the large diversities between and within developing countries. For example, CAP support for EU agriculture could benefit food-importing countries purchasing subsidised products from the EU; their urban populations would profit from lower food prices, but their farmers would argue that this is unfair competition that prevents them from developing a sustainable home-grown agricultural sector. This discussion could perhaps be clarified if coherence with the CAP is understood not in terms of short-term benefits or disadvantages for specific communities within developing countries, but in a structural sense. A reformed CAP that is coherent with development objectives would then contain policies that increase, or at least do not decrease, opportunities for developing countries to develop a sustainable agricultural production system that will increase food security and stimulate inclusive economic growth while safeguarding the environment and ecosystems as much as possible.

The current CAP reform offers limited but sensible opportunities for more coherence with sustainable development objectives

If policy coherence for development and the EU agricultural policy is defined this way, there are limited but sensible opportunities for more coherence within the scope of the current CAP reform:

- CAP measures should not exacerbate the price volatility of food products, a threat posed by the remaining export subsidies and market intervention mechanisms as well as the proposed enhanced risk management toolkit.
- Direct payments could be better targeted at delivering public goods, such as reducing greenhouse gas emissions and increasing agricultural biodiversity. This would also reduce their market-distorting effects.
- Phasing out coupled support, instead of extending its scope as proposed, would improve market opportunities for some developing countries.
- CAP funding for innovation and technology development – for example, for soil conservation and restoration and for good practices in agricultural water management – could also be made applicable in developing countries within the framework of the proposed European Innovation Partnership on Agricultural Productivity and Sustainability.

Table 2

Conditions for sustainable or unsustainable agricultural development

Conditions that are conducive to:		Potentially influenced by CAP or other EU regulations
... sustainable intensification of agricultural production	**... unsustainable agricultural development**	
Conditions favouring investments in long-term productivity		
Prices of produce and inputs are attractive and fairly predictable; markets are reliable	Abrupt structural changes; volatile markets	Yes
Land tenure and property rights are secured and respected	Informal occupation rights; rights derived from using the land	No
Credit is available at affordable terms	No access to credit; debt traps	No
Knowledge and awareness		
Farmers and other stakeholders are aware of the importance of sustainable practices to sustain long-term land productivity and to safeguard ecosystem services	Lack of awareness	Indirectly via food chains, information to consumers
Farmers have access to the knowledge required to apply sustainable management practices	No access to knowledge; malfunctioning farm advisory services	Via knowledge exchange programmes
Biophysical conditions are suitable for sustainable intensification		
High potential to sustainably increase yields on available agricultural land	Little potential to increase yields	No
Yield risks (e.g. due to erratic weather or disease outbreaks) are manageable	Risks are perceived to be high and unavoidable	No
Incentives exist to safeguard public goods and services		
Appropriate regulation is in place and enforced to limit land conversion, foster soil conservation, avoid emissions and excessive water abstraction	Lack of government regulation on land use, water use and agrochemicals; environmentally damaging subsidies	Via SPS*) and exceptionally environmental criteria e.g. for biofuels or in FTAs*)
Opportunities exist to create added value by adhering to high product and production standards	Lack of standards; standards frequently changing or imply high transaction costs	
Opportunities exist to earn income from sustainably managing nature and biodiversity (e.g. ecotourism, payments for environmental services, dividends on natural gene banks)	No economic value attributed to nature and biodiversity	Via payment schemes such as REDD
Fair balance of powers among stakeholders		
Small-scale farmers are organised and are able to act and negotiate as a group	Rural communities are divided	No
Governments are representative, transparent and maintain the rule of law	Weak or corrupt governments	No
Balanced relations between farmers, input suppliers and the buyers of produce	Relations of unilateral dependence	No
Image of agriculture		
Rural entrepreneurs are seen as role models	Rural entrepreneurs are seen as greedy and are distrusted	No
Farmers take pride in their farms	Farmers have little self-esteem; farming is seen as dirty work for the unskilled and ignorant	No
Rural heritage is valued	Strong urban bias in government and society	No

**) SPS: Sanitation and Phytosanitation; FTA: Free Trade Agreement*

- A monitoring and reporting mechanism could be set up to identify the impacts of CAP measures on developing countries within the broader context of other EU policies, as proposed in the study by Klavert et al.[2] and by the Dutch Government.[3] This would provide feedback and a basis for evidence-based decision-making on adjusting CAP measures when harmful consequences for developing countries are documented.

A broader view of sustainable agricultural development

If we consider European agricultural policies within the broader context of global food security, trade policies

and development policies, we can open up more opportunities to stimulate sustainable agricultural growth in developing countries. These could include mechanisms to improve market access in combination with capacity building to meet certification standards for sustainable production and food chains, mechanisms to assist the diversification of production in a sustainable way, and mechanisms for screening intellectual property rights and patents for their impacts on agricultural biodiversity and the environment in developing countries.

Finally, to meet the rising demand for food in the coming decades it is essential that the developing countries acquire the capabilities they need to seize the opportunities to sustainably increase production. It is therefore crucial to support the agricultural sector in these countries. In Table 2 we list some examples that show how different conditions can either encourage sustainable forms of intensification of agricultural production or unsustainable agricultural development. Note that only a few of the items indicated in the table are directly influenced by EU policies, although others may be indirectly influenced.

Notes

1 Proposals by the EC are on Rules for direct payments (COM(2011) 625), a Single CMO regulation (COM(2011) 626), Rural development support (COM(2011) 627), Financing, management and monitoring (COM(2011) 628) and Fixing certain aids and refunds (COM(2011) 629). The corresponding impact assessment is SEC(2011) 1153. http://ec.europa.eu/agriculture/cap-post-2013/legal-proposals/index_en.htm

2 Klavert et al. (2011). Still a thorn in the side? The reform of the Common Agricultural Policy from the perspective of Policy Coherence for Development. ECDPM, Discussion paper 126. www.ecdpm.org/Web_ECDPM/Web/Content/Download.nsf/0/44C94FAF16C37D0EC125791700473C02/$FILE/11-126_CAP%20DP%20final_22092011.pdf.

3 Letter to the Dutch Senate (in Dutch), dated 13 February 2012, Reference DIE-131/2012. www.rijksoverheid.nl/bestanden/documenten-en-publicaties/kamerstukken/2012/02/14/beantwoording-kamervragen-over-het-gemeenschappelijk-landbouwbeleid/beantwoording-kamervragen-over-het-gemeenschappelijk-landbouwbeleid.pdf.

4 EC, COM(2011) 625/3.

5 EC, COM(2010) 672 final. The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future. http://ec.europa.eu/agriculture/cap-post-2013/communication/index_en.htm.

6 OJ 2008 /C 115/13 - http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0013:0045:EN:PDF.

7 OJ 2008/ C 115/47 - http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0047:0199:en:PDF.

8 SEC(2010) 421 final - http://ec.europa.eu/development/icenter/repository/SEC_2010_0421_COM_2010_0159_EN.PDF.

9 EC, COM(2010) 127. An EU policy framework to assist developing countries in addressing food security challenges. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0127:FIN:EN:PDF, p. 8.

10 TK 28 625 nr. 108 of 26 November 2010 (https://zoek.officielebekendmakingen.nl/kst-28625-108.pdf); TK 28 625 nr. 117 of 8 March 2011 (https://zoek.officielebekendmakingen.nl/kst-28625-117.pdf), TK 28 625 nr. 124 of 1 April 2011 (https://zoek.officielebekendmakingen.nl/kst-28625-124.pdf), TK 28 625 nr. 137 of 28 October, 2011 (https://zoek.officielebekendmakingen.nl/kst-28625-137.pdf).

11 During the WTO Hong Kong ministerial conference in 2006, the EU offered to eliminate all agricultural export subsidies by 2013 as part of a wider agreement. Since then, however, the scope of the agreement under negotiations diminished and the EU indicated it would withdraw the offer. http://www.reuters.com/article/2011/06/21/trade-eu-usa-idUSN1E75K10S20110621 (accessed on 21 June 2011). In conformity with commitments previously proposed in the WTO, the Dutch Government backs the abolishment of export subsidies per 2013, independent of the progress in WTO negotiations.

12 EC, COM(2011) 244 final. Our life insurance, our natural capital: an EU biodiversity strategy to 2020. http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_ACT_part1_v7%5b1%5d.pdf.

13 http://www.lei.wur.nl/UK/.

14 http://ec.europa.eu/agriculture/healthcheck/index_en.htm.

15 Matthews, A. (2011). Post-2013 EU Common Agricultural Policy, Trade and Development. A Review of Legislative Proposals. ICTSD, Issue Paper No. 39. http://ictsd.org/downloads/2011/12/post-2013-eu-common-agricultural-policy-trade-and-development.pdf.

16 Nolte et al. (2012). Modelling the effects of an abolition of the EU sugar quota on internal prices, production and imports. European Review of Agricultural Economics 39(1): 75–94.

17 Tangermann, S (2011). Risk management in Agriculture and the Future of the EU's Common Agricultural Policy. ICTSD, Issue Paper No. 34. http://ictsd.org/downloads/2011/12/risk-management-in-agriculture-and-the-future-of-the-eus-common-agricultural-policy.pdf.

18 Helming et al. (2010). European farming and post-2013 CAP measures. A quantitative impact assessment study. Den Haag, LEI. LEI Report 2010-085. www.lei.wur.nl/NL/publicaties+en+producten/LEIpublicaties/default.htm?id=1178.

19 South Asia and Southeast Asia includes all Asia, except China, the Middle East, OECD-Asia and the former Soviet republics. The EU27+ includes all EU Member States plus Norway, Switzerland, Iceland and the Balkan countries.

20 COM(2011) 627, Title IV.

21 SCAR (2011). Sustainable food consumption and production in a resource-constrained world. The 3rd SCAR Foresight Exercise. European Commission – Standing Committee on Agricultural Research. http://ec.europa.eu/research/agriculture/scar/pdf/scar_feg_ultimate_version.pdf.

22 Van Zeijts et al. (2011). Greening the Common Agricultural Policy: impacts on farmland biodiversity on an EU scale. PBL. www.pbl.nl/en/publications/2011/greening-the-common-agricultural-policy-impacts-on-farmland-biodiversity-on-an-eu-scale.

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FULL RESULTS

How European agricultural policy can impact the environment abroad

Agricultural support in the European Union amounts to a very substantial sum (part 1.1). It can influence the environment in developing countries through a complex web of interactions. Agricultural support in the EU can help to provide global public goods with environmental effects in developing countries (part 1.2). Shifts in location, extent and processes of agricultural production through market mechanisms (part 1.2) are deemed to be the main influencing factors, however.

1.1 EU agricultural support in a nutshell

In 2010, the EU aided its agricultural sector by over 60 billion euros in supporting payments, aside of significant protection of its borders against potentially competing imports. The aims of the policy are to provide a stable income to farmers, stable food prices to European consumers, and to manage the rural landscape. Figure 1.1 shows CAP expenditure for the EU27 agricultural sector as a whole.

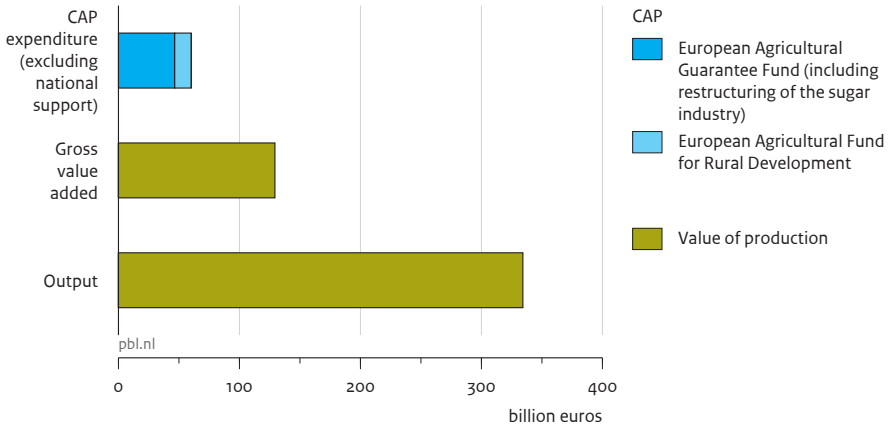
There are several types of CAP measures. The EC (EC, 2011b; EC, 2011c) distinguishes in Pillar I direct payments (coupled and decoupled) and market measures (e.g. safety nets, export subsidies and quotas) and in Pillar II rural development schemes. Border measures, such as tariffs, import quotas and food quality and/or safety standards, are also very relevant to EU agricultural policies but legally not part of the CAP.

1.1.1 Direct payments comprise the largest part of the CAP budget

The majority of CAP payments are made in the form of direct payments to farmers through the Single Farm Payment Scheme (SFPS) and Single Area payment Scheme (SAPS), to be reformed into the Basic Payment scheme from 2014 on. These payments are not coupled to production size or type. Farmers need to own land with entitlements to these payments and to meet a number of requirements (cross-compliance) regarding the environment, food safety and animal welfare. One of these criteria is that the land on the base of which the payments are transferred remains in good environmental and agricultural condition. Direct payments totalling 39.1 billion euros made up some 80% of the 2009 CAP budget.

A part of the direct payments is coupled to production. Coupled support for specific crops has been drastically reduced since the 2003 reform to mitigate distorting effects on international markets. In 2009, 83% of direct payments were decoupled. Yet, 5.8 billion euros were still coupled to specific products, with area payments for cereals, oilseeds and protein (COP) crops and premiums for beef production together making up more than half of that amount. Area aid for cotton amounted to 216 million euros, tobacco received 300 million euros and rice 164 million euros in premiums.

Figure 1.1
Agricultural sector in EU27, 2009



Source: (EC, 2011a) 2.0.1.2 Key agricultural statistics.

CAP support amounts to half of the Gross Value Added in the EU agricultural sector.

1.1.2 Market measures as safety net

In its communication of November 2010 on CAP reform, the EC states that '...to a large extent the market measures, which were the main instruments of the CAP in the past, today provide merely a safety net only used in cases of significant price declines' (EC, 2010a). The main market measures (sometimes referred to as market management mechanisms) are minimum prices for farmers' products and export subsidies. Other potential measures include storage costs, specific aids, funds for producer organisations, and compensations. Total market support in 2009 amounted to slightly under 4 billion euros, down from 4.9 billion euros in 2007. Not all market measures incur costs on the budget: production quotas do not involve public spending. The amount of support measures varies per year depending on world market prices for different products.

Export subsidies as an instrument are linked to 'safety net' prices for products and expenses for storage of produce. Such 'safety net' prices provide a bottom price level below which the EU will buy farmers' products; storage can be public or subsidised private storage to reduce downward pressure on current prices, and export subsidies allow farmers to export excess produce at world market prices when these are lower than EU prices.

1.1.3 Rural development programmes designed and co-funded by Member States

Pillar II of the CAP covers support for rural development by the European Agricultural Fund for Rural Development (EAFRD), comprising 13.7 billion euros in 2009. Rural development initiatives must be co-funded by Member States. They are currently focused on three themes, known as "thematic axes": (i) competitiveness, (ii) improving the environment and countryside, (iii) quality of life and diversification (EC, 2008; EC, 2011d; IEEP, 2011). In current EAFRD spending, most emphasis is on environment (Copus, 2010; EC, Annex E, 2011)[1] . In the reform proposals for 2014 – 2020 six priorities are proposed to replace these axes. These priorities are: Fostering knowledge transfer and innovation; Enhancing competitiveness; Promoting food chain organisation & risk management; Restoring, preserving & enhancing ecosystems; Promoting resource efficiency and transition towards a low-carbon economy; Promoting social inclusion, poverty reduction and economic development in rural areas (EC, 2011h).

1.1.4 Border measures keep prices within the EU high

The prices for agricultural products within the EU are generally higher than on the world market, mainly as the result of border measures. Border measures include tariffs, import quotas (or a combination thereof) and food safety and quality requirements. Tariffs are levied on products imported into the EU. They are often high for agricultural products that have the largest production base in Europe and low for products for which the EU relies on imports. These tariffs can be combined with import quotas (maximum import volume allowed per product) to create different tariffs for imports that stay within the quota (low tax rates) and those that exceed their quota (higher tax rates).

1.2 Common Agricultural Policy and global public goods

European policy may influence the provision of global public goods with effects on developing countries. Kok et al. (2011) identify three categories of global public goods that are relevant for poverty reduction and environmental change:

- *Environmental global public goods* and their relevance for men;
- *Socio-economic global public goods* that are influenced by changes in the environment and access to natural resources;
- *Capacity-related global public goods* that are necessary to bring about collective action to provide global public goods.

1.2.1 Environmental global public goods

One can think of a stable climate, healthy land and water ecosystems that provide services, such as production capacity of the soil, regulation of the water cycle, and agricultural biodiversity, as environmental public goods that are relevant in relation to agriculture and development.

A stable climate: changes to the CAP could influence the amount of carbon stored in European farmlands or natural areas, or alter the emissions from land use and cattle farming. Through market mechanisms, alterations such as deforestation and changes in scale and structure of land use could indirectly also happen outside the EU, as described in Section 1.3. Any influence of this on climate change may have impact on the environment in developing countries.

Healthy ecosystems: Preserving production capacity of soils and sustainable use of water resources are a common interest of the global community to be capable of producing enough food for next generations. The influence of the CAP on the preservation of soil and water in developing countries is indirect. Any measures that reduce security and income of farmers in developing countries may lead to failing of necessary investments in keeping up soil fertility.

Biodiversity: CAP measures, especially those targeted at greening the CAP influence biodiversity within Europe. This can have positive spin-offs outside the EU. A clear example is the case of migratory birds. Their protection in the EU will have an effect on their populations in the countries to which they migrate, seasonally. The dependency is mutual: (agricultural) use of land and water in the countries where these migratory birds hibernate may influence the winter habitat. Preservation of habitats for migratory birds is a common interest. Another example is the preservation of agricultural biodiversity, enhancing the scope for new breeds. However, measures to improve farmland biodiversity in the EU mostly involve more extensive production systems. This means that more land (either within or outside the EU) will be needed to produce the same amount of goods, which, in turn, will leave less land for nature.

1.2.2 Socio-economic global public goods

Loss of environmental public goods and unequal trade relations may add to socio-economic vulnerabilities, setbacks in development, increase inequality and threaten food security, stable livelihoods and peace, leading to undesirable migration. International trade and agricultural policies that hamper sustainable agricultural development in developing countries will add to the persistence of these socio-economic 'public bads'. The other way round, fair trade conditions and sharing of sustainable agricultural practices will increase the provision of socio-economic public goods.

1.2.3 Capacity-related global public goods

Examples of capacity-related global public goods are international cooperation and agreements on biodiversity, climate change and trade conditions, such as the WTO and the EBA initiative; knowledge and knowledge exchange about good agricultural practices to save the soil and water; access to knowledge of the market and of standards for traded goods; free trade in environmental technologies and cooperation and exchange of knowledge on environmental issues; and research and innovation. By directing the CAP to stimulate the development of agricultural knowledge and technology in Europe, these investments could have positive effects on agricultural systems in developing countries. In general, technologies generated in the EU would need to be tested and adapted to local conditions before they can be successfully adopted elsewhere. The principles would still apply, however, which would allow developing countries to focus their attention on topics and aspects that are specific to their particular situation. For example, most of the agricultural research priorities indicated by the EU Standing Committee for Agricultural Research, SCAR (Freibauer et al., 2011) apply not only to the EU but also to developing countries.
The EU could set the trend for global consensus on the necessity of good practices for agricultural production and sustainability standards. Another example is conditional regulation, as is the case, for instance, with the sustainability clauses in some of the EU free trade agreements (FTA). Usually, however, strong international consensus is rare because different actors and countries have different motives for taking policy action and set

different priorities. This hampers the provision of global public goods that would support equality, development and preservation of natural resources (Kok et al., 2010).

1.3 Impacts of CAP and other EU policies on developing countries via market mechanisms

Although most management decisions affecting the environment and ecosystem services are made at a local level, these local decisions are conditioned by national and international policies on agriculture, development cooperation, trade, climate and international financial institutions (Kok et al., 2010). The scheme of Figure 1.2 shows the web of interactions through which the CAP can have an influence on the environment in developing countries.

The instruments that together comprise the CAP can influence global trade conditions (layers 1 and 2 in Figure 1.2). This is connected with influence on the size and composition of EU agricultural production with effects on the world market, effects on world prices for agricultural products and price volatility, and market access for non-EU countries. Depending on the conditions in developing countries (layer 3 in Figure 1.2), there may be different responses to these mechanisms. This depends on numerous variables, such as existing trade relations with Europe, current agricultural production, available land, labour and capital, existing agricultural industries, infrastructure and matters of governance. Depending on the response, the agricultural production system in the developing country will adjust through factors of scale, structure, technology, regulations and transport (layer 4 in Figure 1.2). These adjustments to global trade conditions result in environmental effects (layer 5 in Figure 1.2). How far these environmental effects reach and whether these effects are beneficial or damaging depend on the way agriculture develops and what practices are used. These are influenced by external drivers (e.g. growth rate and continuity of demand, competition, prices, price volatility, existence of certification standards) and on biophysical and socio-economic conditions within the developing country (e.g. vulnerability of the soil for erosion, availability of renewable water resources, land tenure, education, poverty, access to human and financial resources, governance).

1.3.1 Effects of direct payments

Decoupled payments may influence production volume

Decoupled direct payments are currently the bulk of CAP payments to farmers as a form of income support. Although decoupled payments are generally classified as 'non-distortive', many scholars argue that there are ways in which they influence production decisions by European farmers that could have an effect on total production in the EU, and, indirectly via trade, in other parts of the world. Table 1.1 mentions the main potential interactions. Some of them imply an increase but others a decrease in production.

A sizeable reduction in direct payments would have a serious effect on the structure of European farming systems, as many farms depend on them for a significant share of income or operating costs (Vrolijk et al., 2010). However, that does not necessarily mean that EU production would decrease (see e.g. 4 in Table 1.1). Smaller farms may be inclined to stop farming. Their land may be abandoned, or passed on to larger, more competitive farms.

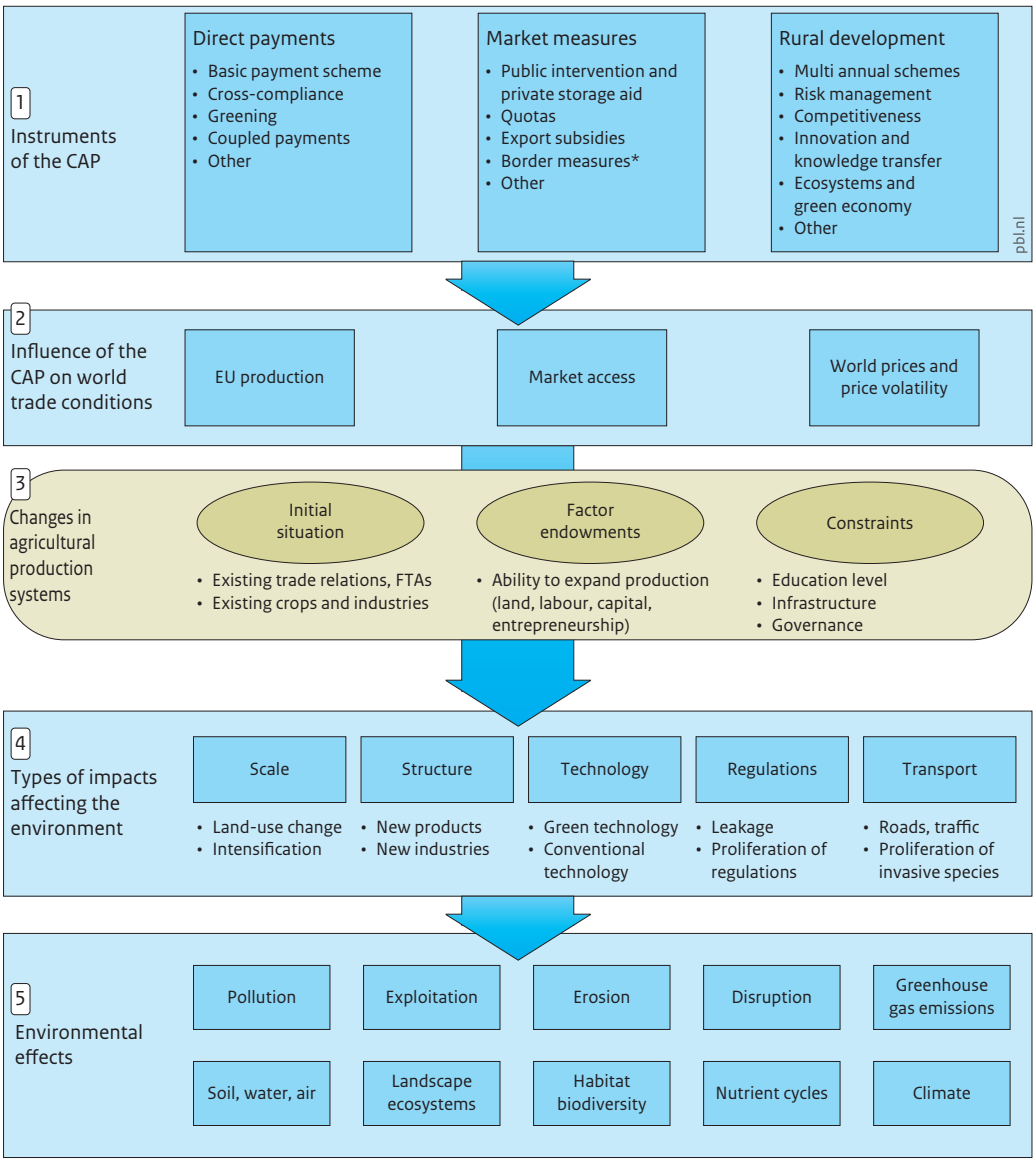
A number of studies assess the effects of decoupled direct payments on EU production. Helming et al. (2010), using a general equilibrium model, find that complete abolition of direct income support would result in an aggregate price increase for agricultural products in the EU of 0.5% and slightly lower exports and higher imports. They see changes to the CAP that are specifically aimed at increasing competitiveness to have most effects, increasing EU production and exports, reducing imports and decreasing the average EU price level. Consistent with these findings, Costa et al. (2009) find direct payments to result in smaller outputs in the crops and livestock sectors in regions outside the EU. In percentages this affects especially the crop and livestock sectors in Latin America (-0.73% and -0.44%, respectively) and Africa (-0.63% and -0.48%); whereas in absolute financial terms, Australia and New Zealand are most affected (USD 188.9 million lower agricultural output).

Production volume may also be influenced by legal production standards such as cross-compliance, which implies that farmers receiving direct income support must comply with certain environmental and animal welfare standards.

Coupled payments may have substantial effect on specific products

In 2009, 5.8 billion euros (circa 15% of the CAP budget) was coupled to specific products. Even though most of these payments represent a small percentage of the total value of production and these payments are not directly linked to quantities produced, some scholars claim that

Figure 1.2
Impacts of the CAP on the environment in developing countries via market mechanisms



* Legally not CAP

Source: PBL

they could have a substantial effect on production. For example, model results by Prins et al. (2011) suggest that the European beef sector would be significantly affected by further decoupling of support, leading to more EU beef imports from third countries, particularly Brazil.

1.3.2 Effects of market measures

The main market measures such as intervention prices potentially apply to most agricultural commodities produced in the EU. Noteworthy exceptions are poultry meat and pig meat, for which no intervention prices exist. Minimum prices ('intervention prices') and export refunds are designed to shield EU farmers in the event of shocks that depress prices. Export refunds create additional supply on the world market in times of price declines, further depressing world market prices (FAO et al., 2011). Intervention prices cushion European producers from the full brunt of a price drop, lowering the incentive to decrease production, thereby maintaining production at a higher level than warranted by the lower world

Table 1.1
Possible effects of decoupled payments to farmers on their production decisions

			Expected effect on production
1	Risk behaviour affected	Income support through decoupled payments provides stability, possibly inciting farmers to more risky behaviour.	+
2	Ease credit constraints	Decoupled income support may be used to expand investments in agricultural production, or even be used as collateral to secure credit.	+
3	Alter labour allocation	Income support increases the farmer's household income. This effect may reduce the time and effort the members of the farm household spend on agricultural production.	-
4	Freezing effect (inertia)	*Direct payments* may keep inefficient farms in business.	+/-
5	Larger holdings	Small and medium-sized farms may be inclined to sell their rights to *direct payments* to larger and more efficient farms.	+

Source: Based on Helming et al. (2010), see also in-text references to specific arguments.

market prices. Consequently, they shift the burden of adjustment to price changes to non-EU producers, which negatively affects their terms of trade. World agricultural commodity markets show higher price volatility than EU markets for all products except chicken between 1997 and 2010 (EC, 2010b).

1.3.3 Effects of rural development measures

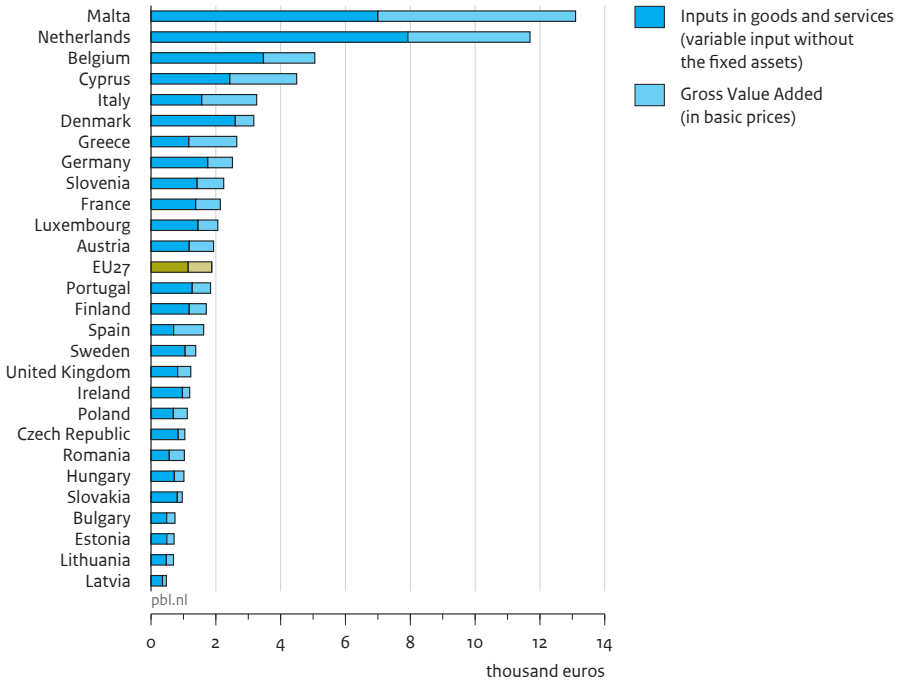
Investments in rural development may accelerate competitiveness, especially of eastern European Member States (Helming et al., 2010). It is difficult to assess the potential effects on total EU production volume of an increase in the EAFRD (the rural development fund), given the different categories and the influence of Member States through the required co-funding. Enlarging the EAFRD is one way to redistribute CAP budget to EU Member States in the east, where productivity is significantly behind that in most western European Member States (Figure 1.3). A shift in rural development spending towards eastern European Member States, especially on competitiveness, would likely lead to an increase in output, part of which may crowd out production in western European Member States through competition within the EU. Eastern European Member States are also likely to benefit more than proportionally from cohesion and structural funds, which also aim at modernisation and improved competitiveness.
On the other hand, rural development programmes focusing on the environment, such as by funding ecological set-aside areas, may reduce production intensity.

1.3.4 Effects of border measures

Border measures have the greatest influence on production allocation. Though not officially part of the CAP, agricultural border measures, such as import tariffs and import quotas, keep prices artificially high and shield domestic producers from foreign competition, keeping protected sectors larger than they would be in their absence. The results from various studies indicate that border measures are the policy instrument with most influence on EU agricultural price levels and production (Costa et al., 2009; Verburg et al., 2009). In other words, changes to tariffs and import quotas will result in highest shifts in allocation of production to countries outside the EU. Especially Latin American countries face high agriculture and food tariff barriers by the EU. This is especially true for products with high added value, such as meat, but not for basic commodities that the EU livestock sector needs, such as soy.

On the other hand, many developing countries have preferential access to the EU, and all least developed countries benefit from the EU's Everything But Arms (EBA) programme. Under EBA, they have free access to the European market. This gives them an edge versus more competitive producers as well as lets them profit from the generally higher EU prices. However, many least developed countries lack the capacity to significantly expand their agricultural production and exports, whereas, on the other hand, strong reliance on preferential market access may create dependence, increasing a potential backlash from preference erosion. Preference erosion implies the reduction in the benefits associated with a preferential trading position. In the case of the EU and the least developed countries profiting from trade preferences, consequences for the latter can come in two forms. First, the EU may open up its markets further to competitors of least developed countries, where these countries themselves already have full and free access to the EU market, resulting in increased competition on EU imports, possibly from more efficient producers. Second, EU policy changes that would bring the EU price closer to the generally lower world market level would also erode the prices received by countries that sell agricultural exports on the EU market. An

Figure 1.3
Value of agricultural output per hectare, 2009



Source: (EC, 2011a), 2.0.1.2 Key agricultural statistics.

Agricultural productivity tends to be lower in eastern European Member States than in those in western Europe.

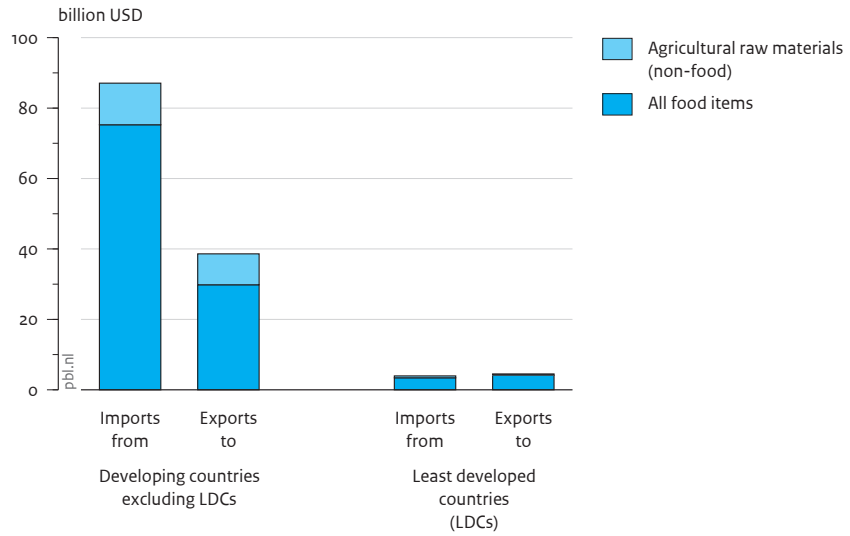
interesting case is the EU sugar market, reformed over the 2004–2009 period. Because of the reform, beneficiaries of the so-called EU-ACP sugar protocol[2] were faced with substantially lower prices, affecting the viability of high-cost producers such as Mauritius, whereas over the same period low-cost producers such as Mozambique (not a beneficiary of the EU-ACP sugar protocol) profited from gaining free access to the same market via EBA.

Other border instruments can also have considerable influence. Non-tariff barriers relate to specific criteria that traded goods must comply with. These criteria, as well as the administrative burden to prove compliance, can be restrictive to trade. Non-tariff barriers to access to the EU include rules of origin[3] and sanitary and phytosanitary measures (SPS). The latter often relate to food safety aspects with a link to the environment, such as the prohibition of traces of certain pesticides. EU SPS standards are usually more stringent than developing countries' standards for domestically traded goods. In some cases they can work as incentive towards the development and mainstreaming of more environmentally friendly production practices, such as integrated pest management. When the standards or administrative procedures are perceived as difficult, however, or when they change very often, most farmers in developing countries, particularly small-scale farmers, will not be able to comply.

1.3.5 Effects of intellectual property rights and patents

Intellectual property rights and patents on crop varieties (strictly not part of the CAP) can affect genetic agricultural diversity. Developing countries often face strong pressure to adhere to agreements to respect intellectual property rights and patents on crop varieties as a precondition for free or freer trade agreements. It is often claimed, however, that the current tendency, especially in developed countries, to patent new varieties and to eliminate the right of other breeders to use this material for further improvement (breeders exemption) leads to monopolies to which farmers become dependent. On the longer term, these developments could have negative social and economic impacts and could possibly lead to the extinction of locally bred varieties (EC, 1998; Louwaars et al., 2009). The recently agreed Nagoya protocol on Access and Benefit Sharing of Genetic Resources (ABS) might play a role here. ABS also has its

Figure 1.4
Agricultural EU27 imports and exports, 2009



Source: UNCTADStat.

EU agricultural trade with developing countries[4]. Total imports into the EU from non-EU Member States totalled some USD 145 billion in 2009.

drawbacks, however. It has been claimed, for example, to form an impediment to the development of environmentally friendly biological pest control which has a community of practice based on free multilateral exchange, rather than bilateral exchange or defined benefit sharing agreements (Van Lenteren et al., 2011).

1.4 Effects of characteristics of developing countries

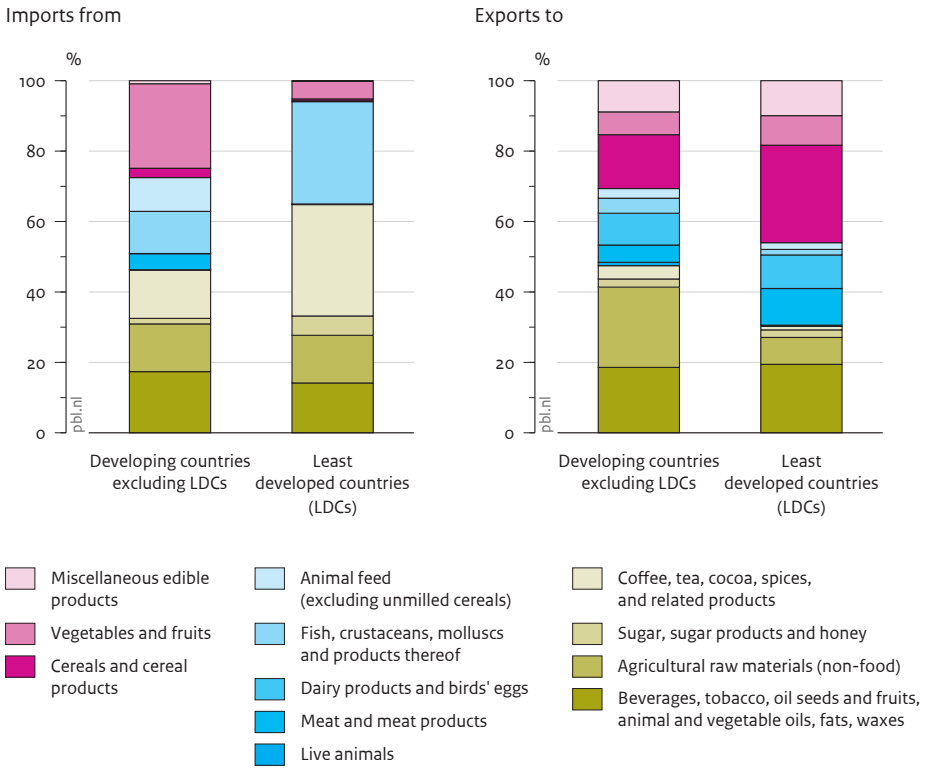
The extent and direction of environmental impacts – positive or negative – in developing countries as a consequence of changes in agricultural market conditions depend on each country's specific agri-environmental and socio-economic characteristics and its capacity to respond to changes. These characteristics are: the initial situation, factor endowments and constraints (layer 3 in Figure 1.2). Biophysical, socio-economic and governance conditions within a developing country work as a 'filter' for the impacts that external pressure may have on agricultural production and its effects on environment. These aspects are unique per country.

1.4.1 Initial situation

The way a country responds to changes in demand on agricultural world markets depends in the first place on its current position: the existence of certain agricultural industries, trade relations and its opportunities for trade. For example, it may be easier for developing countries to expand existing agricultural production than establish new types of agriculture. Existing expertise, excess capacity and sunk capital investments could all play a role here. Many developing countries have a free or preferential trade agreement with the EU. This is the case for all least developed countries and the ACP group of 79 developing countries, of which 39 are also least developed countries. This excludes many other countries, among which some with significant agricultural production capacity or potential, such as Brazil and Argentina. This situation is in violation of WTO rules as it benefits some developing countries over others (discrimination) without these countries opening up themselves (reciprocity). As a consequence, the EU negotiates the European Partnership Agreements (EPAs) with its ACP partners, to effectively create Free Trade Agreements.

Despite the free access of the least developed countries to the European market, the total value of trade of agricultural products is relatively small, compared to European trade with the economically more advanced developing countries (Figure 1.4). Export from the EU to least developed countries about equals import from these countries. There are marked differences in the composition of trade with the EU between economically more advanced developing countries and least developed countries (Figure 1.5). Fish and the 'coffee, tea, cocoa group' dominate the import from least developed

Figure 1.5
Composition of agricultural EU27 imports and exports, 2009



Source: UNCTADStat.

The composition of trade with the EU differs between economically more advanced developing countries[4] and least developed countries, while overall export of least developed countries to the EU is much lower (see Figure 1.4). Economically more advanced developing countries have a more diversified trade with the EU.

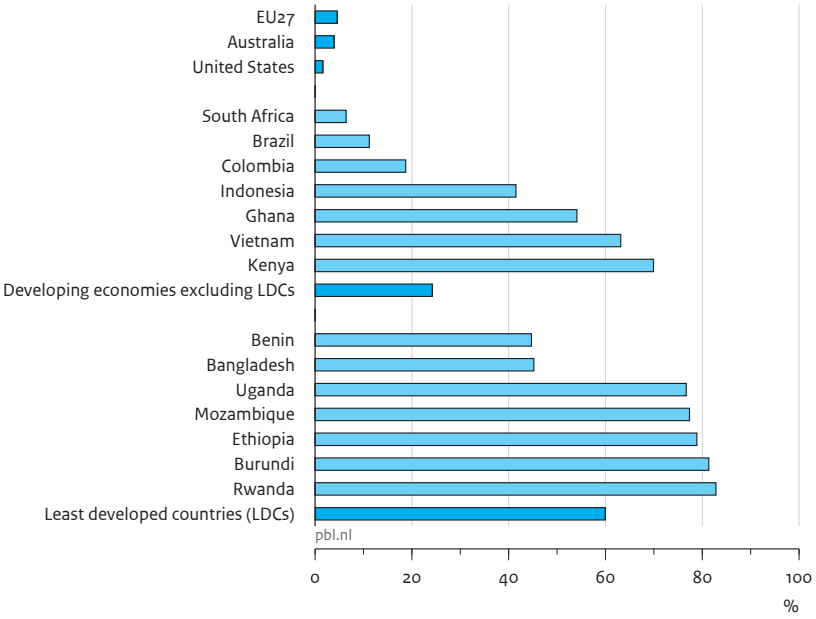
countries, whereas cereals is the most important group of products exported to these countries from the EU. The economically more advanced developing countries have a more diversified agricultural trade with the EU.

1.4.2 Factor endowments and constraints

We use the term endowments to refer to a country's natural resources and the fertility of its soils, the size and quality of its labour force, and the availability of capital and technology. If sufficiently available, these can be applied to expand existing agricultural production or even start farming new products. The quality of the endowments matters. Available agricultural area is of little use if soils are degraded and require a lot of effort or inputs, and a large labour force needs to have the capabilities that are required. The share of labour force in agriculture is high in many developing countries, especially in the least developed countries (Figure 1.6). This means that a lot of people are involved with any change in agricultural production in these countries. Capital goods (machines, storage etc.) can be expensive to replace and are not always useful for another type of agricultural production. Fixed investments can limit the ease with which a switch to another crop or farming type is made.

The supply capacity of countries is the capacity to increase agricultural production in response to higher demand, prices or an opening up of markets. There are differences between the least developed countries and many of the other developing countries. For example, least developed countries are not taking full advantage of the free access they have onto European markets at prices that are higher than the world price (Faber and Orbie, 2009). One cannot assume that any reduction in EU production or further easing of market access from the demand side will automatically improve least developed countries' terms of trade in agricultural products. Estimating the supply capacity of countries for key crops can be a route to quickly identify possible winners and losers from potential policy changes.

Figure 1.6
Share of agricultural labour force, 2009



Source: UNCTADstat

The share of labour force in agriculture in many developing countries is high. However, there are wide differences between countries, especially between the economically more advanced developing countries.

Given a country's initial situation and its endowments, there are a number of relevant constraints that limit or enable agricultural production. Adapting or scaling up agricultural production also depends on, for instance, the size and quality of roads, railways and harbours, and on the efficiency of its communications network and other infrastructure. The quality and reach of the financial sector determines access to capital for investments; availability or absence of technology can determine production costs.

1.5 Environmental effects of changes in agricultural systems

The previous sections showed that the CAP and EU trade policies influence the global agricultural market, causing changes in the price and supply of agricultural products, influencing price volatility outside the EU and market access for developing countries' agricultural products (layers 1 and 2 in Figure 1.2). Depending on country-specific characteristics (layer 3 in Figure 1.2) these external conditions may have impact on its agricultural production system: they may change the scale and structure of production, technology used, regulations applied and transport used (layer 4 in Figure 1.2); (Colyer, 2002; UNEP and IISD, 2005). Environmental impacts of these changes in production systems can be severe (layer 5 in Figure 1.2), but there are also pathways that lead to a sustainable agricultural growth, in which negative environmental impacts are reduced and profits lead to inclusive economic growth, increasing welfare and poverty reduction.

1.5.1 Types of changes

Scale effects refer to potential increases in production, by expansion of the agricultural area, or by more intensive use of the area under production, resulting in higher yields. Agricultural expansion leads to conversion of natural areas, at the cost of biodiversity loss caused by habitat destruction and fragmentation. Land conversion also affects the hydrological cycle, impacting stream flows and the seasonal availability of water for crops, cattle and people. Intensification usually implies an increased use of energy and matter inputs, often leading to emissions and pollution, and an increase in field operations, causing soil degradation. In a pathway of sustainable growth the negative environmental effects of these processes can be minimised, by conserving

Table 1.2

Conditions for sustainable agricultural development

Conditions that are conducive to:		Potentially influenced by CAP or other EU regulations	Level
... sustainable intensification of agricultural production	**... unsustainable agricultural development**		
Conditions favour investments in long-term productivity			
E Prices of produce and inputs are perceived as fair and fairly predictable and markets are reliable	abrupt structural changes; volatile markets, unpredictable fluctuations	Yes	I, N
F Land tenure and property rights are secured and respected	informal occupation rights; occupation rights derived from use of the land	No	N, L
F Credit to invest in long-term land productivity is available and accessible at affordable conditions	lack of access to credit; debt traps	No	N, L
Knowledge and awareness			
C Farmers and other stakeholders (including consumers) are aware of the importance of sustainable practices to maintain long-term land productivity and to safeguard ecosystem services	lack of awareness	Yes, indirectly via food chains and information programmes to consumers	N, L
C Farmers and advisors have access to the knowledge required to apply sustainable management practices; training opportunities are available	lack of knowledge; malfunctioning farm advisory services	Yes, potentially via knowledge exchange programmes	N, L
C There is a general perception that suitable land is a fragile scarce resource	perception that land is abundant	No	L, N
Biophysical conditions are suitable for sustainable intensification			
F There is a high potential to sustainably increase yields on available agricultural land	little potential to increase yields	No	L
C Yield risks, for instance, due to erratic weather or disease outbreaks are low; or affordable technologies/insurance mechanisms are available to lower yield risks.	risks are perceived high and unavoidable	No	L, N
Incentives exist to safeguard public goods and services			
C Appropriate regulation is in place and enforced to avoid land conversion; to foster soil conservation and to avoid emissions and excessive water abstraction for irrigation	lack of government regulation on land use, water abstraction, use of agrochemicals etc.; environmentally damaging subsidies	Only via SPS and exceptionally environmental criteria, for instance, for biofuels or in FTA	N, I
C Farmers and supply chain actors can create added value or gain access to new markets by adhering to high product and production standards, e.g. by means of labelling and certification	Lack of standards; standards frequently changing or imply high transaction costs		
C Opportunities are available to earn income from conserving nature and biodiversity (e.g. ecotourism, payments for environmental services, dividends on natural gene banks)	No economic value attributed to nature and biodiversity	Yes, via payments schemes such as REDD	I, N
Fair balance of power among stakeholders			
F (small-scale) farmers are organised and are able to act and negotiate as a group; strong social coherence of rural communities	rural communities are divided	No	L, N
C Governments are representative, transparent and sufficiently strong to maintain the rule of law	Weak, or corrupt governments	No	L, N
F Relations between farmers, their suppliers of inputs and the buyers of their produce are well-balanced, and based on trust and competitiveness	Relations of unilateral dependence	No	L, N, I
Image of agriculture			
F Rural entrepreneurs are seen as role models	Rural entrepreneurs are seen as greedy, and are distrusted	No	L,N
F Farmers take pride in their farms	Farmers have little self-esteem; farming is seen as dirty; the job for the unskilled and ignorant	No	L,N
C Rural heritage is valued	Strong urban bias of governments and society	No	L,N

E: External pressure; F: Factor endowment; C: Constraint
Dominant level of action or control: I: International; N: national; L: local
SPS: Sanitation and Phytosanitation; FTA: Free Trade Agreement
Source: This report's interpretation of cases presented by FAO (2011); Spielman and Pandya-Lorch (2010); FAO and WorldBank (2009); Gurib-Fakim and Smith (2009); IAC (2004); Izac et al. (2009); OECD (2011a); OECD (2011b); Pretty et al. (2003); Pretty et al. (2011); Prokopy et al. (2008); Röling (2010)

biodiversity rich nature areas connected by ecological corridors, by applying resource efficient technologies, avoiding emissions, and by avoiding intensification beyond the capacity of the land.

Structural factors indicate the possibility of trade altering the composition of output, such as may happen when a country starts producing a new product because trade has suddenly opened up a market for that product.

Changes in *technology* can have a variety of effects. Trade can lead to the wider dissemination and adoption of technologies that can be environmentally beneficial or detrimental. Increased use of fertilisers, for instance, may prevent the soil from erosion and boost yields, which reduces the need to convert more natural land into agriculture leading to less habitat destruction. But more intensive use of the land can also cause pollution, overuse of water and loss of biodiversity.

Regulation may, for instance, encompass the adoption of sanitary and phytosanitary standards required for exporting to another country or the inclusion of sustainability paragraphs in free trade agreements. Another example is the opportunity for developing countries to qualify for additional reduced tariff lines under the GSP+ programme[5] if they comply with a number of international conventions on labour, human rights, good governance and the environment.

The influence of *transport* goes further than the direct impacts of emissions, invasive species and habitat fragmentation as a consequence of road construction. The 20th century saw such advances in transport technology that goods with ever lower value to weight ratio became profitable to ship or lorry over ever longer distances. This allowed for the geographic unbundling of production and consumption and made economies of scale an inevitable consequence (Baldwin, 2012). As a consequence, production of specific goods can be concentrated in areas that are most suited for this purpose. On the other hand, it leads to a larger dispersion of products, by-products and waste, making it more difficult and costly to close production cycles and to recycle materials; for instance, between fodder production, livestock rearing and manure management.

1.5.2 Impacts on the environment

Changes in agricultural production in developing countries can result in a variety of impacts on the environment, both positive and negative. Environmental impacts are inextricably bound up with economic and social aspects. Changes in environment should be seen in a context of economic growth, poverty reduction and welfare. Tekelenburg et al. (2009) found that the Human Development Index and biodiversity are inversely related and that economic and welfare growth tend to cost biodiversity. However, in a situation that ecosystems are degraded and overused, biodiversity restoration and application of 'good environmental practices' can lead to better ecosystem goods and services and increased profits and welfare, a 'win-win' situation. On the other hand, loss of biodiversity may go hand in hand with increasing poverty. This situation may arise, for instance, if profits from projects with environmental impacts go to foreign shareholders or to just a happy few in the country, if expansion and intensification of agricultural production go together with loss of employment without alternative jobs, or if intensification leads to soil erosion and loss of future means of production.
Accrued benefits from ecosystem exploitation are often enjoyed by a different group of people than those who are bearing the costs of ecosystem degradation and loss of goods and services. These differences may cross national and generational boundaries. For example, a seemingly 'win–win' process of economic growth together with increasing biodiversity in a specific region may turn out to be a 'win–lose' process if a reduced ecological pressure in one region means more pressure in other regions (Tekelenburg et al., 2009).

The changes in scale, structure, technology, regulations and transport could occur via more environmentally sustainable or unsustainable pathways. In Table 1.2 some examples are given how different conditions can either work as an incentive to sustainable forms of intensification of agricultural production or to unsustainable agricultural development.

Note that only six of the items indicated in Table 1.2 are influenced by EU policies to some extent. However, these items are interrelated with other items in the table; so indirectly many more of them could be affected. For example, in case of strong price volatility, access to credit is likely to be more difficult than in case of predictable markets. When credit is accessible at affordable rates, technologies to overcome yield risks may also come within reach. Regulations, such as restrictions on the use of certain agrochemicals in order to comply with SPS requirements for exports, can also have an effect on the domestic awareness over the sustainability of these products.

Notes

1 It is noted that, proportionally, on average, the new (EU12) Member States have budgeted considerably more for the competitiveness axis, whereas the old (EU15) Member States spend more on environment and nature. Copus (2010) notes that expenditures on competitiveness tend to count with high levels of private sector contribution, whereas environmental expenditures have little or no co-funding from the private sector.

2 An agreement between the EU and certain African, Caribbean and Pacific (ACP) countries to buy and/or sell sugar at prices related to EU market prices.

3 Rules of origin specify the procedures that must be complied with to proof that goods traded under a certain agreement or initiative (e.g, EBA) were actually produced in a country that is a beneficiary of the agreement.

4 Country groupings according to UNCTAD. The group of developing countries also includes so-called emerging economies, such as China, Brazil and Argentina.

5 The Generalised System of Preferences (GSP) is a system of exemption from general trade rules to enable WTO Member States to give preferential trade access to developing countries. GSP+, formally known as the Special Incentive Arrangement for Sustainable Development and Good Governance, is an EU initiative which offers additional preferences to support vulnerable developing countries in their ratification and implementation of relevant international conventions in these fields. http://trade.ec.europa.eu/doclib/docs/2008/july/tradoc_139988.pdf.

TWO

Effects of the proposed CAP reform

The proposed CAP reform in the period 2014 – 2020 is likely to have limited effects on the environment in developing countries. This is due to (i) the relatively limited scope of changes that are under consideration, (ii) the limited effects that these changes are likely to have on global agricultural production and on global public goods, and (iii) the stuck Doha negotiations due to which the EU border controls will not change.

2.1 Characteristics of the proposed reform

A public debate on the future of the CAP was formally launched by Commissioner Ciolos in April 2010, with the objective to inform the preparatory work for the decision-making process. A summary of contributions to this debate was published in July 2010 (EC, 2010c). In November 2010, this was followed by a communication from the Commission (EC, 2010a) sketching the reform path, challenges, objectives of the future CAP, reform orientation with future instruments and three broad policy reform options. Formal proposals for new legislation and the corresponding Impact Assessment were issued in October 2011 (EC, 2011e; EC, 2011f; EC, 2011g; EC, 2011h; EC, 2011i)[1]. The proposal will be subject to a co-decision procedure between the Council and the European Parliament, which might result in substantial changes, including in the allocation of the CAP budget between and within its two pillars. The reforms are further complicated by the CAP budget itself being discussed in the EU's overall budget for 2014 – 2020. According to the tentative timeline the CAP legislation will be finalised in spring 2013 after the adoption of the Budget for Europe 2020 in December 2012. If this timeline will be reached, the Member States will implement the new instruments from 1 January 2014 on.

In Table 2.1 a selection is given of the proposed changes to the CAP instruments. The two complementary pillars of the CAP would remain, with annual support paid to farmers in Pillar I (currently ¾ of CAP budget), and multi-annual support for rural development measures in Pillar II (currently ¼ of CAP budget). Member states co-finance Pillar II. The ongoing discussions on the CAP reform are strongly focused on the objectives, forms, level and distribution of direct payments. Changes to the EU's border measures for agricultural products are discussed primarily in the context of the WTO Doha round, though potential interactions with a reformed CAP are of course being kept an eye on. Market measures in the first pillar of the CAP (e.g. intervention prices and export subsidies – commonly referred to as export refunds or export restitutions – and production quotas) draw relatively little attention in the debate, although they have most impact on European and global production and thus on trade conditions of developing countries, see part 1.1.2. The relatively low profile of market measures in the current reform discussion is due to:

1. The ongoing Doha round. Prominently including changes to the market instruments in the reform could

Table 2.1
Selection of changes in CAP instruments as proposed by the European Commission, potentially relevant to external effects

Direct payments (72% of proposed budget, Pillar I)	Market measures (Pillar I)	Rural development (Pillar II)
• Convergence of direct payments across Member States • Green components: - 30% of Pillar I budget - ecological focus areas - crop diversification - permanent pasture • Extended options for coupled payments • New standards for cross-compliance	• Ending milk quotas (2015)*) • No extension of sugar quotas (after 2015) • Extended market disturbance clause • Measures to improve food chain • Measures to support quality production	• New priorities: - competitiveness - ecosystems - climate • Enhanced risk management toolkit • European Innovation Partnership (EIP) on Agricultural Productivity and Sustainability • Monitoring and evaluation

Sources: EU legal proposals for post-2013 CAP[1]; Matthews (2011).
*) *Part of Health Check*[2]

result in the EU undermining its bargaining position in the negotiations in the WTO Doha round.
2. Changes already made to market support measures. In recent years these measures have seen considerable reform already: money spent on export subsidies has declined fast; intervention prices have been reformed and lowered; and production quotas have been relaxed or are being phased out.
3. A lull in their necessity. There has been relatively little demand in recent years for export subsidies and interventions, given the high food prices prevailing on the world markets (bar some intervention in the dairy sector).

2.2 Expected impacts on developing countries through market mechanisms

As explained in Chapter 1, the impacts of any CAP reform on developing countries will depend on the extent to which the measures (i) affect EU and world production; (ii) affect prices and price volatility, (iii) affect trade conditions between the EU and the rest of the world and access to markets by developing countries and (iv) generate global public goods or 'bads' with an influence on production conditions and environment beyond the EU.

Because of the limited scope of the proposed changes, we expect that in general terms CAP reform will have little effect on external trade, and thus on agricultural production and the environment in developing countries. This notion was confirmed in the interviews conducted for this study. This is further illustrated by results from a model study using the LEITAP – IMAGE suite, conducted in 2010, regarding the production of major crop and livestock commodities (Helming et al., 2010), confirmed by a more recent study using the CAPRI and Dyna-CLUE models to assess the effects of the 'greening measures' of the CAP on an EU scale (Van Zeijts et al., 2011).

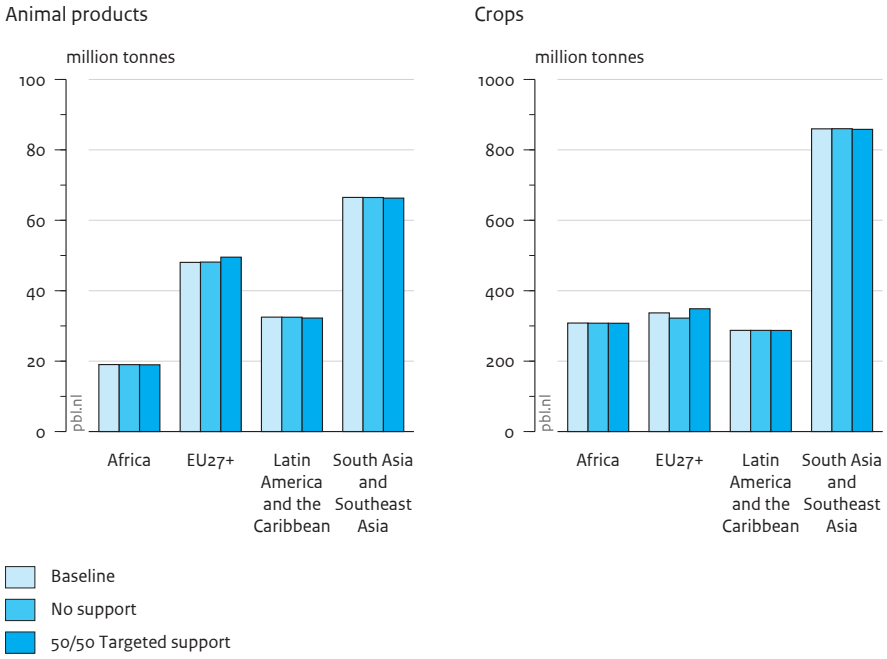
2.2.1 Results of LEITAP-IMAGE model study

In this study the effects on production volume and land use in several world regions were calculated up to 2020, for three contrasting stylised future CAP scenarios. The scenarios (ii) and (iii) go much further than what is proposed by the Commission for the CAP reform. For all scenarios it was assumed that export subsidies were abolished and that import tariffs remained in place. The three scenarios were:

i. Continuation of current CAP including the Health Check ('Baseline' scenario)
ii. 50% of current direct payments redirected to enhance EU competitiveness; the other 50% would be targeted to areas facing natural or other specific constraints ('50/50 targeted support' scenario)
iii. Abolishment of all payments ('No support' scenario)

Results of the modelling for aggregated crops and livestock products are presented in Figure 2.1 and for some specific commodity groups in Figure 2.2. See Appendix for a description of the model analysis.
The model results suggest only small effects on total EU production, consumption and trade. The 50/50 targeted support scenario would result in the highest production in the EU, and lowest outside the EU, because of the high investments in EU competitiveness. Total crop production in the EU would be 3.5% higher than in the baseline in 2020; whereas total production of animal products would increase by 3.1% on a dry mass basis. According to the model, these EU production increases would result in lower prices, inducing higher consumption, as well as lower production in the rest of the world, especially in other OECD countries, Latin America and Asia. In Africa,

Figure 2.1
Projected agricultural production, 2020



Source: LEITAP-IMAGE model calculations (see Appendix).

According to model calculations a far more drastic reform of the CAP than currently proposed would hardly change production volumes of crop and animal products in three world regions[3] where many developing countries are situated. The results presented here refer to the baseline results presented by Helming et al. (2010), plus two unpublished scenarios constructed for the same study. NB Volumes are expressed in dry matter.

crop production under this scenario would decrease by 0.2% and livestock production by 0.3% as compared to the Baseline scenario.

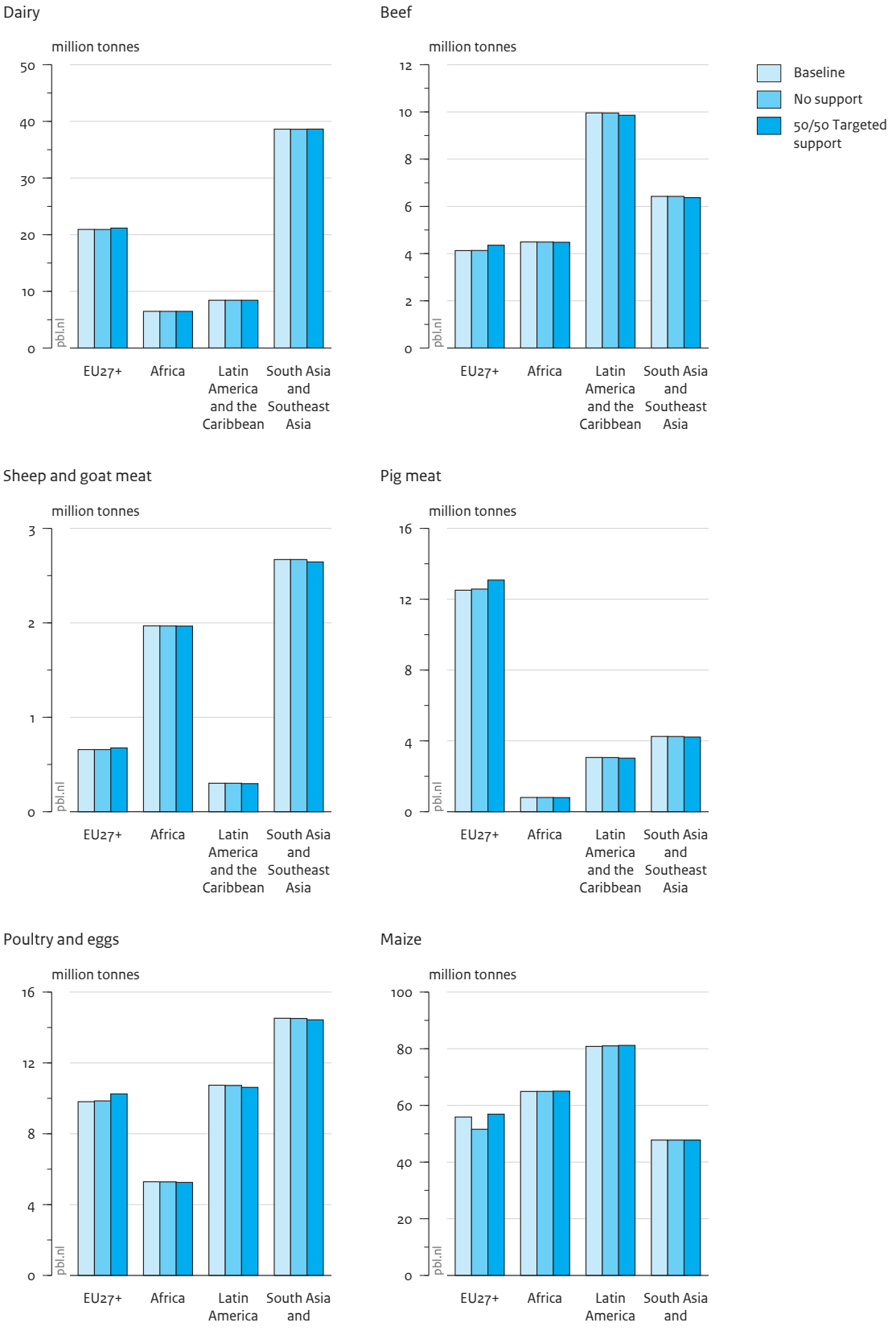
Hence, the conclusion from this exercise is that CAP reform within the wide range of the options studied will likely have at most a very small impact on the environment in developing countries through market mechanisms. Another conclusion, though not central to this analysis, is that abolishment of all CAP payments would have little influence on the EU agricultural production volume in general.

2.2.2 Results from 'Greening the CAP' scenario study

Van Zeijts et al. (2011) use the CAPRI and Dyna-CLUE models to assess the effects of more equity between Member States, ecological focus areas and greening incentives. The latter refers to environmental actions that go beyond cross-compliance (e.g. permanent pasture, green cover, crop diversification and ecological focus areas).The results show 4% decline in EU cereal production, a 5% decline in oilseed production and a 1% decline in beef production as compared to the 'Baseline' scenario. The main reasons for these relative production declines is that in the greening scenario, EU farmers are actually compensated for producing less because more land is under the agri-environment schemes or on less land because of the legal commitment to ecological focus areas and less conversion of grassland to crop land. As a consequence, EU imports would increase, especially for cereals and oilseeds. According to the model projections, 2020 production outside the EU is 0.2% higher for cereals and 0.65% higher for oilseeds, compared to the 'Baseline' scenario. There will be little effect on agricultural production in developing countries though, for two reasons: the EU production of oil seeds is only small, and increased import and decreased export of cereals would not benefit agriculture in developing countries as these cereals mainly originate from producers in temperate zones. As more advanced developing countries such as Brazil and Argentina would take advantage of any opportunity that may arise from decreases in EU agricultural production, for instance, caused by the greening measures of the CAP, least developed countries would likely experience even fewer effects. Indirectly

Figure 2.2

Effects of CAP reform options on the production of agricultural commodities, 2020



Source: LEITAP-IMAGE model calculations.

Also, at a more disaggregated level than in Figure 2.1, projections suggest hardly any effect of CAP reform on production volumes of key agricultural products in world regions where many developing countries are situated. NB Volumes are expressed in dry matter.

there could be an impact on agriculture in developing countries who import cereals through price mechanisms. In Figure 1.5 it can be seen that cereals make up a large part of the agricultural export of Europe to developing countries, especially the least developed countries. If prices of imported cereals rise, demand for local substitutes may increase.

A demand for increased crop diversification as part of the greening components of the reform proposals could possibly lead to higher production of oil and protein crops at the expense of cereal production. This could reduce EU dependency on the imports of protein rich feed (mostly derived from soy, of which the current major world market suppliers are Brazil, Argentina and the United States), but at the cost of cereal production for which the EU is currently more or less self-sufficient.

2.2.3 Results from literature study

The Impact Assessment on Policy Coherence for Development (Annex 12 of EC, 2011e) concludes that the proposals for CAP reform are in the spirit of continued market orientation, alongside the EU's multilateral trade negotiations. The Impact Assessment further states that impacts on agriculture in developing countries will be further reduced. However, the assessment is quite general, does not quantify the effects of the proposals on developing countries, and does not analyse potential impacts of changes in CAP instruments on specific commodities, countries or different groups within countries. Furthermore, in contrast to what is suggested in its introductory paragraphs, the Impact Assessment was made against a reference of 'do no (further) harm' without making any attempt to look into the potential for synergies of CAP reform with development.

Effects of changes in pillar I measures

As argued in Section 1.3.1, and confirmed by the model results in Section 2.2.1, changes in the size and distribution of direct payments may have substantial effects on EU farming patterns, but are likely to have very limited effects on total EU agricultural production.

The EC proposes that in the CAP reform the rules for coupled payments will be loosened, both in terms of the overall amounts and of commodities affected. Coupled payments could stimulate production of certain commodities in Europe to higher levels than would be without these payments. This would put producers outside the EU at a disadvantage and keep production in these countries at a lower level. The impact on agricultural production in developing countries would depend on their connection with the commodity and the volume of the coupled payments. However, there are no reasons to assume that after 2013 commodities and amounts of payments will change much as compared to the current situation, because the total volume of payments remains constrained to a relatively low percentage of overall EU direct payments. The objective of these payments is to avoid cessation of production; not to increase it (Matthews, 2011).

In countries that produce sugar and that have preferential access to the EU market, the proposed abolishment of sugar quotas and consequent downward effect on sugar prices could affect sugar production (Matthews, 2011; Nolte et al., 2012). This could be seen as an example of incoherence, or rather as an adjustment to formerly distortive policies. The ending of milk quotas is not expected to have significant impact on world dairy markets (Matthews, 2011).

Effects of changes in rural development measures

As pointed out in Section 1.3.3, if emphasis were put on competitiveness in rural development programmes, agricultural production may increase, especially in eastern European Member States, but possibly at the cost of production in western Member States, resulting in relatively small effects on total European agricultural output and world markets. Increased emphasis on ecosystem preservation and restoration, however, may reduce production intensity.
According to Tangermann (2011) the proposed 'risk management toolkit' under Pillar II would have the potential to create new market and trade distortions, but it is expected that budgets spent on this toolkit and thus its effects will be limited.

2.3 Potential impacts of CAP greening measures on global public goods

The main focus of the study by Van Zeijts et al. (2011) mentioned earlier was to calculate the effects of the 'Greening measures' on biodiversity in Europe, as well as on carbon emissions and sequestration. They found that there will be an increase of 3% in species richness – a measure for biodiversity – in the EU, as compared to the 'Baseline' scenario (CAP up to and including the reforms introduced with the so-called CAP Health Check). This would reduce the decline in EU farmland biodiversity to half the decline in the Baseline, over the 2014–2020 period. Biodiversity would profit most in north-western Europe. This slowdown of biodiversity loss could also count for migratory birds that hibernate in Africa, but this is not specified in the study.
They also calculated that the contribution of the greening measures to reduction in global greenhouse gas emissions would be close to zero, as compared to the

'Baseline' scenario. A small reduction in greenhouse gas emissions in Europe would be counterbalanced by some increase in emissions outside the EU, as certain EU imports, such as oil seeds, cereals and beef, would increase slightly.

Notes

1 A full overview of the proposals and accompanying documents is given at http://ec.europa.eu/agriculture/cap-post-2013/legal-proposals/index_en.htm.

2 Http://ec.europa.eu/agriculture/healthcheck/index_en.htm.

3 South Asia and Southeast Asia includes all of Asia except China, the Middle East, OECD Asia and the former Soviet Republics. EU27+ includes all EU Member States plus Norway, Switserland, Iceland and the Balkan countries.

THREE

Effects of other drivers on agriculture in developing countries

The effects of worldwide developments outside the realm of the CAP, such as population growth and welfare growth on food consumption, agricultural production and production practices will be of far greater consequence for environment and nature in developing countries than reform of the CAP. Biofuel policies in Europe and other countries are expected to have relatively small impact if considered on a global scale, but may have large impact locally.

3.1 Autonomous drivers

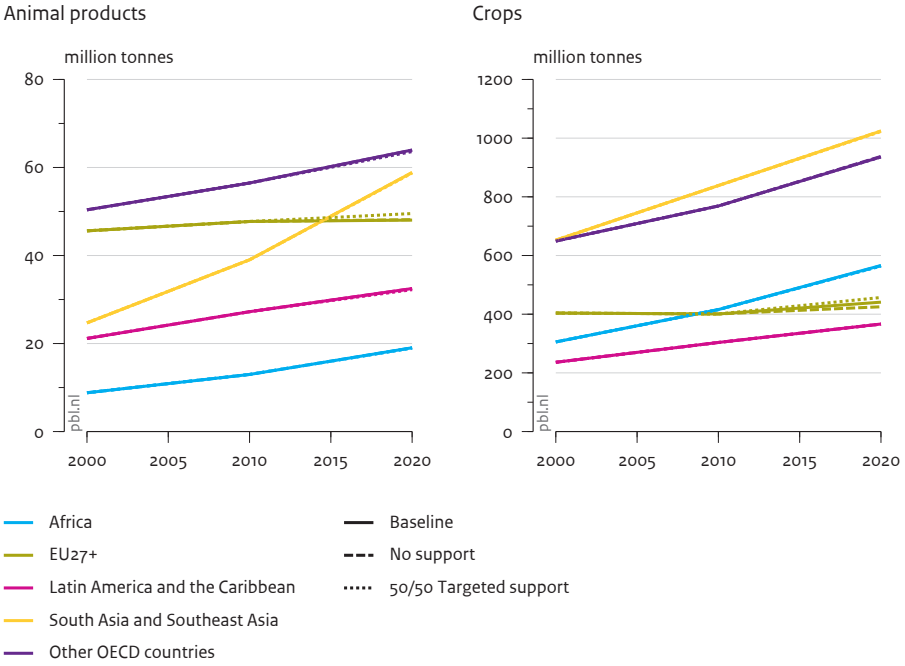
Model calculations project that population and welfare growth, increasing food consumption especially of animal products and agricultural production outside Europe will have far greater consequences for environment and nature in developing countries than reform of the CAP (Helming et al., 2010). While agricultural production in Europe is expected to nearly stabilise, production will grow in Asia, Latin America and Africa, thus reducing the share of Europe in global production (Figure 3.1).

3.2 Biofuel policies

Biofuel policies are not part of the CAP, but European agricultural policies may influence the cultivation of biofuel crops, such as sugar and cereals, which can be raw material for biofuels. The impact of EU biofuel policies – and biofuel policies in general – has been heavily debated in the last years. Mandatory blending triggers production and import of biomass or biofuels from other regions with land-use changes as a consequence. These land-use changes could even counterbalance the emission reduction obtained from reduced use of fossil biofuels; for example, due to deforestation. Sustainability criteria should avoid that deforestation will occur to grow biofuel crops. However, biofuel crops grown on current agricultural land can displace the food or feed production and indirectly contribute to deforestation (Ros et al., 2010). This displacement effect is also called indirect land-use changes (ILUC). The debate is still ongoing whether this ILUC should be a criterion of sustainable produced biofuel crops and which measures could be implemented to minimise these impacts.

Several studies explored the impact of biofuel policies on land-use changes (Al-Riffai et al., 2010; Cornelissen et al., 2009; Dumortier et al., 2009; Fabiosa et al., 2009; Fritsche et al., 2010; Havlík et al., 2011; Overmars et al., 2011; Perez-Soba et al., 2010; Searchinger et al., 2008). The uncertainty around the actual additional production of food crops needed for biofuels is high. The assumed biodiesel–bio-ethanol ratio on the demand side, the occurrence and usefulness of by-products and price-feedbacks on consumption and production are the most important mechanisms that cause this uncertainty (Edwards et al., 2010; Prins et al., 2010). Moreover, when lignocellulosic biofuel crops, also known as 'second-generation biofuels', will become commercially available is uncertain. The IPCC Special Report on Renewable

Figure 3.1
Projected agricultural production



Source: PBL, derived from raw data of the study by Helming et al. (2010).

Model projections suggest that autonomous growth in livestock and crop production in most world regions[1] will dwarf the effects of far more drastic CAP reforms than those currently proposed by the EC. In the graph, the effects of CAP reform are too small to be visible, except for the EU itself, and for other OECD countries and Latin America in the scenario with 50% of CAP support strongly targeted at improving competitiveness. The 'Baseline' represents a projection of the production under the current CAP (including the 'Health Check'). NB Animal products are expressed in dry matter.

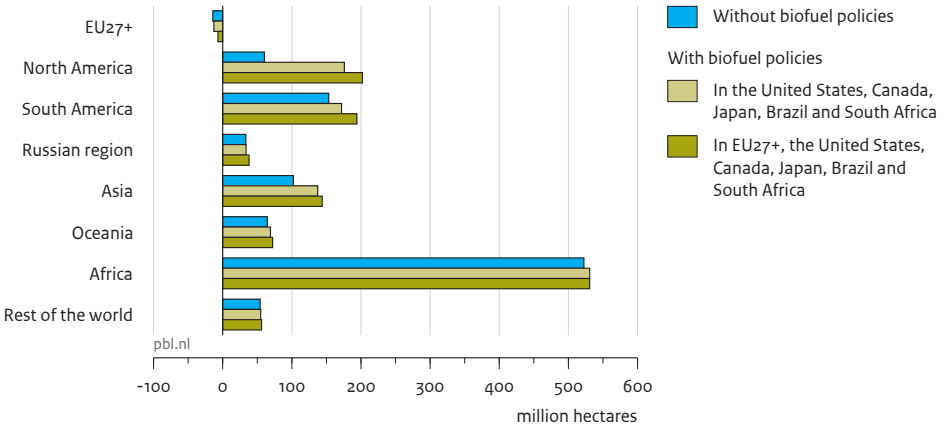
Energy Sources and Climate Change Mitigation (IPCC, 2011) states that strong short-term research and development and market support could allow for commercialisation around 2020 depending on oil and carbon pricing (Chum et al., 2011).

The combination of the LEITAP and IMAGE model was used to calculate the global impacts of biofuel policies (Perez-Soba et al., 2010). The drivers to produce first-generation biofuel crops are an autonomous economic demand and – the lion share – the obligatory blending mandates in 2020 in several countries, such as the United States, EU countries and South Africa.
Figure 3.2 shows the increase in agricultural land between 2000 and 2030 for 8 major world regions in three scenarios: (1) a reference scenario without biofuel policies and only fully market-driven production of biofuels (the model can choose to project biofuel crops in case the prices of fossil fuels are high), (2) a second scenario in which five countries outside the EU implement biofuel policies (namely the United States, Canada, Japan, Brazil and South Africa), and (3) a third scenario that also includes the EU policy directive with mandatory blending.

The model results suggest that implementation of biofuel policies in the five countries causes the highest impacts in their own regions, although in all regions the agricultural area expands compared to the baseline situation. European biofuel policies are projected to cause a stronger expansion in all regions, especially in the United States, Canada and Brazil. In the EU itself the abandonment of agricultural land would be less. In Africa, the implementation of biofuel policies in the countries mentioned in this projection would result in an additional 8.3 million hectares for agriculture.

Even today, pressure on land is being felt in many sub-Saharan countries as a consequence of foreign investments in land intended for biofuel projects. IFPRI estimated that between 15 and 20 million hectares of farmland in developing countries were subject to transactions or negotiations involving foreign investors between 2006 and 2009 (De Schutter, 2009).

Figure 3.2
Projected change in agricultural area due to biofuel policies, 2000 – 2030



Source:Based on data from Perez-Soba et al. (2010)

According to model projections, biofuel policies will cause an expansion of arable land, especially in North and South America and Asia.

Text box 3.1 Smallholder arrangements most positive alternative for local livelihoods and environment in Tanzania

Establishing biofuel projects in Africa has the potential to provide a substitute for oil imports and to provide a new source of agricultural income and economic growth in rural areas. Thus it can become a source of improvements of local infrastructure and broader development. Also it can be carried out by smallholder farmers. There is a growing interest from foreign private investors in establishing biofuel projects in Africa. The negative side is that biofuel plantations could have negative environmental impacts such as deforestation and water scarcity, compete with food production and deprive local people of rights to use land, without proper compensation or alternative livelihood opportunities.

Sulle and Nelson (2009) found that in Tanzania over 4 million hectares of land had been requested for biofuel investments, but only 640,000 hectares had been allocated and of these only 100,000 hectares had been granted formal rights of occupancy. They concluded that biofuel companies that use outgrower and other contracted smallholder arrangements have little direct negative impacts on land access; this appears to be a positive model. Other promising models are village land trusts and equity-based joint ventures. Communities should be supported to increase their ability to negotiate with biofuel investors on their own behalf. A model study by Arndt et al. (2010) confirms these conclusions.

FOUR

Opportunities for a more development-friendly CAP

The CAP reform proposals do not explicitly refer to development objectives, despite the legal obligation to take these into account. Nor do they explicitly mention a global scope in measures that have potential for synergy with development targets such as improvement of food chains, innovation partnerships on productivity and sustainability or impact monitoring. To be coherent with development objectives, CAP reform requires an approach that is considerate of the global dimension of agriculture and food supply. This approach should utilise potential synergies with development objectives, rather than merely 'do no harm'.

4.1 Development-friendly CAP not easily defined

Discussion about a CAP that would be more coherent with development objectives is hampered by the lack of a clear definition of such a development-friendly CAP. One reason for this are the large diversities between and within developing countries. The extent to which changes to the CAP would affect developing countries depends on their degree of self-sufficiency in food supply, commodities they produce and consume, competitiveness of local agriculture, trade relations with the EU, and the potential to take advantage of market opportunities. The effect of changes to the CAP could mean that food-importing countries would benefit from subsidised products from the EU. The urban population would profit from lower food prices, but their farmers would argue that unfair competition prevents them from developing a sustainable agricultural sector. This discussion could perhaps be clarified if coherence with regard to the CAP is understood in a structural sense, rather than in terms of short-term benefits or disadvantages for specific communities within developing countries; as policies that increase or at least do not decrease opportunities for developing countries to develop a sustainable agricultural production system that will increase food security and stimulate inclusive economic growth.

4.2 Opportunities within the scope of the CAP reform

Many developing countries have a substantial potential to sustainably develop their agricultural sector, with potentially great benefits in terms of food security, poverty reduction, employment and economic development (FAO and WorldBank, 2009; Gurib-Fakim and Smith, 2009; IAC, 2004; Izac et al., 2009; OECD, 2011b; Pretty et al., 2011; Pretty et al., 2003). Coherence of the CAP reform with such developments would mean that:

1. any distortions caused by the CAP in production and trade conditions (layers 1 and 2 in Figure 1.2) which harm developing countries are remedied, new distortions are avoided and if possible synergetic elements are introduced which benefit sustainable agricultural production and food supply in the EU as well as globally;

2. it would contribute to the establishment of conditions in developing countries that are conducive to sustainable development as specified in Table 1.2;
3. maximum advantage is taken of the possibilities for the provision of global public goods and avoidance of global public 'bads' – something that would benefit the environment and stimulate sustainable agricultural development in developing countries; for instance, a stable climate, knowledge and knowledge exchange about good agricultural practices to protect the soil and water, free access to knowledge of the market and of standards for traded goods, free trade in environmental technologies and cooperation and exchange of knowledge on environmental issues and innovations that support sustainable agriculture. Of particular relevance are the development of green technologies, supported by the CAP's Pillar II and measures to promote agricultural biodiversity which contribute to the global pool for variety improvement.

Opportunities for more coherence within the scope of the current CAP reform include:

- CAP measures should not exacerbate price volatility, which could be the case with the remaining export subsidies and market intervention mechanisms, as well as with the proposed enhanced risk management toolkit in Pillar II. There is almost unanimity regarding harmful effects of market distorting instruments on developing countries, especially of export subsidies (Aksoy and Beghin, 2005; Bailey, 2011; FAO et al., 2011; OECD, 2011a).
- Direct payments could be better targeted at delivering public goods, such as reducing greenhouse gas emissions and increasing agricultural biodiversity. This would also reduce any market-distorting effect of direct payments.
- Phase out instead of reintroduce coupled support to enhance market opportunities for some developing countries.
- CAP funding for innovation and technology development – for example, for soil conservation and restoration, and for good practices in agricultural water management – could also be made available to contribute to such activities in developing countries within the framework of the proposed European Innovation Partnership on Agricultural Productivity and Sustainability.
- Finally, a monitoring and reporting mechanism could be set up, to identify impacts of CAP measures on developing countries in the broader context of other EU policies, as proposed in the study by Klavert et al. (2011) and by the Dutch government (Ministry of EL&I, 2011). This would provide feedback and could lead to adjustment of the policies and measures that would be shown to be harmful, and provide a basis for evidence-based decision-making.

4.3 Opportunities in a broader context

In a more comprehensive approach, policy coherence would not be restricted to the CAP, but also apply to policies in adjacent fields, to enable countries to actually reap the benefits of opportunities offered by a more coherent CAP reform or spin-offs of such reform; or to address constraints caused by the CAP. This approach opens a much wider area of opportunities for coherence and would help to leverage benefits of improved coherence within the CAP. For example, addressing export subsidies alone is unlikely to lead to a quick response of more sustainable production in developing countries if other pressure factors towards unsustainable development continue outweighing those that foster sustainability (Table 1.2). Another example is the case of improved market access, implying new opportunities for some and preference erosion for others. For the former, policy coherence would mean, for example, capacity building to comply with regulations for export to the EU; whereas for the latter it could mean assistance to diversify production. These notions are not new, but their effective application so far seems to have been rather weak (Bouët et al., 2010; Faber and Orbie, 2009).

Border measures such as SPS regulations, trade agreements and preferential access initiatives have an effect on the ability of developing countries to export to the EU. In the case of SPS, for example, this could be a reason to consider, also in this light, the real need for more stringent health and safety regulations in the EU; the speed at which new regulations are introduced; as well as potentially negative environmental side effects. In the case of changes to trade regulations, both the implications of gaining preference as well as of preference erosion need consideration.
Also intellectual property rights and patents could be screened for their impacts on agricultural biodiversity and environment in developing countries.

As the capabilities of developing countries themselves are of great importance to seize opportunities and to face the challenge of meeting the food demands in the coming decades, support to the agricultural sector in these countries would be crucial. Text box 4.1 lists opportunities for measures that would improve coherence between European policies and the development goal of supporting sustainable agricultural production in developing countries.

Text box 4.1 Opportunities for improved coherence of EU policies with sustainable agricultural development in developing countries

Within the scope of the CAP
- Totally abolish coupled payments and export subsidies
- Identify and address cases of cross-subsidisation and their effects
- Encourage technology transfer of CAP funded innovations
- Seek full alignment with internationally co-ordinated policies to enhance food security and mitigate food price volatility

With relation to border measures, adjacent to the CAP
- Timely notification and gradual introduction of new trade agreements
- Review product criteria for exports to the EU
- Gradual introduction of any new criteria for exports to the EU
- Support to adjustments to changes in trade conditions (e.g. preference erosion)

Outside the CAP, related to agriculture and food
- Support to the establishment of regional collaborative initiatives
- Support to establish (micro) credit schemes and cooperatives
- Support to agricultural extension, training, education and awareness campaigns
- Support for agricultural diversification and multifunctionality initiatives (e.g. agri-ecotourism)
- Support to payment schemes for environmental services (e.g. REDD, agri-pastoral carbon sequestration, preservation of habitats for migratory birds) and the preservation of agricultural biodiversity
- Support to sustainable supply chain initiatives and labelling schemes (e.g. establishment and administration; assistance to farmers to comply with criteria)
- Support to environmental interest groups and NGOs that act in the interest of poor rural communities
- Capacity building in research, development, administration and governance
- Support to the establishment of monitoring and information systems (e.g. of burning, deforestation, land conversion, application of good practices, market information systems)
- Participation in and support to integrated impact assessments and regional medium- and long-term agricultural and environmental outlook studies

Appendix

The LEITAP and IMAGE model calculations

Leitap model

LEITAP (Nowicki et al., 2006; Van Meijl et al., 2006) is a multi-regional, static, general equilibrium model based on neoclassical microeconomic theory; it includes all economic sectors. LEITAP is adapted and further developed by LEI (Part of Wageningen University and Research Centre) and is based on the standard GTAP model[1]. The standard model is characterised by an input–output structure based on regional and national input–output tables that explicitly links industries in a value added chain from primary goods, over continuously higher stages of intermediate processing, to the final assembling of goods and services for consumption. Based on assumptions on economic growth (GDP), demographic developments and policy changes, the model calculates commodity trade, commodity price and commodity production (actual yield) for a number of regions in the world. About 20 crop types and several animal products categories are defined in the model. Trade barriers, agricultural policies and technological development are taken into account.

Image model

IMAGE is an integrated assessment model at world level that is run at the PBL Netherlands Environmental Assessment Agency. IMAGE simulates greenhouse gas emissions from the energy system and the land-use system. The land-use system is simulated at a global grid level (0.5 by 0.5 degrees), leading to land-specific CO_2 emissions and sequestration and other land-related emissions such as CH_4 from animals and N_2O from fertiliser use. IMAGE creates feedbacks by simulating the impacts of CO_2 concentrations and climate change on the agricultural sector and natural biomes and can therefore project environmental impacts of global change. By combining LEITAP and IMAGE the ecological consequences of changes in agricultural consumption, production and trade can be visualised (Eickhout and Prins, 2008). Basically, IMAGE uses the economic output from the LEITAP model as inputs. In current LEITAP-IMAGE calculations biofuels are included in the LEITAP energy system and in the IMAGE calculations on land use. Specific biofuel crops are identified.

Model setup and scenario assumptions

The external inputs (exogenous drivers) to the model include changes in population, income expenditure, technological change, etc.. Data used here are taken from other studies such as Scenar 2020 (Nowicki et al., 2006) and Scenar 2020-II (Nowicki et al., 2009) and from projections of international institutes such as OECD and FAO (Helming et al., 2010), as indicated below.

In addition to providing general model inputs, the study by Helming et al. (2010) also added input for three scenarios to assess the impact of European agricultural policies on land use within and outside Europe. The 'Reference Scenario' included the CAP measures and budget of the 2008 Health Check. This scenario was compared with two 'Policy scenarios': one that abolished Pillar I without any additional measures and one that used Pillar I money to stimulate competitiveness and support Least Favoured Areas (LFA) payments. In more detail the scenarios used the following assumptions:

Reference scenario:

Policy and measures including 'Health check' (2008), for instance:

- 10% reduction in Direct Income Support.
- CAP budget nominally constant.
- No further WTO agreements included.
- Biofuel policies: 10% share of biofuels in transport in 2020.

Policy scenario 1: Abolishing the 1st pillar:

- The basic assumptions are similar as in the reference scenario mentioned above.
- Pillar I is totally removed and this budget is removed from the CAP.

Policy scenario 2: Payments for LFA and competitiveness

- Helming et al. (2010) calculated several policy scenarios with LEITAP. These stylised reform scenarios included the setup of the current Pillar II, while Pillar I subsidies were used to implement measures as currently present in Pillar II since these were close to the issues that were assumed to be important in the future CAP (paying for public goods such as landscape, biodiversity, food security), together with extra means for improving competitiveness. These measures were: support of competitiveness and sustainability, valuable areas (LFA

areas) and ecosystem services, and a base premium at Member-State level (similar to current Pillar I payments). An important difference with current Pillar II payments was that no extra co-financing by the Member States was assumed.

- In our study we used one of the stylised reform scenarios in which 50% of the Pillar I budget was spent on competitiveness and 50% was spent on LFA payments. LFA payments help farmers in areas facing natural or other specific constraints to production, for example mountainous areas. No extra payments for agri-environmental measures were assumed in this scenario. Assuming that the substantial changes implemented in the model scenarios for these measures would show clear effects, this approach would provide a good estimate of the direction of effects. The EC proposals published in October 2011 present much smaller changes in budget.
- Measures to improve competitiveness were included in the LEITAP model by assuming a relationship between physical and human capital investments and productivity and efficiency gains in the agricultural sector (Nowicki et al., 2009). Half of the technical change was contributed to yield increase and half to input savings.
- Income payments for LFA were linked to land in the agricultural sector. FADN data were used to distribute payments across sectors.
- All other model settings were equal to the reference scenario.

Note

1 Https://www.gtap.agecon.purdue.edu/models/current.asp.

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PBL Netherlands Environmental Assessment Agency

Mailing address
PO Box 30314
2500 GH The Hague
The Netherlands

Visiting address
Oranjebuitensingel 6
2511VE The Hague
T +31 (0)70 3288700

www.pbl.nl/en

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