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CAP: Thinking Out of the Box

Further modernisation of the CAP – why, what and how?

2017

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The Rural Investment Support for Europe (RISE) Foundation is an independent foundation which strives to support a sustainable and internationally competitive rural economy across Europe, looking for ways to preserve the European countryside, its environment and biodiversity, and its cultural heritage and traditions. It works as a think tank, bringing together experts to address key environmental/agricultural challenges in Europe and develops high quality accessible research reports with clear recommendations for policy makers. It draws on its extensive network of rural stakeholders to highlight innovative practices developed at the farm level and provides a platform for debate on issues that affect rural communities.

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The RISE Foundation would like to thank the sponsors of this report for supporting us and giving us the freedom to develop this out of the box thinking project to find better policy solutions for a more sustainable European agriculture. As an independent public utility Foundation the work of the RISE Foundation is completely impartial and independent. Therefore the ideas and views expressed in this report are solely those of the RISE Foundation and do not necessarily represent in anyway the position of the sponsors.

PREFACE

by Janez Potocnik

The challenges we are facing in the 21st Century are increasing our individual and collective responsibility. We should turn the existing fragility and increasing risks to a more sustainable path. We should fix the broken compass. The international agreements, in particular the recent adoption of the Sustainable Development Goals (SDGs) and operationalisation of one of the goals through the Paris climate agreement, are important steps in the right direction. They are the recognition of the increased awareness of humanity that the transition to a more sustainable path is necessary and unavoidable and that we should work together to be able to achieve it.

The necessary transition is not limited to agriculture and not only to the European Union. It involves all economic sectors, all society, and it involves all nations facing these joint challenges in their specific way.

What is needed is a clear, agreed strategic approach, addressing these challenges, which would prevent us from being lost in details. All concrete decisions should be taken on the basis of that strategic vision and tested against its delivery. Europe's Common Agricultural Policy (CAP) is, and will remain, a critical instrument to deliver that vision and it should be adjusted to support and enable the necessary transition. Appropriate governance structures should be introduced to make the transition viable.

These structures should be based on the principles of sincere partnership, joint ownership and joint responsibilities considering that only farmers are positioned to manage primary production in the food system. They are the largest group of natural resource managers in the world and are critical agents of change in the transformation of current consumption and production systems.

Recent news from the Netherlands has shown the difficult situation in which Dutch farmers are trapped after the expiry of a derogation from the EU's nitrate rules, that allowed them to spread more manure than other European farmers, and the disappearance of milk quotas. The massive quantity of manure is a problem because it releases too much phosphorus, which contaminates groundwater, and the only realistic response is to cull the culprits. A lucky few cows could be sold abroad. There is no winner and solutions could be traumatic. Many are furious with the various politicians and experts who they say failed to foresee that the end of milk quotas would cook up phosphate trouble. One Dutch MEP has been quoted as saying "In 2006 we knew that we had a phosphate ceiling, in 2008 we knew that milk quotas would end, we all in the Netherlands did not act appropriately."

Considering the challenges we are facing as humanity and if we want to help farmers in a sincere way, then we must do everything to avoid this kind of trap which emerges from short sighted logic and interests.

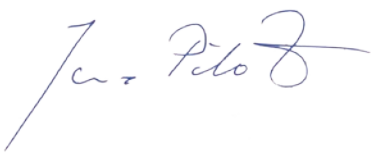
EU farmers are numerous and individually have a rather small resource base (land) with which to operate. They run their businesses sandwiched between the immense market power upstream of input suppliers and downstream food processors and retailers. These are vulnerable small businesses which are subject to wide biological (pest and disease) variability and risk, market volatility (trade embargoes) and weather risk. Technology helps them manage some of this variability and risk, raising the cost of labour and land productivity and systematically reducing the cost of food. However, the same technology has also in many cases led to large harmful external impacts on biodiversity, soil, water and landscape, and to emissions of greenhouse and other harmful gases many of which have only been noticed and measured relatively recently and which are complex and expensive to abate. Despite a generously funded, but badly targeted, agricultural policy and a relatively protective border regime of tariffs and

tariff rate quotas, for all but the most efficient and the largest farmers, the wafer-thin margins on agricultural commodity production have left them earning extremely low returns on capital invested and often with low and highly variable incomes from farming. Farmers therefore operate under intense economic pressures and are subject to much criticism about their environmental performance, and the lavish nature of the CAP. This leaves many farmers and their organisations feeling embattled.

Resolving the situation explained above requires much more than just changes to the CAP. Indeed, the challenges of over-consumption and resulting ill-health add to the pressures on the farm system. The long-term interests of farmers, landowners and environmentalists are the same: a sustainable and resilient food system. This should be our guiding principle. Complexity and the extent of challenges we are facing in the 21st Century do not allow us the luxury of short term behaviour and policies. The complexity of challenges also requires that we work actively together against the prevailing silo logic and approach. Food system challenges cannot be tackled only through the optic of agriculture, but must be addressed through system change approach addressing the entire food system.[1]

That said, in this report we focus on the contribution CAP reform could make with an emphasis on the need to help farmers make the unavoidable transition. It was prepared by a small group of experts based on years of experience following the developments of the agriculture and environmental policy in the EU. In this highly condensed report, we do not deal with all aspects of agricultural policy but focus on the two areas where we believe that reform is most needed: land and risk management. It therefore has little to add to the wealth of ideas contained in the Cork 2 Declaration on Rural Development[2]. Readers are urged to turn to the appendices which accompany this report which provide the evidence behind many of the assertions made and much fuller explanations of the reasoning and the concepts and ideas.

Dr Janez Potocnik
Chairman, RISE Foundation



1 A comprehensive approach to food system change from a resource perspective can be found in: IRP 2016: Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel. Westhoek, H, Ingram J., Van Berkum, S., Özay, L., and Hajer M. Job Number: DTI/1982/PA, ISBN: 978-92-807-3560-4

2 See the Cork Declaration 2.0, A better life in Rural Areas, http://enrd.ec.europa.eu/sites/enrd/files/cork-declaration_en.pdf

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Summary

Further adaptation of the CAP is necessary to help EU farming become a well-structured industry which is economically viable and environmentally sustainable. The next 15 years will see a generational turnover amongst farmers as millions of farmers already over 60 retire. The new generation have before them the exciting challenge of embracing the wealth of new technology based on precision, digitisation, big data and even robotics which when applied to plant and animal genetics and nutrition can raise their productivity, and thus incomes, and equip them to combine Europe's high quality food production with high and rising environmental performance as they steward our natural resources.

Europe's agricultural policy has a key role in assisting this transformation. This inevitably requires change to the largest instruments in the CAP, the Pillar 1 direct payments. These payments currently account for over 70% of CAP expenditure and nearly 30% of the entire EU budget. The introduction of these direct payments and their later decoupling from production were important steps in the evolution of the CAP but the impression that they offered farmers a permanent entitlement to such support was a mistake. These payments are ineffective, inefficient and inequitable. They do not serve well the purpose of income support of those most needy, nor do they serve food security, efficiency of resource use, nor the delivery of rural environmental services and moving to a more productive and sustainable agriculture. The conclusion is that they should be systematically reduced and resources switched to provide targeted assistance, including transitional adjustment assistance, to help farmers adapt and rise to the specific challenges of improving productivity, resource efficiency and risk management, and to pay farmers to provide specific environmental and other public goods. For the land management aspect of the policy this should be done by replacing the concept of entitlements with contracts for services.

It is argued that the two principal aspects of the CAP requiring most attention are **land management and risk management**. The third main element of the CAP, namely **rural development** policy is less in need of radical over-haul. It was well analysed in the Cork 2 declaration so we do not address it here. Its important functions are to raise productivity and resource efficiency by improving skills and knowledge exchange, improve farm product marketing, encourage rural economic diversification and develop rural infrastructure. Likewise we do not dwell on the constructive proposals in the recent report of the Agricultural Markets Task Force on economic relations in the food chain whose recommendations we support[1].

The concern about **land management** is that current environmental standards are not being met. Progress on containing water and air pollution, soil and biodiversity degradation, have further to go and climate protection remains a key challenge. Unless agriculture's GHG emissions can be further cut it will be exposed as contributing a steadily higher share of total EU emissions.

Key points to remedy these concerns include: the need to set clear strategic targets for farming so that farmers can better appreciate the task that confronts them; and to clarify the trade-off in reaching a low carbon strategy whilst

1 Agricultural Markets Task Force, 2016

also paying attention to soils, water and air quality and biodiversity conservation targets. It is stressed that this cannot be achieved by the CAP alone, but general regulation, plus advice, training, R&D and institutional development are needed. Importantly, a significant part of the action must in future be contributed by the private sector.

The CAP itself should be transformed to achieve this. It is argued that more targeting of the right measures, in a programmed, multi-annual, and cofinanced approach is required. But this also requires a new culture with more attuned modes of delivery emphasising engagement of the parties rather than heavy controls, inspections and sanctions. This suggests a redesigned, more integrated, tiered structure of supports. Four such tiers are suggested: at the base level, or tier, is transitional adjustment assistance with appropriate conditionality. Building on this are successively higher, more enduring, support tiers targeting: next, the marginal areas such as areas of natural constraints, then a tier providing agri-environment and climate schemes available to most farming systems and the highest tier providing support where more specific environmental or other management is required. Not all these supports require annual payments, an important building block will be investment supports to individuals or groups of farmers.

It is critically important to note that this work cannot be achieved by the CAP alone. The long-term objective must be to internalise the environmental costs of farming into food prices so that these better signal socially aware consumption patterns too. Thus sustainable sourcing by the big players in the food chain must become more than just a Corporate Social Responsibility gesture but a demonstrable reality. This requires the active engagement of the private food processing, food service and retailing sectors.

The core argument concerning **risk management** is that the present approach in the CAP towards market orientation has not gone far enough. The sheer scale of direct payments dwarfs and inhibits the development of a more appropriate and more comprehensive mix of tools. The present system has too many distorting elements which inhibit farmers from better mitigating the risks they face.

Risks will be far better managed if the full range of options available to farmers are brought to bear. These include: business diversification, using spot and futures markets, better specified contracts with buyers, improving relations with buyers, where appropriate more investment in value-adding downstream, and moving towards fuller vertical coordination. We demonstrate that different instruments are appropriate for catastrophic risk versus market risk versus normal business risk. Each of these, in turn, are best approached, respectively, at policy, market and farm level. A key consideration is that other policy instruments should not inhibit or 'crowd-out' the deployment of this range of measures. Unfortunately, at present the existence of substantial direct payments is doing just this and therefore restricting the use of the full canvas of risk mitigation measures.

The prescriptions which emerge from this analysis are that risk *prevention* demands appropriate technology, information systems and training; risk *mitigation* requires private risk management measures some of which would benefit from administrative support; and risk *coping* might justify a suitably structured and financed income stabilisation tool.

The report concludes by exploring if the kind of reforms being discussed are achievable within the current **EU decision structures and procedures**. Following the lessons of what has been described as the 'perfect storm' resulting in the helpful reform in 2003 and the 'imperfect storm' which resulted in the less well-received 2013 reform, it is suggested that further procedural changes and more work on conditioning the climate of opinion for reform would be helpful to increase the chance of the sort of reforms envisaged in this report. The most concrete such idea is that the necessary integration and coherence of these proposals will only be achieved if they are initiated by the joint inputs of several DGs within the Commission and then negotiated by joint agricultural and environmental Parliament Committees and Councils. This would enable each DG, Committee and Council to defend their natural constituency but within an integrated procedure better allowing trade-offs to be explored and settled.

Summary of actions and recommendations

Why reform?

1. The current policy is not optimal, it has not brought about viable farms that are sustainably managing Europe's rural resources. It is not sufficiently helping farmers adapt to the challenges ahead, particularly climate change. It is important to redefine the development path for EU farming for the 2020s and to **create an Agricultural Policy focused on results**.
2. **Excessive weight is given to inefficient, ineffective and inequitable direct payments** in Pillar 1. They should be systematically reduced over a pre-announced period of time and resources switched to provide targeted assistance to help farmers face specific challenges of improving productivity, resource efficiency and risk management and to pay farmers to provide specific public goods.
3. The **two aspects of policy requiring most adaptation are land management and risk management**. The structural investment supports of Rural Development policy for innovation, productivity, human capital, improved marketing, quality production and wider rural diversification and development have already been widely discussed, notably in the Cork 2.0 Declaration, and are less in need of reshaping.

4. **For land management aspects of the policy the concept of entitlements should be replaced by contracts for services.**

What reform for land management?

5. **The key rationale for policy intervention is the need to build more sustainable forms of agriculture** and meet increasingly demanding goals for environmental land management in Europe.
6. **Setting goals**. European agriculture should be helped to make the transition to sustainability on an agreed pathway to 2030 and beyond. This requires **a European plan for a lower carbon and more biodiversity friendly agriculture and food system**, meeting environmental standards and rewarded with higher prices which recognize the full costs of production.
7. **Refining policy tools and delivery**. This requires a cultural change in the way that farmers are engaged with policy on the ground involving, *inter alia*, clearer goals and results orientation, incentives for innovation, wider landscape approaches, more advice and integration with food chain initiatives.
8. Integrated land management requires more than the CAP. It demands a **combination of regulations, support through the CAP, strengthened advice, training and research and an enhanced role for the private sector.**
9. The land management component of the CAP would grow and shift towards a **tiered set of multi-annual contractual measures underpinned by the reference level of environmental and other regulations.** The two-pillar model is no longer needed.
10. The first tier, **Transitional Adjustment Assistance** replaces basic payments to facilitate change. **Tier 2 supports the marginal areas**. **Tier 3 pays for expanded agri-environment and climate measures**. **Tier 4 delivers higher more specific environmental services and restores natural capital**.
11 In parallel, **new private resources would be deployed to meet public goods objectives** and improve returns for good land management through novel measures such as payments for ecosystem services and forward looking food supply contracts reflecting the cost of meeting higher standards.

What reform for risk management?

12. **Agriculture is inherently a risky economic activity** due to the biological nature of its prodution processes and its exposure to the weather, uncertainties that are amplified by a fragmented farm structure and price inelastic supply and demand functions.
13. We recommend a market and risk management policy based on **building adaptive capacity making farms more resilient in undistorted markets.** Therefore, we recommend only offering public support to market measures on a temporary basis for example to help meet the costs of producer organisations or the set-up of private insurance markets where these are underdeveloped.
14. **Most attention should go to risk prevention**, based on applying appropriate technologies, land management, information management and training. Government support should stimulate farmers to use appropriate technologies and land management strategies, which can be granted in the form of investment support for infrastructure, payments for ecosystem services and support for training.
15. **Risk mitigation should be mainly based on private risk management measures**. A comprehensive and coherent legal framework should be provided to enable the development and use of a wide set of private risk management instruments that spread, buffer, share and transfer risk, both horizontally (cooperatives, producer organisations) and vertically (in supply chains).
16. **Residual risk not mitigated by private risk management measures can be covered by an income stabilisation scheme** as a form of *ex post* risk coping strategy. The tool should be designed in such a way that private risk management measures are not crowded out.

How to reform?

17. **Re-integrate the principal stakeholders in agricultural policy** by inviting a joint initiative from Commission Directorates General for Agriculture and Rural Development, Environment and Climate to prepare the next reform proposals. Then conducting the ordinary legislative process through joint efforts of Agriculture and Environment Councils, and Agriculture and Environment committees of the European Parliament.

1 Introduction and context of this report

The context of this report is two sets of pressures on European farming. The first are the calls for global food production to adjust towards 'resource-smart food systems'. Twelve of the 17 Sustainable Development Goals (SDGs) agreed in 2016 relate to the management of resources. According to a report of the International Resource Panel (UNEP, 2016), globally, "food systems are responsible for 60% of global terrestrial biodiversity loss, around 24% of the global greenhouse gas emissions, 33% of degraded soils, the depletion of 61% of 'commercial' fish populations, and the overexploitation of 20% of the world's aquifers. These pressures on our natural resource base are expected to significantly increase with population, urbanization and supermarketization trends, as well as dietary shifts to more resource-intensive food. By 2050, an expected 40% of the world population will be living in severely water-stressed river basins and agriculture's share of global greenhouse gas (GHG) emissions may increase from 24% to 30%."

The way humankind is using resources, and producing and consuming food, risks pushing natural systems close to, or beyond, global tipping points. This particularly applies to management of nutrients (phosphorus and nitrogen), biodiversity loss and especially Greenhouse Gas (GHG) emissions, with potentially severe impacts on food production potential arising from climate change. Unsustainability of some food production systems is the greatest threat to global food and nutrition security. The EU is a zone with a relatively intensive agriculture, high rates of food wastage, and with diets rich in livestock products and sugars. It has high and growing incidence of obesity, diabetes and other non-communicable, lifestyle-related, ill health. The EU therefore has much to learn, and teach, about finding sustainable food production and consumption systems. As a signatory to the SDGs the EU and its policies, not least its Common Agricultural Policy (CAP), must fully adapt.

The operationalisation of Goal 13 on Climate Action at the top level has been speedily addressed through the COP21 Paris Climate Agreement. The challenge now is practical policy implementation on the ground. Agriculture cannot stand apart from this. Agriculture is a significant contributor to climate-damaging GHG emissions, mostly the non-CO_2 gases nitrous oxide and methane. This is a medium-term threat to agriculture itself. It necessitates a step change in resource use efficiency in crop and livestock production, including soil, nutrient and manure management to reduce these emissions. But agriculture has, potentially, also an equally significant positive role in managing, and increasing, soil carbon and providing sustainable renewable energy from biomass.

The second set of pressures is more immediately and directly felt by European farmers. They face challenges to become and remain competitive internationally, to achieve remunerative incomes, to manage a generational turnover introducing needed youth and energy, to master new technologies and to meet new societal demands beyond supplying their primary output, food. The environmental and resource management challenges

for agriculture have been well understood in Europe for some time. The reforms of the CAP since the late 1980s have slowly embraced the idea that a major purpose of agricultural policy is to deal with the provision of resource management services provided by farmers[2] which are not rewarded by markets. Correcting these so-called market failures by paying farmers to provide pubic goods is increasingly the accepted language of policy reform. However, this process has much further to go.

Another important dimension of the context in which CAP operates is the complex trade regime. Although agricultural commodity trade has been liberalised and some of the most distorting domestic policies (such as former EU variable export subsidies) no longer operate, agriculture is still a relatively highly protected sector[3]. Most agricultural production worldwide is consumed in the country it is produced, however trade flows are increasingly influential on EU markets. The EU is a member of the WTO and thus a signatory to the Agreement on Agriculture which limits trade distorting policy. Europe's common external tariff includes some very high tariffs for agricultural products. However, the EU offers free access for many products within quotas (tariff rate quotas) and preferential access and freer trade under its numerous free trade and preferential trade arrangements with 48 countries around the world. Many more such arrangements are under discussion including with Mercosur which could have profound impacts for some sectors of EU agriculture. Food and agricultural commodity trade is also affected by numerous non-tariff, technical barriers to trade in the form of regulations on products and a wide range of processes and aspects of the production and processing of food. EU farmers are thus partly protected from globalisation, but they are also exposed to it through the concentration and globalisation of the companies providing their inputs (seeds, fertilisers, crop protection and animal health products and machinery) and, to a lesser but growing extent, the companies to which they sell their products.

It appears that the momentum towards more multi-lateral trade liberalisation has now evaporated. Even the move towards bilateral or regional trade liberalisation is meeting resistance. Meanwhile the UK is seeking to go global as it exits the EU while, depending on the actions of the new administration, the USA may turn its back on existing Free Trade Agreements such as NAFTA. This report therefore focusses on domestic agricultural policy reform of the CAP. Even within the status quo of trade agreements an unresolved issue which repeatedly plays into domestic agricultural policy is the treatment of environmental externalities. This shows up in two ways. First, farmers resist higher environmental standards, or demand compensation for respecting such standards, because it is feared that they will displace production to countries with lower standards (and lower associated costs) and thus export the pollution. Second, environmental groups point to the 'virtual' resources consumed by citizens of regions, like the EU, with a pattern of high imports of resource heavy products like food.

Within these global developments and responsibilities there are intense pressures in the EU itself**.** Many parts of the Eurozone still struggle with slow recovery and high unemployment stemming from the 2007/8 financial crisis. Furthermore, Brexit and other Eurosceptic movements have arisen in many Member States centring, *inter alia*, around discontent with migration levels and coping with the unprecedented flow of refugees in 2015 and 2016. In this context with current MFF discussions for the post-2020 period framed for a "budget focused on results" the value for money from expenditures under all EU policies, especially therefore the second largest spending policy, the CAP, is coming under intense scrutiny.

At the root of these challenges are farmers. For millennia in Europe they have managed our vital resources of land, its soil, much biodiversity and our cultural landscapes. Their activities utilise a high proportion of fresh water. The responsibilities on farmers have magnified as we have discovered the impacts on natural resources of feeding the human population that has quadrupled since 1900. However, the policies to help farmers better manage these resources whilst running viable private businesses have a long way to develop. Whilst EU farmers' organisations are well aware of these broad global and European challenges it is important to recognise that individual farmers themselves are under a great deal of pressure. Their principal role as suppliers of primary agricultural produce has been considerably complicated by new societal demands. At the same time, they are trying to manage new technologies, some of which are resisted by society, and they are striving to achieve competitiveness in international markets. Understandably, farmers, confused by the cacophony of comment on what they do, focus on coping with the immediate very real market circumstances of low or even negative margins in several product areas (the latest cases being for milk and pork) and adjusting to what they see as unnecessary complexities of the current CAP.

This report necessarily should stand back from these immediate issues. It shows in Chapter 2 **WHY** the CAP has further to reform because too much of its expenditure is indefensible. Chapter 3 offers clear ideas about **WHAT** reforms are needed in the two key areas of land management and risk management. The fourth and final chapter then offers some ideas of **HOW** the decision procedures and structures could be adapted to raise the possibility of earlier and more effective reforms. The intention throughout is to provoke discussion on more effective policy to assist farmers to rise to the challenges identified.

2 Such as pollination, flood management, water holding and filtration, biodiversity, habitat and cultural landscape management and carbon sequestration. See Cooper *et al.*, 2009 for a full account of public goods associated with EU agriculture.

3 See Matthews *et al.* (2017) for a comprehensive analysis of the trade impacts of EU policy for agriculture

2 Why further reform?

The EU will spend €363 billion in 2011 prices on the Common Agricultural Policy (CAP) during the period of the 2014-2020 Multiannual Financial Framework (MFF), accounting for 38% of EU spending during this period. The then Commissioner for Budget and Human Resources Kristalina Georgieva questioned in the debate on the next MFF at the EU Presidency Conference in January 2016 whether the CAP as reformed in 2013 is achieving a sufficiently high degree of European value-added and whether the greening of the CAP is working.[4] Close examination of the current design and scale of the CAP when measured against the objectives of the CAP suggests it is not fit for purpose and does not give the European taxpayer value for money. This suggests that further reform is required.

What *are* the objectives of the CAP? These were set out in the Treaty of Rome and have not been updated since. They are to increase agricultural productivity, thereby to ensure a fair standard of living for farmers, to stabilise markets and to ensure food security and fair prices for consumers. The CAP 2013 reform specified three broad policy objectives for the future CAP linked to the overall objectives of smart, sustainable and inclusive growth in the Europe 2020 strategy. These were (European Commission, 2010):

- Contributing to a viable, market oriented production of safe and secure food,
- Ensuring the sustainable management of natural resources, and
- Contributing to the balanced territorial development.

These objectives are being pursued under the Junker Commission's priorities of jobs and growth. Specifically, Agriculture Commissioner Hogan was asked to pursue flexibility and simplification of the CAP instruments.[5] In addition, following the September 2015 UN General Assembly, the 2030 SDGs now form the basis for the EU's long-term planning including for sectoral policies such as the CAP for the next MFF period (European Commission, 2016). And the December 2015 Paris agreement on a global action plan to combat dangerous climate change will require significant changes in behaviour and incentives across most areas of human activity, especially agriculture.

How well does the CAP contribute to the achievement of these objectives? The analysis summarised here[6] focuses on the Pillar 1 Direct Payments (DPs henceforth) for two reasons. First they make up 72% of the CAP budget and account for 28% of the EU budget. Second, although the CAP contains many structural and environmental measures especially in the Rural Development second pillar, and agriculture is also supported by border protection through the EU's Common External Tariff as well as Common Market Organisation (CMO) regulations, it is the pre-

4 http://ec.europa.eu/commission/2014-2019/georgieva/announcements/speech-vice-president-kristalina-georgieva-eu-presidency-conference-multiannual-financial-framework_en, accessed 26 December 2016.

5 http://ec.europa.eu/commission/sites/cwt/files/commissioner_mission_letters/hogan_en.pdf, accessed 18 December 2016.

6 Matthews's full analysis critique of the direct payment system is contained in Appendix 1 of this report found on-line at http://www.risefoundation.eu

dominant role played by the first Pillar, area-based, direct payments which attracts most controversy.

Direct payments were introduced into the CAP in 1995 and overtly calculated and distributed as compensation for lower market price support. Since then they were mostly decoupled from production, consolidated for all supported commodities for each farm, and mostly paid on an area basis. Over two decades later it is very hard to justify such continued compensation for past policy change. They are now variously justified as contributing to higher farm incomes, as a necessary support for food security, as providing a safety net for farmers against unexpected market shocks, as compensating for higher regulatory standards, and as ensuring more sustainable management of natural resources. Each of these is an entirely legitimate objective of farm policy. But what is the evidence on whether the DPs as currently defined and distributed are an effective, efficient or equitable way of achieving such objectives? Briefly consider each of these five justifications offered for Pillar 1 direct payments.

Do DPs support farm income? They do indeed constitute a significant share of income from farming. This varies by farm type: from the relatively minor role on horticultural farms (7%), vineyards (9%) and a small but significant share on pig and poultry farms (granivores) (22%) to 61% on mixed farms, and 70% of the income on 'other grazing livestock' farms (predominantly beef and sheep). However, this picture is complicated by the fact that a great many farm families, encouraged by policy, have developed diversified alternative income sources. In addition, increasingly women have moved into paid employment contributing to household income enabling survival of otherwise non-viable farms. The result is that it is not clear that incomes in households headed by farmers are notably lower than those in society generally. Furthermore, there is evidence that decoupled payments slow the rate of structural change relative to a situation of no agricultural policy support. The CAP's income support payments have discouraged some farmers from exiting agriculture and slowed the reallocation of land towards younger, more efficient farmers. In any case, there is considerable leakage of the supports to landowners outside agriculture, to suppliers of other factors of production and downstream to food processors and distributors. But particularly damaging for a social measure is that the DPs are not equally distributed among beneficiaries in the European Union. In 2014, on average, 80% of the beneficiaries received only 20% of the payments (DG AGRI, 2015). More embarrassing still, for a social welfare measure is that payments are highly concentrated on farms with higher incomes. Around 750,000 farms in the top 10% of income group receive over half of the direct payments budget in the CAP. Just 5% of direct payments go to farms with incomes below the median farm. Clearly, if direct payments are intended to support farms with low farm incomes, they are extraordinarily badly targeted.

Do Direct Payments assist food security? This is undoubtedly a critical objective. However, food security is, or should be, as much to do with sustainable consumption levels, access to affordable food by the poor, and minimizing waste as agricultural production *per se*. It is not clear that EU food security is under immediate or severe threat and it is far from clear that annual payments to farmers serves a legitimate food security goal. The EU already has a high degree of food self-supply while also being one of the world's largest food traders. The ability to import through a liberal trade regime can be described as the most resilient policy towards food security. Indeed, the most serious threat to EU (and global) food security are potentially unsustainable production systems which undermine biodiversity (for example pollinators), degrade soil and water quality and emit climate-damaging greenhouse gases from which agriculture is a potentially serious victim. The point is that there is little or no direct connection between direct payments and these considerations.

Do they improve risk management and resilience? There is no doubt that direct payments help to stabilise farm income because they are a less variable part of income than market income alone. However, area-based payments paid to all farms, every year, do not distinguish between different lines of production, some of which are more vulnerable to production and price risks than others. Thus, it is not necessarily the case that direct payments make the biggest contribution to risk reduction on those farms facing the largest income variability. Also, they are poorly designed to deal with variations in income over time. Payments are made to farmers when prices are low, but also when prices are high. Another objection to making generalised direct payments available to all farmers as a risk reduction instrument is that it makes farmers less likely to adopt other risk management strategies, and may even encourage them to increase the amount of risk that they take on. These concerns, and the worrying degree of dependence of some farm types on direct payments, again point to the conclusion that this instrument is an extremely blunt tool to manage risk which is likely to be crowding-out more effective actions.

Do DPs compensate for higher regulatory standards? EU farmers are required to meet high food safety, environmental and animal welfare regulatory standards. Regulations in the fields of the environment, animal welfare and food safety can raise costs at farm level. Hence, the global competitiveness of European agriculture may be adversely affected by these standards. However, standards also raise the quality and reliability of EU food products, enhancing their reputation and making them more attractive to consumers on both home and export markets. The increasing role played by private standards deployed by the globalising food industry may mean that competitive conditions in food markets are actually more similar than differences in legislation between countries might suggest. Whether EU farmers are disadvantaged by a particular standard or not is an empirical question.

Higher regulatory standards are not always a reason for compensation. In many cases, the regulations are intro-

duced to prevent unintended costs being borne by other groups in society. There are thus a limited number of regulations which reflect societal preferences and where a case for compensation might be made for the higher costs that farmers may incur. However, decoupled area payments are not an efficient way to compensate farmers for these costs. Costs of compliance differ significantly across commodities and flat-rate per hectare payments bear no obvious relationship to these costs. Targeted payments may be justified on occasion. The need to meet high regulatory standards does not legitimise the continued payment of Pillar 1 payments to all farmers on all land.

Do DPs contribute to environmental sustainability?
The last two decades have seen significant development in the understanding of the complex and dynamic interaction between agricultural production systems and the environment. Everyone concerned is much more aware of the pervasive negative and positive externalities of farming. The negative effects arise from specialization and intensification and impact on biodiversity, habitats, soil, water, air and atmosphere; the positive effects arise in farming systems and practices which create and maintain many semi-natural habitats and cherished cultural landscapes found in rural Europe. The CAP itself has evolved strongly in the direction of seeking to integrate environmental land management into its structures. Some environmental indicators have improved but many standards are still not achieved. The gains have been helped greatly through instruments found in the Rural Development regulation such as: agri-environment and forestry payments, supports for farmers in agriculturally less-favoured and environmentally more favoured (Natura 2000) zones, high quality food marketing using geographical indications, and through encouragement of organic farming. Initial evidence suggests that Member States have devoted a substantial share of their 2015-2020 RDP Pillar 2 funds to environmental and climate measures with significant environmental benefits expected.

The controversy arises over the environmental role of Pillar 1 DPs. Farming organisations claim that only viable businesses can deliver sound environmental services, and the DPs are a key component of this 'viability'. However, viability dependent on inappropriately distributed and targeted payments is not the basis for long-term business sustainability. A further argument is that the existence of direct payments provides leverage for adherence to critical EU and national environmental legislation through the operation of the cross-compliance conditions. This too is a dubious argument as it seems to contradict the polluter pays principle operating for other sectors. However, the most controversial development has been the 'greening' of Pillar 1 direct payments introduced as a key element of the 2013 reform. The introduction of greening in Pillar 1 was a highly significant recognition of the importance of incentivising more environmentally sensitive land management. However, it invited failure because to fit into the Pillar 1 framework it relies on simple, annual and generalisable actions, yet environmental management invariably requires system- and place-specific adaptation. Analysis of the greening obligations themselves, the exemptions built into the regulations, and the implementation choices made, first, by Member States and then the farmers themselves, has suggested that the expected environmental benefits from the greening payment in Pillar 1 are likely to be very limited. As the greening payments command twice the funding of the rural development measures devoted to environment and climate, this is a serious indictment.

This chapter has focussed on the Pillar 1 direct payments which make up over 70% of CAP expenditures. There is little evidence that decoupled area-based payments are an effective, efficient or equitable way of achieving the objectives of supporting farming incomes, food security, farmers' resilience to shocks, adaptation to higher regulatory standards, or sustainable agriculture. It is unlikely any country would design from scratch an agricultural policy based heavily upon paying an annual lump-sum amount per hectare of agricultural land with minimal conditionality attached as the optimal policy. These direct payments do not therefore seem compatible with a budget focussed on results. Whilst European society has shown a willingness to provide substantial support its farming communities the current use of much of these funds is a wasted opportunity to devote resources to help farmers cope better with the immense challenges they face. In future, any such farmer supports should be much better structured and targeted and for land management and delivery of public environmental goods would be better deployed by switching away from payment entitlements to contracts for services. These ideas are taken up in sections 3.2 and 3.3 which follow.

3 What reform is required?

3.1 Balance and architecture of the CAP must change

To this point it has been argued that the CAP must continue to evolve. Despite the generous support of the CAP and EU agricultural trade policy too much of EU agriculture is still unviable, over-dependent on badly targeted direct payments, and struggling to cope with natural and market volatility. In addition, in some regions and production systems agriculture is not meeting statutory environmental standards such as the directives on nitrates, birds, habitats and water, and has much more to do to rise to the challenges of the SDGs and climate commitments. This analysis and the current public debate on the CAP point to two major aspects which most require further change, namely land management and risk management. At present the tools for addressing these issues are confusingly deployed in both pillars of the CAP.

The land management tools must respond to the pervasive market failures surrounding the management of rural land. The need for more coherent risk management partly arises from the structural market imperfections found in the food chain which puts the primary production sector in a weak position. These phenomena are not confined to the EU but apply globally. A result of these failures and imperfections is that consumers are not paying the full social costs of the food they purchase, and low-margin farming businesses cannot be expected to meet these costs either. Hence the need for collective action and policy reform particularly to rebalance the policy away from untargeted direct payments towards measures which meet the challenge of better environmental and risk management and to galvanise the private sector to internalize more of the externalities. How to do this is the focus of this chapter.

The CAP has many necessary and important measures; many of the investment instruments at the disposal of Member States in the Rural Development Regulation are performing vital functions. Agricultural markets policy requires investment measures to help improve productivity, product quality and protection of denomination of origin, to encourage formation of producer organisations, and to embrace proposals developed by the recent Agricultural Markets Task Force on market transparency, trading practices, farm product contracts and rules of competition. Specific Rural Development policy under the CAP has always had a limited, but important role, encouraging investment in environmentally friendly technologies, diversification, improving infrastructure (mobile connectivity and broadband), and developing local multi-stakeholder participation through LEADER. There are also much needed general horizontal measures for research and development, investing in human capital through knowledge exchange, training, skills development, innovation and pilot projects. These are not further developed here because it is assumed they should and will continue to be refined in the light of experience and to play a continuing constructive role in the CAP as was signalled and widely agreed in the 2016 Cork Conference.

To develop the CAP as a truly integrated policy for sustainable agriculture it is suggested that a clearer frame is needed. The distinctions between the two pillars of the CAP have been obscured and have lost purpose and should therefore be abandoned. Land management and risk management instruments are in both pillars, there are measures to help young and small farmers in both pillars with little obvious reasoning for these com-

plexities. There is much evidence from evaluations and audit that the array of instruments particularly for land management which evolved piecemeal over the last 25 years has become over-complex for farmers and policy administrators, lacking coherence and with questionable cost effectiveness. There is also no clear rationale explaining why some of these measures are located in the programmed, co-financed, multi-annual, voluntary Pillar 2 and others in the annual, 100% EU financed first pillar. The land management component of the CAP with its measures for improving environmental performance has grown in importance and is ripe for restructuring into a more coherent and integrated set of measures. This is the subject of the next section.

3.2 A more integrated approach to land management

This section suggests how the land management role of the CAP can and should be enlarged, better integrated and streamlined to deal with the pervasive environmental externalities which surround agriculture. It is emphasised that improving land management is not the totality of the CAP. This must be flanked by the investment measures summarized above in section 3.1 and risk management measures to be discussed below in section 3.3.

Market failures and public environmental goods. The environmental consequences of agricultural production decisions on farms have been of growing concern and are perhaps clearer in Europe than in many other parts of the world because of the combination of relatively intensive agriculture, high population density and almost complete absence of wilderness. Meeting environmental goals in the farmed countryside is a large-scale enterprise, requiring sustained activity over a considerable period and involving the whole agriculture sector to varying degrees. It is partly a question of reacting to market failures: reducing negative externalities and producing positive environmental services for which markets fail to operate. Full environmental integration into agriculture involves a transition to a significantly different model of production where land managers must pursue a wider range of goals than in the past alongside their core role of food production.

Environmental sustainability implies both the establishment of production systems that are durable and resilient over the long term and they should make a substantial contribution to the attainment of wider environmental goals and the provision of ecosystem services in the countryside through appropriate land management. This can only be durable if these businesses earn sufficient returns from the market for their marketed products and receive sufficient remuneration for their delivery of public environmental goods.

Important steps have been taken to integrate these environmental concerns into the CAP. The current instruments in Pillar 1 with direct environmental purpose for agricultural land comprise: cross compliance, greening payments, and payments in Areas of Natural Constraints (ANC). The principal such instruments in Pillar 2 are the agri-environment and climate measures. But both Pillars also have other measures which have indirect or secondary environmental purpose and effects, and indeed some environmentally harmful subsidies. The piecemeal development of these instruments over many years has resulted in confused unclear objectives, the inclusion of measures which fail to deliver sufficient results, procedures which are over-constrained by CAP rules and controls and a system that does not engage with farmers in a user-friendly way. The integration should be taken very considerably further if current and emerging goals for sustainability are to be met.

Setting Goals. The big question is how the rather broad goal of the sustainable management of natural resources related to European agriculture can be translated into a set of more specific outcomes, especially at the EU level. Given the need to achieve and demonstrate clearer results and show greater added value from the EU budget and the CAP, it would be timely to stipulate more concrete outcomes against which the success of interventions can be judged. Greater precision would also help to reveal and delineate trade-offs and synergies between objectives that can be important in the land management sector – for example as between the need to reduce GHG emissions from the ruminant livestock sector whilst maintaining appropriate grazing to manage semi-natural vegetation and secure the conservation values that are sought by environmental legislation such as the Habitats Directive.

The political and legislative messages currently presented to the agricultural sector do not provide the sense of the scale and significance of the challenges in a way that is helpful for land managers. There is a sense that current levels of food production in the EU are sacrosanct for reasons that are unclear and difficult to justify, and no recognition that unsustainable production methods themselves pose the greatest threat to food security. The challenge is to formulate a clearer more coherent set of strategic EU-level commitments and targets on water quality, integrated pest management, biodiversity protection, soil protection and reducing agriculture's GHG emissions to 2030 and beyond. Ideally this would be accompanied by an indicative roadmap for achieving desired goals.

Refining policy tools and delivery. This is needed because there are concerns about effectiveness and high transaction costs in some current measures. However, sufficient experience has been gained with integrating environmental measures into agricultural policy across the diversity of the EU Member States and farming systems to enable some important lessons and principles to be learned. Difficult balances should be struck between increasing the level of precision in environmental goals whilst allowing for uncontrollable influences (weather) and for the diversity of local conditions to be considered.

A key aim must be to reduce over-cautious behaviour amongst Member States because of the rigid enforcement culture operated by the Commission in its CAP monitoring and control rules.

Some suggested responses to these challenges are, *first*, to adopt policies that reward farmers directly in relation to environmental results where this is possible. *Second*, to specify preferred land management practices in more considered and precise ways, accompanying this with an appropriate delivery and support framework. The goals should be clear to the farmers involved as well as the rules, so the focus in their management is on the objectives rather than being driven by pure compliance. *Third*, to ensure the CAP framework does not inhibit Member States from introducing more innovative and creative schemes, as it can do now because national authorities fear disallowance of their CAP funds for minor failings emerging on farms. *Fourth*, to adopt new institutional models for scheme operation and delivery, for instance the use of group rather than individual farmer agri-environmental schemes where this can be devised. *Fifth*, it may be better in many environmental land management schemes to place greater focus on advice, facilitation, support and information alongside the payments rather than relying on paper systems and remote transactions; this may involve costs, but effectiveness will generally rise faster. *Sixth*, where possible environmental delivery should be integrated with food chain and other market initiatives. These lessons are not entirely new, but the further development of payments for delivery of public goods requires that they are pursued with renewed vigour.

Selecting policy combinations. The aim must be that the costs of running a sustainable EU farming system should ultimately be met primarily by the beneficiaries, including food consumers, water suppliers, leisure companies, farmers themselves and others. Public land management payments should be devoted solely to those public goods that are too difficult to attain by market routes, even if these are much more developed in future. In the interim, however, there will be a continuing need for public expenditure for both maintaining and enhancing aspects of agricultural land management. It is suggested that the strategic agricultural and land management goals and targets should be delivered through four sets of instruments: (A) An enhanced role for the private sector, (B) CAP supports, (C) Advice Training and Research, and (D) Regulations. Focus here is on the first two.

The CAP cannot be the only source of incentives for promoting sustainable land management and there is no assurance that it will be sufficiently well funded to secure the level of effort required on farmland over the coming decades. Where private resources can be harnessed more effectively this reduces calls on the CAP budget as well as being more efficient in broader economic terms. Several policy options are identified for harnessing more private resources, these include:

- At the most strategic level, an aim must be ultimately to reflect more of the costs of sustainable management of soil, water, carbon and other resources in *the price of agricultural products*[7]. This is a process that will be spread over more than one decade, requiring planning and consensus building. Some actors in the food chain, including certain retailers and food manufacturers (such as Unilever) already are moving in this direction, including sustainable land management considerations in their contracts for raw material sourcing. In the meantime, other steps can lead us in this direction.
- *Labelling and certification schemes* for farm products. This aims to introduce more systematically a greater environmental dimension into new and existing EU and local labels, to more overtly connect the idea that product quality entails environmental protection, and in the process, build market demand and acceptance of the costs involved.
- Positive promotion of well specified *Payments for Ecosystem Services (PES)* schemes by actors outside the public sector such as water supply companies, mineral water companies and environmental NGOs who own or lease land. These could deliver improved resource management alongside flood management and clean water supplies. Such schemes could be funded outside the CAP budget but potentially linked to rural development programmes, especially at a local level.
- *Offsetting schemes for biodiversity* on farm and forest land that has been developed into urban space so that developers meet more of the costs of compensation, an example is the German eco-points scheme.
- *Attracting private and charitable funds into land purchase for environmental management* this can be pursued by individuals, charities, trusts and businesses, and could be encouraged further by developing new investment mechanisms that allow wider participation in the ownership and management of forests for example.

Implications for the CAP

The overall concept for land management suggested is a tiered set of payments for public goods offered in a generally programmed, multi-annual, regionally-defined, co-financed approach to address the strategic goals expressed at regional/local level within a clear European framework. Farmers would enter contracts, which as far as possible would be multi-annual and enable them to receive funding under one or more of the tiers. Many elements of the policy would involve one-off contracts or investments, although some measures will require on-going annual payments. Of course, a radical restructuring of the kind suggested here is a major legislative and administrative undertaking. However, the shift of the principal interaction between farmers and national administration

7 In economic jargon, this task is to make more efforts to internalise these externalities of farming.

from direct payment schemes with their clumsy and costly annual cycle of applications and control, to a phased-in, multi-annual (5 year?) contractual approach, once set up, offers a considerable saving in transactions costs for administrators and farmers.

The suggested four tiers of this approach would be built upon a *Reference Level* set of pre-conditions for public payments like the existing system of cross compliance but revised to ensure *inter alia*, the protection of soil carbon, especially avoiding damage to carbon rich soils. The four tiers are:

Tier 1 Transitional Adjustment Assistance. This replaces the current pillar 1 basic payment. It is annually paid, perhaps in a multi-annual contract, for which, in principle, all farmers are eligible. It would be compulsory for Member States to introduce these payments. It would have a modest ceiling payment[8] and be overtly digressive tapering off to zero within an agreed period. This should be long enough, say 10-15 years, to give security to the large cohort of EU farmers who are likely to reach retirement during the period, and to give time to develop sustained market returns for rising standards of environmental management. Its justification is assistance to farms to make the necessary adjustments to their businesses or their lives to thrive under the new regime envisaged. Part of the transitional process is for farmers to become more knowledgeable, skilled and professional so payments under this tier might include inducements for activities such as skills enhancement, business planning and environmental management tools such as business accounts and nutrient management plans. It may also be worthwhile considering methods that enable farmers to capitalise these payments to fund business restructuring and investment. It is likely that much of the expected reduction in the CAP budget would be felt in this tier.

Tier 2 Payment for environmentally or socially important marginal areas. An annual payment provided under a multi-annual contract to support the continuation of farming and appropriate rural land management, avoiding the abandonment of holdings and land and hence contributing to both rural vitality and the maintenance of cultural landscapes in such areas. This certainly embraces upland and mountainous areas, but also includes some lowland mostly pastoral grazing areas[9] where environmentally acceptable alternative land uses are not viable.

The scaling of such payments should reflect the true opportunity cost of farmers remaining in such areas (i.e. compared to living standards they could achieve outside such marginal farming areas). This is a positive reinterpretation of the current negative concept of compensating for the additional costs relating to the constraints on agricultural production in the area concerned. Society would not generally compensate producers of tradable goods located in an area unsuitable to their production – such businesses would be helped relocate. The fact that we are willing to help marginal farming indicates that prime motive for these payments is not the agricultural production *per se*, but the environmental and cultural landscape benefits and social vitality of helping keep these historically farmed areas populated. Indeed, the interactions between livestock farming, carbon management, flood protection and other such services must be appropriately balanced taking account of the new priorities. If properly labelled and defined with appropriate environmental conditions, it will then be clear that such payments can only be made when appropriate environmental management of these regions is in place. It would not be compulsory for Member States to introduce this tier, especially if it could be demonstrated that other means of achieving the desired outcomes had been put in place via the other tiers of support and through approaches outside the CAP.

Tier 3 Agri-environment and climate measures. This is a base-level environmental land management scheme, appropriately tailored to different farming systems in a broad sense[10]. Payments would be for the environmental public goods that are associated with good management of these systems, with relatively simple rules and subject to some regionalisation. They would be annual for the period of a multi-annual contract and it would be compulsory for Member States to introduce this tier with elements corresponding to their requirements alongside EU objectives. Eligibility requirements, conditionality and packages of basic management options or desired outcomes would be identified for each farming system, tailored to the environmental priorities facing these farming systems in different regions. This could cover mainly maintenance activities but with some limited enhancement as well and should be designed to link easily with supplementary enhancement measures in Tier 4.

Advice would be available and wholly necessary to accompany the implementation of these schemes. It is envisaged that schemes would be designed for a wide range of farming systems, such as: organic systems, HNV grassland systems, agro-forestry systems, integrated farming systems, non-High Nature Value (HNV) grassland systems, arable systems – HNV and other, permanent crop systems – HNV and other, larger scale area based regimes for water catchments or landscapes, and specific extensively managed outdoor livestock systems not covered above.

Tier 4 Higher level environmental payments. These are targeted at achieving specific environmental outcomes/results beyond those sought in Tier 3 – the focus would be on enhancement and restoration, not mainte-

8 The principles defining any ceiling payment require debate given the very different large farming structures in some Member States.

9 Lowland grazing farms have equally high dependence on public payments and just as low returns as upland and mountain farms, but defining which can be included in these supports is a challenge.

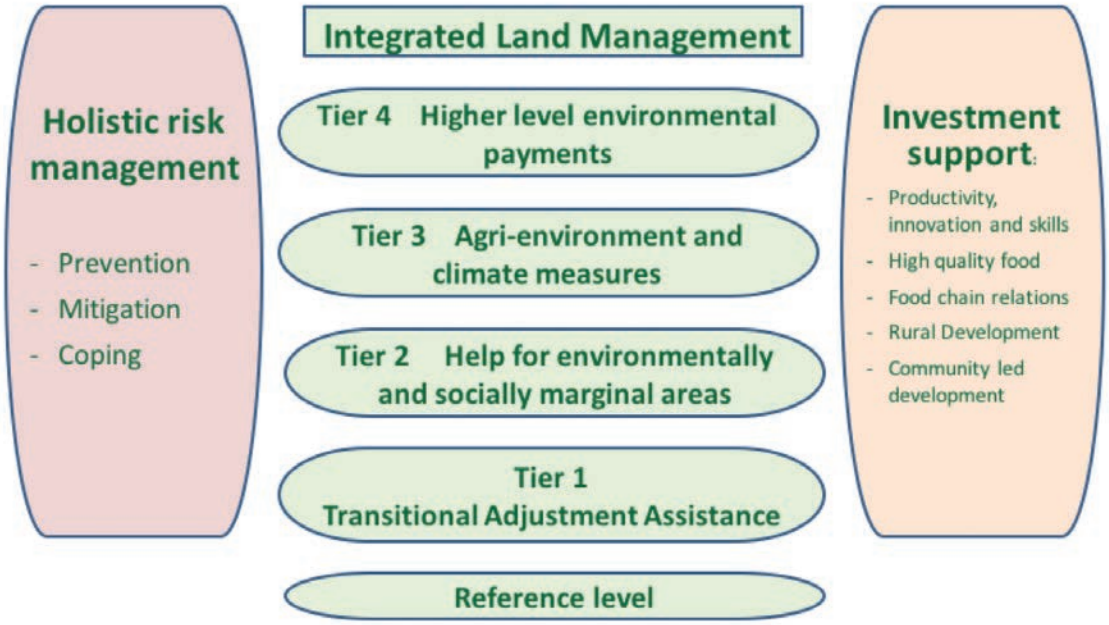
10 The authors have resisted investing a great deal of time and imagination into the name of this tier because the terminology and more descriptive label will not satisfactorily translate into different European languages, each Member State has to interpret these ideas with descriptors which best suit its purposes and local context.

nance. The requirements would go beyond the activities identified under Tiers 1 to 3. They will usually involve annual payments in a multi-annual contract, but they may also require one-off investments as well. It would be compulsory for Member States to offer this tier, although enrolment by farmers in them would be voluntary and subject to discretionary rules originated by Member State authorities. The types of measure envisaged here include: area based payments; complementary support for green and other non-agriculturally related investments; funding to support the development of management plans; and advice, training and capacity building.

Two over-arching challenges in further extending the operation of payment for public goods concern the administrative burden and payment rates. Excessive transactions costs to public authorities and land managers can stifle this approach. It is vital to allow, indeed encourage, positive engagement of land managers in defining, operating and controlling these schemes. Defining payment rates requires more holistic interpretation of opportunity costs and a full appreciation of the transactions costs. If the delivery of public environmental services is not remunerative, then farmers will simply decline to enrol. Farmers could expect to earn considerable sums per hectare in Tiers 3 and 4 of the proposed structure.

This integrated land management element of the CAP sits alongside two other key elements: risk management and safety net, discussed below, and innovation and investment which includes the measures discussed briefly in section 3.1 above. The land management element would be expected, at least initially, to engage practically the whole EU farmed area and it may absorb a high proportion of support finance. Figure 1, below, illustrates how the main components of the policy fit together.

Figure 1: Proposed structure for a modernised CAP



Source: This is an adaptation of the figure in Hart et al. (2016)

3.3 Managing volatility and risk

The recent period of low prices for many sectors following the price spikes following the financial and commodity crises of 2007/8 has led to increased demands for the CAP more overtly to tackle volatility and risk. The Agricultural Markets Task Force set up in 2016 to examine and improve the position of farmers in supply chains made several recommendations including: to increase market transparency, to make the existing risk management toolkit more attractive and coherent, using simplified loss calculations and reimbursement options and even to shift resources from untargeted direct payments to "an approach which channels CAP money into a genuine and predictable safety-net for farmers to apply in times of market imbalance"[11]. This section takes up this challenge and suggests how the CAP can be adapted to help farmers manage volatility and risk in a more coherent and holistic way.

11 Agricultural Markets Task Force, 2016, p. 51.

The nature, causes and consequences of risks in agriculture. Agriculture is a particularly risky economic activity due to the biological nature of its production processes and its exposure to the weather; the atomistic (i.e. highly fragmented) structure of the industry also makes risk management more challenging. In addition, agriculture is characterised by supply and demand functions that are highly price inelastic, with the effect that small market perturbations can generate large price effects. Risk in agriculture has been much studied. It is useful to categorise risks faced depending on whether they arise in production, in market interactions, from financial sources or legal/institutional change. For each of these the risks can be *micro* affecting individual businesses, *meso* (covariant) affecting groups of businesses or communities, or *macro* (systemic) affecting a whole region or nation. The impacts can be very local, specific and short lived, or enduring and widespread.

There is evidence that market-based price variability is higher than weather-induced production variability in N Europe, and the opposite in S Europe. However, price and yield tend to be negatively correlated so the income risk is to some extent moderated, although this natural hedge is diminished where prices are set through international trade. Evidence also shows that price risk tends to be systemic (OECD, 2011). In brief, the wide variety of causes and reach of risks in farming suggests that there will not be a single or small set of actions to manage risk, rather it is best approached with a wider coherent and comprehensive set of measures to be applicable at different levels.

Risk management approaches: principles. Broadly there are three ways of managing risk: prevention, mitigation and coping (Holzmann and Jorgensen, 2000). The best way is of course to *prevent* being exposed to a hazard in the first place. However, once exposed, farmers can try to *mitigate* or decrease their sensitivity to that exposure either *ex ante* or *ex post*. The third approach once exposed to hazard is that there must be a *coping* strategy to manage the impact on their business.

These three types of intervention can be activated at the level of the individual farm, collectively through the market, or through government action. In turn, the appropriate action will depend on the size of the risk. *Normal risks* occur frequently with relatively little damage, *marketable risks* happen sporadically but with moderate damage, and *catastrophic risks* occur infrequently but with large damage. Generally, good governance of risk would entail normal risks being managed by farmers mainly using on-farm strategies, middle range risks should be addressed using market tools such as contracting, insurance or futures markets and catastrophic risks should be dealt with by government both *ex ante*, and *ex post*, as they cannot be dealt with by farmers or markets unaided.

Farm-level strategies can be *yield-focussed* e.g. using technology (genetics, biotechnology and ICT) and knowledge to deal with pests and resistance to disease, or investment in water storage and irrigation or *income-focused* through diversification of business activity including non-agricultural income activities. Farmers may also store produce to wait for better prices or transform produce into more durable, higher-value forms, such as cheese and juice. However, where there are significant scale economies in such storage or marketing activities they will tend to be more efficiently performed at a collective level. So, the individual private approaches merge into the wider collective action such as establishing cooperatives and producer groups to forward integrate into processing and marketing (e.g. dairy fruit & vegetables).

There are two critical policy judgements on risk management. The first is the role of government in addressing normal or market level risks. Some argue there is little or no such role, but a more pragmatic approach would suggest that awareness raising, information, training and skills, and even facilitation, encouragement and start-up assistance for farmer collective action can be justified as legitimate functions of government. The second issue is to set the boundary between marketable and catastrophic risk. Setting the boundary too low will result in deadweight losses of supporting farmers beyond that needed to deal with risk. Current low-level safety net use of public and private storage/stocking can be appropriate. On the other hand, *ex ante* measures in the form of insurance and mutual funds may reduce the need for crisis management *ex post*, so it may be efficient to stimulate insurance-based schemes.

Risk management policies in action in the EU. European farmers' organisations often point enviously to the extensive risk management support given to farmers in the USA and Canada. US and EU policies on risk management are certainly very different. US policy draws mainly on insurance and on safety nets through counter-cyclical payments. In budget terms, EU policy is still largely based on direct payments. The risk management tools[12] in the co-financed Rural Development pillar of the CAP are utilized by only 12 of the 28 Member States. These make up just 1% of the CAP budget. There are two other risk management measures in the CAP: the residual Commodity Market Organisations which allow emergency intervention to support markets in extremis[13], and Crisis Prevention and Management (CPM) measures which may be undertaken by producer organisations under the CAP Common Market Organisation in the fruit and vegetables and wine sectors. During the 2007-2013 period, CPM measures included market withdrawals, green harvesting or non-harvesting of fruit and vegetables, promotion and

12 These include: crop, animal and plant insurance, mutual funds for adverse climatic events, outbreaks of animal or plant disease or environmental incidents, a mutual fund-based income stabilisation tool.

13 The expenditures on public and private storage aids and other intervention measures, which mostly apply to cereals, sugar, wine and dairy produce, were €850m in 2005 and €750m in 2006 and considerably less in the following eight years. Expenditure has risen in 2015 and 2016 following disruption to markets caused by the Russian ban on imports of certain EU products. Overall, market intervention expenditure is generally less than 1% of annual CAP expenditure. See Matthews et al (2016).

communication, training measures, harvest insurance and support for administrative costs of setting up mutual funds., In addition to these CAP measures Member States have granted much more substantial quantities of State Aids to deal with catastrophic risks. During the period 2007-2013, a total of 13.5 billion euro of state aid expenditures were granted for crisis management, covering adverse weather events, animal and plant diseases and insurance premiums. Most (¾) of these payments were compensation for *ex post* crisis management, the rest funded *ex ante* insurance funds.

A more coherent and holistic EU Risk Management Policy. In the light of the principles summarised above the current EU mix of policies looks anything but coherent. It is no surprise EU farmers feel insufficiently prepared to cope with the undoubted risks they face.

The main aim of a EU Risk Management Policy (RMP) should be to enable farmers to deal with risk to stabilise their income. Such a policy must address five challenges. (i) It must be able to consider the *heterogeneity* of EU farmers in terms of size, cost structure and strategies. This suggests some degree of subsidiarity to allow for the diversity in the EU, yet this must not be allowed to undermine the integrity of the single market. (ii) An EU RMP should consider the problem of *asymmetric information* between the insurer and the insured (farmers) on the true amount of risk the insured is facing. The dangers are that insured farmers change their behaviour by taking more risk (moral hazard) or that those entering an insurance programme have a higher risk profile. (iii) A RMP should not *crowd out* private risk management strategies based on management measures or market-based instruments. (iv) A RMP should consider the *interactions with existing policies*. These may well crowd out farmers' strategies. (v) The challenges of farm heterogeneity and asymmetric information require government to be able to deploy detailed *data* and this increases the *transaction costs* of an RMP.

These are not simple matters, without appropriate data and analysis there are dangers of inefficient, wasteful policy actions. It is already clear that the large CAP expenditures on direct payments and CMO measures in Pillar I are substantially crowding out private action at farm and market level. The operation of these schemes can also explain the low take-up of RMP measures, and may in future lead to over-insurance.

Based on the above challenges and principles we recommend that EU policy must be based on four key actions.

- ***Building adaptive capacity making farms more resilient in undistorted markets***. Public support on market measures should only to be offered for temporary support to the costs of producer organisations under the CMO. The focus of the CMO should be the collection and dissemination of market information for prices to be undistorted and thus play their signaling role.

- ***Constructing EU Risk Management Policy around three axes: risk prevention, risk mitigation and risk coping***. This should evolve so that most private and public resources mobilised are spent on risk prevention and the least on coping with risk. The share of government spending should be smallest in prevention (in order not to crowd out private action) and highest in risk coping. Further, risk mitigation should correspond with manageable risks, while risk coping corresponds with catastrophic risks.

- ***Deploying the full set of potential risk mitigation measures.*** Risk can be managed by transferring it to another party, either by vertically integrating into the next or even the final level of the supply chain, i.e. consumers, or by hedging. Risk can be buffered by setting up mutual funds, horizontally or vertically, or by borrowing or fiscal smoothing. Risk can be pooled and shared either horizontally (insurance) or vertically (contracts). And risks can be spread also by diversifying horizontally (enterprise diversification) or vertically (diversification through adding value and processing).

- ***Focusing public support on the variability of farmers' income and not the level of income and to deal with catastrophic risk.*** Anything else risks crowding out private mitigation, or distorting markets. The best way to manage risk is to prevent risk from happening and to make farmers more resilient. Prevailing risk management approaches are too piecemeal, they attach too little attention on building long-term resilience, while paying too much attention on addressing short-term volatility.

4 How to propel such reforms?

Political economy of policy reform. Detailed studies of past reforms of the CAP have identified factors explaining the quite different results of CAP reform attempts in the last two decades (Swinnen, 2008; 2015). The conclusion of this political economy analysis is that three factors have critical impact on the success of reform efforts: favourable institutional settings, optimal conditions for reform given the institutions, and the numbers and quality of the key actors. The analyses concluded that the 2004 Fischler reform was necessary and highly significant whereas the 2013 reform is regarded as much less significant. Amongst others, institutional factors were highly influential in both stories. Changes such as the shift to qualified majority voting during the Fischler period (1995-2005) significantly assisted the success of this experienced two-term Commissioner. The changed institutional situation after 2009 with co-decision between the Council and Parliament and participation of 27 Member States following the Eastern enlargements were important factors explaining why the 2013 reform under the less experienced Commissioner Cioloş was much less successful.

These ideas lead to the proposition that future reform of the CAP will have a greater chance of success if new procedural approaches could be adopted. Of course, the decision processes and institutions of the EU cannot be arranged solely for agricultural policy. Changes in these arrangements can only be proposed and agreed by the highest political levels in the EU. The aim is to create the conditions and procedures for a positive, balanced, working relationship between all stakeholders, specifically, farmers and environmentalists.

Overcoming institutional inertia and antagonistic stakeholders. The issues surrounding farm policy are highly complex, detailed and technical. Non-farming interests rarely have the inclination or knowledge to get involved. The process therefore can be captured by agricultural interests at each stage which militates against deep reform. This challenge has been heightened by the fracture in relations between two key stakeholder interests in EU agricultural policy: farmers and environmentalists. The latter harbour a strong sense of betrayal following the experience of the 2013 reform[14]. Strong action will be required to bring them back together. Environmental organisations are therefore disinclined to engage in further negotiations with farmers and are seeking a 're-fit' of the CAP and a separate environmental fund over which they might expect greater influence. However even if the latter is successful, this will not assist in improving the environmental management of EU agricultural land (40% of the EU territory) unless farmers are positively engaged.

Overcoming the breakdown of relations between farming and environmental interests could be helped by novel approaches to the decision-making procedures adopted in the process. One such idea could be to ***instigate joint initiative and decision making from two or more Commissioners, Councils and EP committees***. There seems to be a real challenge to persuade farmers and environmentalists to work constructively together. Farmers must accept that environmental interests have a

14 Agricultural, environmental and climate interests worked hard together in the MFF negotiations to make the case for retaining generous support for the CAP on the basis that an important part of the CAP reform was to be a significant greening of agricultural policy. However, once the funding was secured, the perception of environmentalists was that agricultural interests systematically, and effectively, worked hard to minimise the number of farmers required to take greening actions and to reduce the scale of those actions (see Swinnen, 2015)

legitimate stake in land management policy; and environmentalist correspondingly must accept that farmers have a legitimate right to expect to be able to manage viable businesses. A way of resolving the current impasse might be to require that for the sole purpose of discussing CAP reform; making proposals for new regulations and then negotiating them through the ordinary legislative process a novel procedural arrangement should be put in place. This is to require that the Commissioners (and their Directorates General) for Agriculture and Rural Development, for Climate and for Environment[15], should be tasked to work jointly to produce the next reform proposals for adoption by the College of Commissioners. Following this, the co-decision process should be correspondingly adapted. This might involve the proposals being considered by an appropriate configuration of the Council Ministers who normally serve on the Agriculture, Environment or perhaps Energy Councils. Similarly, the consideration of the proposals in the European Parliament could be handled by an appropriate combination of members of COM-AGRI and COM-ENVI. The intention of widening the co-decision process in this way is to internalise the two main conflicted interests (and possibly others) within the decision process from proposals to negotiations and resolution. The fact that these procedures would be suggested by agreement of the Presidents of the institutions ensures the individual Commissioners, Ministers and Parliamentarians have no option but to work through and settle the differences which arise from their different perspectives.

This is not a revolutionary idea; indeed, it has been used in other areas of EU regulation which span the interests of different Directorates General, Councils and EP committees. For example, the preparations for the Climate & Energy Package for 2020 agreed in 2009 were made by DGs Energy and Clima, and the negotiations were handled by combined representation from the appropriate Councils and EP committees. Likewise, similar joint initiation and decision making was pursued by DG Environment and DG Development in the preparatory work for Europe's input into the Sustainable Development Goals.

Overall conclusion

Europe's Common Agricultural Policy has constantly evolved since its foundation in the 1960s, not least because the EU itself has expanded in membership and reach. Notwithstanding the constructive developments of the CAP since the mid-1990s, it is argued here that the current principal support expenditures, the Pillar 1 Direct Payments are inefficient, ineffective and inequitable in relation to stated objectives and these must be further reformed. This report identifies that land and risk management are the two areas requiring greatest further development and it recommends ways this should be done.

However, there is a great deal of inertia in EU decision procedures and in the absence of something radical to break the current system, there is a danger of repeating the experience since 2005 of a sequence of inadequate, sub-optimal reforms, or even worse, reversals[16]. Ideas are offered to break the log jam and thereby offer a way of achieving a reform of the CAP which can fulfil its purpose of enabling a productive, resource efficient and economically viable agriculture, which is environmentally sustainable too protecting climate and biodiversity and embedded in thriving, integrated rural economies – over the whole EU territory.

15 Or, as appropriate, another combination of two or three Commissioner / Directorates General, which might include public health, food safety or internal market.

16 It can be argued that the 2000 – 2015 trend to switch CAP resources towards actions in, or akin to, Pillar 2 measures was halted and perhaps even reversed by the 2013 reform.

References

Agricultural Markets Task Force, 2016. *Improving market outcomes – Enhancing the position of farmers in the supply chain*, Brussels.

Cooper, T. Hart, K. and Baldock, D., 2009. *The Provision of Public Goods through Agriculture in the European Union*. Report for DG Agriculture and Rural Development, Contract No 30-CE-0233091/00-28. Institute for European Environmental Policy, London.

DG AGRI, 2015. *Rural Development Programmes 2014-2020*. Brussels: Directorate-General for Agriculture and Rural Development.

European Commission, 2010. The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future. COM(2010)672, Brussels.

European Commission, 2016. *Next Steps for a Sustainable European Future: European Action for Sustainability*. COM(2016) 739, Brussels.

Hart K., Baldock D., Buckwell A., 2016. *Learning the lessons of the Greening of the CAP*. A report for the UK Land Use Policy Group in collaboration with the European Nature Conservation Agencies Network, Institute for European Environmental Policy, London.

Holzmann, R., Jorgensen, S., 2000. *Social Risk Management: A New Conceptual Framework for Social Protection and Beyond*. World Bank.

OECD, 2011. *Managing Risk in Agriculture Policy Assessment and Design*. OCED Publishing, Paris.

Matthews, A., Salvatici, L. and Scoppola, M., 2017. *Trade Impacts of Agricultural Support in the EU, International Agricultural Trade Research Consortium (IARTC)*. Commissioned Paper No 19, January 2017.

Swinnen, J., 2008. *The Perfect Storm: The Political Economy of the Fischler Reforms of the Common Agricultural Policy*. Centre for European Policy Studies, Brussels.

Swinnen, J., 2015. *The Political Economy of the 2014-2020 Common Agricultural Policy, An Imperfect Storm*. Centre for European Policy Studies, Brussels.

UNEP, 2016. *Food Systems and Natural Resources*. A Report of the Working Group on Food Systems of the International Resource Panel. Westhoek, H, Ingram J., Van Berkum, S., Özay, L., and Hajer M.

APPENDIX 1

Why further reform?

Alan Matthews

Introduction

The EU will spend €363 billion in 2011 prices on the Common Agricultural Policy (CAP) during the period of the 2014-2020 Multiannual Financial Framework (MFF), accounting for 38% of EU spending during this period (European Commission, 2016e). The CAP's share in the total EU budget has been falling, but it is still high. This high share is explained on the grounds that the CAP is the EU's only truly common spending policy. But as the EU faces another set of bruising negotiations on the next MFF post-2020, it is inevitable that this budget will again come under scrutiny. Indeed, the then Commissioner for Budget and Human Resources Kristalina Georgieva indicated as much in her presentation at the EU Presidency Conference organised by the Dutch Presidency opening the debate on the next MFF in January 2016. In her address she questioned whether the CAP as reformed in 2013 is achieving a sufficiently high degree of European value added and whether the greening of the CAP is working.[1]

This chapter seeks to respond to the challenge in the first part of the Budget Commissioner's question. It asks whether the current design and scale of the CAP is fit for purpose and whether the European taxpayer gets value for money from current CAP expenditure. When measured against the objectives of the CAP, the answer must be a resounding no, and this provides the basis for arguing that further reform is required. This chapter sets out the evidence behind this conclusion.

The CAP's formal objectives were set out in the Treaty of Rome and have not been updated since. As set out in Article 39 of the Treaty on the Functioning of the European Union, they are to increase agricultural productivity, to ensure a fair standard of living for farmers by increasing the individual earnings of persons engaged in agriculture, to stabilise markets and to ensure food security. The CAP is also expected to contribute to the higher-level and wider commitments into which the EU has entered over time. These include, for example, commitments to improve the quality of Europe's waters, to combat air pollution and to halt the decline in biodiversity.

The CAP 2013 reform recognised that the challenges to EU agriculture have become broader and more complex. Among the factors contributing to this, the Commission identified **economic pressures** such as the deterioration in agricultural terms of trade, the erosion of the sector's competitive potential and the challenge of further liberalisation of agricultural markets; increased **environmental threats** such as climate change and the loss of biodiversity; and **territorial needs** such as keeping the great diversity of rural areas in the EU vital and attractive (European Commission, 2011b). Based on this analysis, the Commission put forward three broad policy objectives for the future CAP linked to the overall objectives of smart, sustainable and inclusive growth in the Europe 2020 strategy:

- **Contributing to a viable, market oriented production of safe and secure food** throughout the EU by acting on drivers related to income derived from the market (improving farmers' capacity to add value to their production, improving the functioning of the food supply chain in a pro-competitive way, providing a safety-net in case of excessive price drops), promoting sustainable consumption, enhancing the competitiveness of agricultural holdings (innovation, modernisation, resource efficiency, addressing production difficulties in areas with natural constraints) and helping farmers to deal with income volatility and the below average income and productivity of the sector (income support, risk management for economic and public health risks).
- **Ensuring the sustainable management of natural resources**, such as water and soil, and the provision of environmental public goods such as preservation of the countryside and biodiversity, integrating and promoting climate change mitigation and enhancing farmers' resilience to the threats posed by a changing climate, fostering green growth through innovation and reducing environmental damage by agriculture.
- **Contributing to the balanced territorial development** and thriving rural areas throughout the EU by responding to the structural diversity in farming systems and assuring positive spill-over effects from agriculture to other sectors of the rural economy and

1 http://ec.europa.eu/commission/2014-2019/georgieva/announcements/speech-vice-president-kristalina-georgieva-eu-presidency-conference-multiannual-financial-framework_en, accessed 26 December 2016.

vice-versa, improving their attractiveness and economic diversification" (European Commission, 2011b).

Since the conclusion of the last CAP reform in 2013, three further important political commitments have been made. First, the Juncker Commission took office in October 2014 on a political platform based on, among other priorities, jobs and growth (Juncker, 2014). In his mission letter to incoming Commissioner for Agriculture and Rural Development Phil Hogan, President Juncker stressed the need for the CAP to contribute to the jobs and growth agenda as well as the need to pursue flexibility and simplification of the CAP instruments.[2]

Second, world leaders adopted at the 70th UN General Assembly on 25 September 2015 a new global sustainable development framework: the 2030 Agenda for Sustainable Development having at its core the Sustainable Development Goals (SDGs). The 17 SDGs and their 169 associated targets are global in nature, universally applicable and interlinked. These 2030 goals now form the basis for the EU's long-term planning including sectoral policies such as the CAP for the next MFF period (European Commission, 2016b).

Third, in December 2015, the United Nations Framework Conference on Climate Change, COP21, set out a global action plan in the Paris Agreement to put the world on track to avoid dangerous climate change. It sets out a long term goal to limit global warming to well below 2°C above pre-industrial levels – and to pursue efforts to limit the temperature increase to 1.5°C. It will require significant changes in behaviour and incentives across most areas of human activity, especially agriculture.

The CAP has undergone significant changes in a series of reforms since 1992. Support to farm products through market regulation has been replaced by support to individual producers through direct payments. Expenditure on rural development, including farm modernisation and land management, has grown in importance. However, the bulk of CAP expenditure is delivered in the form of (mostly) area-based decoupled payments. Direct payments make up 72% of the CAP budget and account for 28% of the EU budget (Table 1.1). Border protection through the EU's Common External Tariff as well as Common Market Organisation (CMO) regulations are also important instruments of agricultural policy, but it is particularly the predominant role played by area-based direct payments which attracts controversy (Matthews *et al.* 2017).

Table 1.1: *The importance of direct payments in EU agricultural policy*

	2003-05	2013-15
	€ million	€ million
Direct payments	31,075.09	40,850.22
CAP budget	45,474.80	56,880.72
EU budget	98,510.71	145,403.05
Memo items	%	%
Share of EU direct payments in CAP budget	68.3%	71.8%
Share of EU direct payments in EU budget	31.5%	28.1%

Source: Matthews (2016a). The successive enlargements of the EU in 2004, 2007 and 2013 should be kept in mind in interpreting these figures.

Leading figures have expressed different views on the future role of direct payments. Commissioner Hogan has declared his "*determination that basic income support and an effective safety net will continue as an essential element of any new CAP through a system of direct payments*".[3] On the other hand, the report of the Agricultural Markets Task Force noted: "*The potential of such a targeted [risk management] policy and the shortcomings of the current direct payment regime, in particular its blanket nature which does not target actual needs and its effect on land and input prices, are such that we suggest exploring a resource shift to an approach which channels CAP money into a genuine and predictable safety-net for farmers to apply in times of market imbalance*" (Agricultural Markets Task Force, 2016).

For these reasons, this paper focuses particularly on the role played by direct payments in achieving the objectives of the CAP. Direct payments were introduced into the CAP in 1995 as compensation for lower market price support. This was an important change which, over the following two decades, facilitated the move to more market-oriented producer prices. Today, however, it is very hard to justify such continued compensation for policy change. Various other justifications have since been supplied to legitimise maintaining the system of decoupled direct payments. We examine the most important arguments in this paper and find them unconvincing. There is an urgent need for a further reform of the CAP.[4]

2 http://ec.europa.eu/commission/sites/cwt/files/commissioner_mission_letters/hogan_en.pdf, accessed 18 December 2016.

3 Speech by Commissioner Phil Hogan at the Agricultural Outlook Conference - 6th December 2016, Brussels, http://ec.europa.eu/commission/2014-2019/hogan/announcements/speech-commissioner-phil-hogan-agricultural-outlook-conference-6th-december-2016-brussels_en, accessed 10 December 2016.

4 This paper draws on and extends the analysis contained in my report on the future of direct payments for the AGRI Committee of the European Parliament, see Matthews (2016a).

It is helpful to clarify the meaning of direct payments before we proceed. This term is used more or less broadly in discussing agricultural support measures. In the broadest sense, direct payments refer to all budgetary transfers to individual farmers from the government. They include, for example, payments for income support, agri-environment schemes, investment aids and less favoured area payments; in fact, all agricultural support with the exception of market price support paid for by consumers. Within the CAP, direct payments are usually defined more narrowly to mean payments to farmers under Pillar 1 of the CAP. Since the 2013 reform, these include the Basic Payment, the greening payment, the redistributive payment, coupled payments, the small farm payment and young farmers' payment. This is the definition used in showing the importance of direct payments in EU agricultural policy in Table 1.1.

Within the CAP Pillar 1 direct payments, particular attention is paid to decoupled payments, which accounted for 93% of the total in the 2015 financial year (DG AGRI, 2016). In this chapter, our critique of direct payments is directed at direct payments financed by Pillar 1 of the CAP. This critique accepts fully that budgetary transfers to farmers can be justified on the grounds of various forms of market failure, grounds which are developed more fully in other chapters of this report. Indeed, the purpose of this chapter is to argue that the objectives which are now partially and wastefully addressed by CAP Pillar 1 direct payments could be addressed more effectively, efficiently and equitably by a redesigned system of contractual payments explicitly targeted to specific outcomes for which society is prepared to pay.

1 Do direct payments increase farm incomes?

The combination of low labour productivity in agriculture, leading to low returns to agricultural labour, a reduction in the agricultural labour force, growing farm consolidation and an unbalanced age structure, forms the backdrop to agricultural policy in the EU. These trends are, not surprisingly, resisted by those who continue to work in the sector, not least because, once a farmer takes over a farm, he or she is less likely to change occupations or to retire early than workers in other occupations.[5] For those remaining in the sector, 'exit' becomes an increasingly difficult option, so they turn to 'voice' (Hirschman, 1970). This translates into political action demanding the transfer of resources from the rest of society to compensate for lagging living standards. In terms of EU agricultural policy, this has manifest itself in high border protection against low-cost imports and budgetary transfers in the form of direct payments which are claimed 'for income support'.

Together with the desire to promote a high level of food self-sufficiency to guarantee food security (an issue taken up in a later section), an important argument for agricultural support in the EU has thus been to provide income support to farmers whose incomes are assumed to fall behind incomes in the non-farm sector because of these structural characteristics of agricultural production. It has been a central objective of the CAP since its initiation to achieve "a fair standard of living for the agricultural community".

1.1 High dependence on direct payments

Farm groups have been spectacularly successful in attracting public transfers. There can be no denying the importance of direct payments in farm incomes. DG AGRI on its website maintains a regularly-updated chart showing the dependence of agricultural factor income on public support from the EU budget (e.g. direct payments, rural development) by Member State. Agricultural factor income represents the income generated by farming which is used to remunerate borrowed or rented factors of production (capital, wages and land rents) as well as own production factors (family labour, own capital and own land). On average across the EU, CAP direct payments accounted for 28% of agricultural factor income in the period 2010-2014; when Pillar 2 payments such as agri-environment payments and compensatory payments for farming in areas facing natural constraints are added, the total rises to 33%.[6] For individual countries the percentages can be higher, and for individual enterprises within countries (e.g. beef farming) the percentages can be much higher still.

Data from the EU's Farm Accountancy Data Network (FADN) suggest dependence on direct payments is even higher. The FADN data include payments received from Member States in addition to CAP payments. These payments may be compensatory national direct payments used to top-up Pillar 1 direct payments in the new Member States, national co-financing of Rural Development Programme payments, or other types of state aids. These payments can be compared to farm net income in the FADN database (similar to the concept of entrepreneurial income in the economic accounts for agriculture). Farm net income is the amount left over for farm families or entrepreneurial income after paying for external factors of production. It is arguably a better indicator of the return *from farming* for farm households than is agricultural factor income in countries where agricultural production

5 Admittedly, empirical evidence for this statement referring to European farmers is hard to identify. It is also the case that, in many European countries, part-time off-farm employment provides an alternative route to occupational change when a farmer seeks additional income. Nonetheless, in other sectors, self-employed persons faced with a low or falling income are more likely to seek alternative employment than in the case of farm occupiers for whom handing on the farm to another family member is an important motivation.

6 Figures from DG AGRI, "Share of direct payments and total subsidies in agricultural factor income", available at http://ec.europa.eu/agriculture/cap-post-2013/graphs/graph5_en.pdf, accessed 24 May 2016.

Table 1.2. ***Importance of direct payments by farm system, EU-27, 2011-2013***

	Field crops	Hor-ti-cul-ture	Wine	Other perm-anent crops	Milk	Other grazing live-stock	Gra-ni-vores	Mixed	Total
Farm income depending on direct aids	55%	7%	9%	29%	41%	70%	22%	61%	44%
Farm income depending on other subsidies	13%	3%	5%	7%	17%	31%	8%	21%	15%
Farm income depending on market factors	32%	90%	87%	64%	42%	-1%	69%	18%	41%

Source: Own calculations based on FADN database

is organised in family farms.

Farm net income can be partitioned between direct payments (both coupled and decoupled), other public subsidies, and income depending on market factors (market income) defined as the residual.[7] Averaged over the period 2004-2013, direct payments have accounted for 47% of farm net income, other public transfers 15%, and market income the remaining 38%. Direct payments have been the most stable component of farm net income, as shown by the respective coefficients of variation (0.08 for direct payments, 0.09 for other public transfers and 0.27 for market income) (Matthews *et al.* 2017).

The importance of public transfers differs greatly across farm systems (Table 1.2). Direct payments play a relatively minor role on horticultural farms (7%), vineyards (9%) and pig and poultry farms (granivores) (22%). However, they account for 70% of the income on 'other grazing livestock' farms (predominantly beef and sheep) and 61% on mixed farms. Taking account of other public transfers does not change this ranking. The largest amounts in absolute terms are obtained by arable and 'other grazing livestock' farms. Indeed, for the latter group, total public transfers (101%) actually slightly exceeded farm net income. These figures refer to budgetary transfers only, and do not take account of consumer transfers due to market price support arising from trade barriers or market intervention.

This apparently high dependence of farm income on direct payments understandably makes farmers nervous if there is a suggestion that these payments might be reduced. However, there are several reasons why these figures overestimate the likely impact of a reduction in payments on farm income. Also, given that there is a case for making direct payments to farmers, are decoupled area-based direct payments the right way to provide these?

1.2 Total farm household income

To assess the relative income of farmers and non-farmers, the average farm income (obtained by dividing either agricultural factor income or farm net income by the numbers working in agriculture) is sometimes compared to average non-farm earnings. However, this comparison tells us nothing about the living standards of farm families. This is a function of their disposable income which, in turn, depends on the total income of agricultural households (see Hill and Bradley, 2015, for a discussion). Statistics on the total income of agricultural households are not collected on a systematic basis. However, the evidence reviewed in Hill and Bradley (2015) suggests that *"The average disposable incomes of households headed by*

7 This partitioning is based on the strong assumption that all of the expenditure on intermediate consumption and external factors is allocated to the production of marketed output, and that the current level of public subsidies would be fully retained even if the farm reduced expenditure on intermediate inputs and external factors to zero. For example, a farmer may be renting land on which he or she is drawing a decoupled payment. Without making the rental payment the farmer would not receive the decoupled payment. Some minimal expenditure is required to maintain land in good agricultural and environmental condition which is required to receive the decoupled payment. There are also interdependencies between the different income categories. For example, higher direct payments may be reflected in higher land rents and thus lower market income due to the capitalisation effect mentioned in the chapter. Despite these caveats, this partitioning provides useful insights into the dependence of different types of farming on the different components of income.

farmers (in the sense that farming is the main income source) are generally of similar levels to those of society in general". Of course, the statistics on which the relevant comparisons were made reflect the income transfers included in farm income.

1.3 Direct payments and structural change

As a way of solving the low-returns problem in agriculture, political transfers can only act, at best, as a temporary palliative. Despite the assumption of limited mobility in the short-run, the agricultural labour force does respond to the differences in returns between the farm and the non-farm sector. Returns to farm labour are lower than in the non-farm sector, but there is no evidence that this disparity is increasing over time. It is thus not too big a stretch to think of agriculture as a perfectly competitive sector in which resources are allocated in accordance with relative returns.

If the political response to industry lobbying is to provide transfers to farmers, what will be the outcome? In the short-run, relative farm incomes will increase. However, this relative improvement in incomes will be short-lived as, ultimately, the effect of the transfer is to maintain a larger number of people working in agriculture than would otherwise be the case. In the longer run, the effect of the transfer is to influence the structure of agriculture rather than improve individual farm incomes.[8]

Direct payments can, in principle, influence the entry, growth and exit of farms. Part of direct payments are capitalised into land values and land rents. Increased land rents and prices may represent significant barriers to entry into the agricultural sector for those not in a position to inherit farmland and may also impede restructuring within the sector. Direct payments can also influence a producer's decision to exit the industry, particularly for low-profit farmers. If the amount of the direct payment exceeds the loss associated with a particular productive activity, then there may be a cross subsidisation effect that will keep that producer in business thus again slowing consolidation.

There is evidence from survey intentions and simulation modelling (Bartolini and Viaggi, 2013; Brady et al., 2009) that decoupled payments slow the rate of structural change relative to a situation of no agricultural policy support. The CAP's income support payments have discouraged some farmers from exiting agriculture and slowed the reallocation of land towards more efficient farms.

This has implications for the serious problem of the unbalanced age structure and the need for generation renewal in EU agriculture. The Young Farmers Scheme was introduced as part of Pillar 1 direct payments in the 2013 reform to help to address this issue. It provides a top-up of the basic payment to young farmers under 40. However, it does not help to encourage the exit of older farmers and the entry of younger farmers. The availability of a direct payment not linked to production but linked to land encourages some older farmers to remain in farming and therefore slows generational renewal.

1.4 Leakages to unintended beneficiaries reduce the value of support.

Not all payments from the CAP budget show up in terms of higher farm income. There is a considerable leakage of these payments so that farmers are not the ultimate beneficiaries. Despite the focus on limiting payments to active farmers in the last reform, the role of non-farmers claiming entitlements to support is not the major reason why a great share of direct payments ends up in the pockets of others. The main reason why farmers capture only a proportion of the direct payments is that much of the benefits leak away to the suppliers of farm inputs and the owners of land, many of whom are non-farmers. The latter occurs through the process of capitalisation, in which the benefits of support are bid into higher land rents or higher land values (Latruffe and Le Mouël, 2009).

Agricultural economists refer to the extent to which one euro of support provided by taxpayers and consumers ends up benefiting farmers as the transfer efficiency of support. If farm household income goes up by one euro for every euro of support, then the transfer efficiency of that support would be 100%. In practice, such as perfect measure of transfer efficiency is never achieved. The OECD undertook some theoretical work to quantify the extent of transfer inefficiency across different agricultural support instruments (OECD 2003). In its analysis, area-based payments which required farmers to undertake production was the most efficient instrument (compared to market price support, deficiency payments or input subsidies) at transferring income to farmers but still only one-half of the original support ended up in farmers' pockets. This analysis does not carry over directly to decoupled area payments for which no production is required but it is suggestive of the scale of leakages that arise.

In the case of payments based on area, the major source of leakage is to non-farming landowners although other input suppliers may also benefit. Farmers receive the payments, but in competing with one another for access to land, some of the value of these payments is transferred to land-owners. As around one-half of all EU farmland is rented, mostly from non-farmers, the transfer away from those working the land and benefiting those not directly engaged in agriculture is potentially large. When asset values are inflated by payments, young farmers must pay a higher price to enter farming or to acquire additional land, with the benefits going to those who are leaving the sector. For those inheriting land, higher asset prices may mean higher payments must be made to the non-farm-

8 As discussed in the next section, direct payments also lead to an increase in the prices of fixed factors of production and variable inputs. However, to the extent that these are owned or provided by farmers (for example, around half of the EU agricultural area is owner-occupied and the other half rented), this is perceived as an increase in farm income and thus will tend to slow the rate of structural change.

ing siblings when a farm is inherited, again leading to an outflow of benefits from the sector.

The empirical evidence suggests that the actual extent to which direct payments are capitalised into land rents and prices in EU countries may be more limited than expected (Matthews *et al.* 2017). Estimates from empirical studies range from as low as 6-7 cents to as high as 80-90 cents for each euro of direct payments received being capitalised into land rents, with median estimates of around 20-25 cents (Matthews *et al.*, 2016).[9] These capitalisation effects reduce the benefits of direct payments to existing farmers and raise the costs of entry and growth for younger and expanding farmers.

There would be some concern that a sharp drop in land values as a result of removing CAP Pillar 1 direct payments could lead to financial difficulties for farms that are highly-indebted. However, a feature of land prices in EU countries is that they are generally well above what their use value in agricultural production alone would justify. This can be explained by the fact that owning rural land brings with it many aesthetic, social, emotional, investment as well as fiscal benefits in the high population density countries of Europe. Thus, while there would certainly be a short run impact on land prices if payments were reduced suddenly and completely, this impact on land prices would be moderated if it were clearly pre-announced and then phased in over a period of years, and where alternative payments were made to farmers in return for the provision of ecosystem services and environmental assets.

1.5 Significant structural heterogeneity

If direct payments were intended to raise farm incomes to "a fair standard of living", we would expect them to go mainly to relatively smaller farms with lower farm incomes. In practice, however, most payments go to a relatively small number of farms, and these farms tend to have farm incomes well above the median in the EU. This reflects the highly skewed distribution of farm sizes in the EU and is an inevitable consequence of relying on an area-based payment for income support.

There were a total of 10.8 million farms in the EU-28 in 2013; the vast majority of these were relatively small. Romania accounted for one third (33.5%) of these farms, while Poland accounted for a further 13.2%.[10] 4.4 million farms had a standard output[11] that was less than EUR 2 000, while a further 3.1 million farms had an output within the range of €2, 000–€8,000. Together these very small and small farms accounted for more than two thirds (69.1%) of all the farms in the EU-28, whereas their share of standard output was considerably lower, at 5.0%. Many of these small and very small farms are subsistence holdings that are also below the threshold where they would be able to claim CAP payments. Across the whole of the EU-28, almost three quarters (74.4%) of very small farms (in economic terms) consumed more than half of their own production in 2013, while just over two fifths (42.6%) of small farms were classified as subsistence holdings. By contrast, there were 680,000 farms in the EU-28 with a standard output of at least €100,000; these very large farms accounted for 6.3% of the total number of farms and for 71.4% of the agricultural standard output in 2013. Note that these very large farms may have a significant number of employees, so that on a per capita basis the distribution of support would not look quite so skewed. However, there is no evidence that farm workers receive higher wages than market conditions dictate simply because the farm holding on which they work is a big recipient of direct payments. It is a reasonable assumption to make that the great bulk of payments accrue to those owning the farm and not to those working on it.

Similar heterogeneity is revealed using a definition of farm size based on the physical size of farms, as measured by their utilised agricultural area. This is a more relevant statistic for the distribution of area-based direct payments. In 2013, there were 4.9 million physically very small (< 2 hectares of utilised agricultural area) and 4.5 million physically small (2 – 20 hectares) farms in the EU-28. Together, this group of 9.4 million farms with less than 20 hectares of utilised agricultural area accounted for almost 9 out of 10 (86.3%) farms in the EU and for more than two thirds (68.1%) of the labour force directly working on farms. However, their share of the utilised agricultural area stood at less than one fifth (18.5%) of the total.

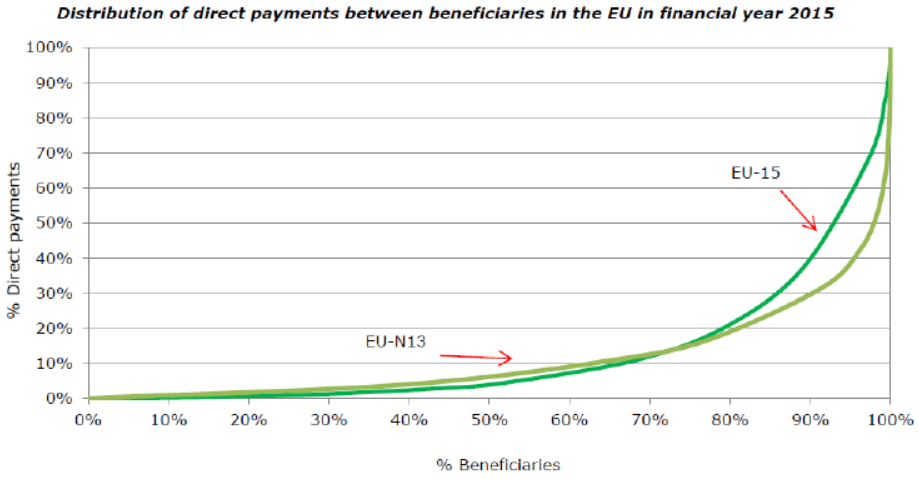
By contrast, there were 337,000 physically large farms in the EU-28 - defined as those with at least 100 hectares of utilised agricultural area. Together they accounted for 3.1% of all farms in 2013 and for 12.5% of the total agricultural labour force that was directly working on farms. Their share of the total utilised agricultural area was considerably higher, at 52.1%. Given that these physically large farms occupied more than half of the total agricultural area, the farming practices that they adopt may be considered to be particularly important from an environmental perspective.

9 A recent US study also found that for every dollar of US farm subsidies, about 25 cents leaked to landowners while 75 cents were retained by farmers (Kirwan, 2009).

10 The statistics in this section are drawn from Eurostat (2016)

11 The standard output (SO) of an agricultural product (crop or livestock) is the average monetary value of the agricultural output at farm-gate price, in euro per hectare or per head of livestock. There is a regional SO coefficient for each product, as an average value over a reference period (usually 5 years). The sum of all the SO per hectare of crop and per head of livestock in a farm is a measure of its overall economic size, expressed in euro, see http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Standard_output_(SO)..

Figure 1.1: ***Distribution of direct payments between beneficiaries in the EU in the financial year 2015***



Source: DG AGRI (2016)

1.6 Direct payments are highly concentrated

Reflecting this heterogeneity in farm structures, DG AGRI's annual report on direct payments shows they are not equally distributed among beneficiaries in the European Union. The graph on the distribution of payments from the most recent report for the 2015 financial year (thus covering direct payments made to farmers in 2014 as Member States are reimbursed in the following financial year) is shown in Figure 1.1. It confirms that the oft-quoted statistic that 80% of direct payments go to just 20% of farmer beneficiaries is alive and well; indeed, the distribution is even more skewed in Bulgaria and Romania than in other Member States (DG AGRI, 2016).

Because the 2015 financial year was a transitional year between the previous and new systems of direct payments, it does not reflect the full impact of the 2013 reform. The 2013 CAP reform attempted to reduce the degree of inequality in the distribution of payments through three mechanisms, external and internal convergence, degressivity/capping and the redistributive payment.

External convergence was the process of redistributing support between Member States while taking account of the differences that still exist in wage levels and input costs. Member States that have direct payments per hectare below 90% of the Union average should close one third of the gap between their current level and this level, with all Member States arriving at a minimum level by financial year 2020, representing roughly 75% of the Union average. Internal convergence is the process whereby historical references for decoupled payments are progressively removed. Member States could choose from a range of options, with the aim of reducing divergences in the level of aid per hectare within a Member State or region.

Degressivity required Member States to reduce basic payments over €150,000 per farm by a minimum of 5%. Member States could opt for any reduction percentage up to 100% (capping), and nine Member States have opted to cap payments at amounts between €150,000 and €600,000. To avoid disproportionate effects on large farms with high employment numbers, Member States could take into account salaried labour intensity when applying the mechanism. The amount of money affected by degressivity/capping is, in practice, very limited. The total amounted to €109 million in 2015, almost two-thirds of which is accounted for by Hungary (Matthews, 2016a).

A potentially more equalising measure was the new voluntary possibility to pay a redistributive payment on the first hectares farmed. Up to 30% of a country's national ceiling could be devoted to this, and eight Member States have implemented it. The amount involved in the redistributive payment is larger than that affected by degressivity/capping, amounting to €1.25 billion in 2015. Because this redistribution is financed by a reduction in the basic payment to all farms, its impact on the overall distribution of payments among farms will also be limited.

1.7 Direct payments are concentrated on farms with higher incomes

The Commission's presentation of the direct payments data sorts the distribution according to the size of the individual payment made to each farmer. However, it does not tell us whether it is richer or poorer farmers (in terms of income from farming, not overall income) who receive the largest payments. Sorting direct payments by the level of farm income obtained by farmers allows us to see the share of direct payments going to those with farm incomes above a certain threshold.

This exercise has now been done for the first time using

Table 1.3: ***Direct payments distributed by farm income decile in the EU, 2013***

Farm income decile (lowest to highest)	Average FNI/decile	Average DPs/decile	Total FNI by decile	Total DPs by decile	Cumulative FNI by decile	Cumulative DPs by decile
	€	€	€m	€m	%	%
1	940	313	707	236	0.8%	0.6%
2	940	313	707	236	1.5%	1.1%
3	940	313	707	236	2.3%	1.7%
4	2,371	892	1,783	671	4.2%	3.2%
5	3,089	1,182	2,323	889	6.8%	5.3%
6	4,870	1,990	3,663	1,496	10.7%	8.8%
7	9,444	4,064	7,103	3,057	18.4%	16.0%
8	11,447	5,232	8,609	3,935	27.8%	25.2%
9	22,349	11,324	16,809	8,517	46.0%	45.2%
10	66,083	31,127	49,701	23,411	100.0%	100.0%

Source: Matthews (2016b). FNI is Farm Net Income as defined in the FADN database. Total beneficiaries are 7.5 million farms.

FADN farm data adjusted to take into account the fact that the population of farms covered by the FADN sample excludes the very smallest holdings (see Matthews, 2016b for the methodology and caveats with the approach). In line with the evidence on the skewed structure of agricultural holdings by land use documented earlier, over half of farm income on EU farms is earned by the top decile of farms with an average farm net income of €66,083 in 2013 (Table 1.3). There are around 750,000 farms in this decile. These farms also receive over half of the CAP Pillar 1 direct payments budget. This is partly because direct payments make a bigger contribution to farm net income at higher incomes. For the two highest farm income deciles, direct payments contribute 48% of farm net income whereas for the lower farm income deciles the share is between 38% and 48%.[12] Just 5% of direct payments go to farms with incomes below the median farm (i.e. farms in the lowest five farm deciles), while 95% of payments go to farms with incomes from farming above the median. Again, we should note that these larger farm businesses are likely to employ significant numbers of farm workers although, as noted earlier, the way the labour market works for farm workers means that they are unlikely to be beneficiaries of these payments to any extent.

To summarise, if direct payments are intended to support farms with low farm incomes, they are very badly targeted. The data to show the impact of the redistributive elements of the 2013 CAP reform are not yet available, but the initial evidence suggests these new elements will make little difference to this result. Most direct payments go to substantial businesses for which there is no obvious need for 'income support'. For this reason, there is now less emphasis on justifying direct payments because of their role in supporting farm income. It is, of course, the case that there are many farm households with a low standard of living, also relative to average living standards in their region or country. Rural poverty exists and must be addressed. However, Member States are in a much better position to address rural poverty because they have access to the full income situation of farm households and can put the social policies in place to target farm households with low incomes.[13]

12 For the three lowest farm income deciles the share is 33% by assumption.

13 An excellent example of such a targeted scheme is the Farm Assist scheme operated by the Department of Social Protection in Ireland. Farm Assist is a means-tested income supplement which provides a top-up for low income farmers to bring them in line with social welfare thresholds. Around 8,000 farm families were in receipt of Farm Assist payments in 2016, compared to around 140,000 farm holdings in total. Details of the scheme can be found at http://www.welfare.ie/en/Pages/Farm-Assist.aspx (accessed 25 February 2017).

2. Food and nutrition security

2.1 Importance of food and nutrition security

All governments have a responsibility to ensure food security for their populations. This was also one of the original objectives of the CAP in the Treaty of Rome. There has been a renewed focus on food security in the EU in the last decade, driven by the spikes in food prices in 2007 and 2011 abroad and by the effects of the financial recession since 2008 at home.

Food security has traditionally been taken to mean ensuring the availability of, access to and stability of food supplies. In recent years, there has been an increasing focus on the nutritional adequacy and quality of diets and providing a diversity of foodstuffs not just calorically dense commodities. In EU countries, the importance of nutritional considerations is growing in importance to response to the problems of over-weight and obesity due, at least in part, to excessive calorie intake.

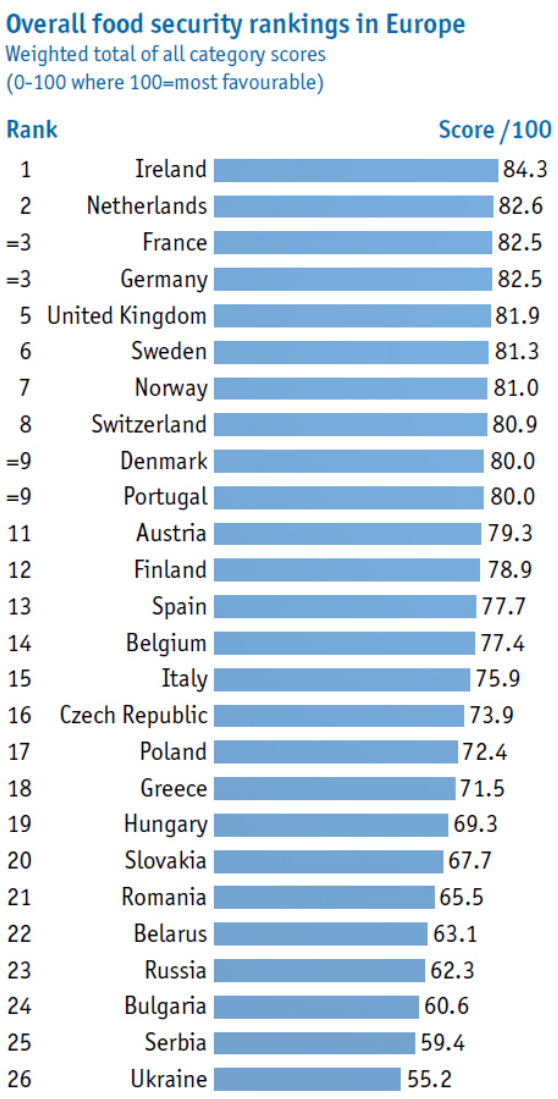
In a Eurobarometer survey of attitudes to food security in 2012, EU citizens were particularly concerned that sufficient food is produced to meet the needs of the world's population. Three-quarters (76%) of all respondents expressed this view, as did a majority of respondents in most Member States. There were lower overall levels of concern about the ability of the EU and Member States to meet the food needs of their populations. However, there were substantial differences between respondents by Member State, particularly with respect to national capacity to meet demand. Ninety-four percent of respondents in Greece were concerned about national food production, whereas only 11% of those surveyed in Denmark or the Netherlands were. A large majority of EU citizens agreed that the EU should help other countries to produce more food (84%); produce more food to reduce its dependence on imports (81%); and produce more food to meet rising demand in the EU and elsewhere (77%) (Eurobarometer, 2012).

While food security as an objective is not questioned, opinions differ on whether there is a serious threat to EU food security and, if so, on what policies are needed to address this. Also, while there is no doubting the continued existence of hunger and malnutrition in the world, and the world's commitment in the Sustainable Development Goals to eliminate hunger by 2030, the appropriate EU response to this challenge is debated. It is often assumed that meeting both objectives justifies support to EU agriculture in order to increase domestic production. Ensuring food security is not necessarily an explicit objective of CAP Pillar 1 direct payments, but it is certainly implicit insofar as these payments are seen as necessary to guarantee the continuation of EU agricultural production in order to maintain a high level of food self-sufficiency. Whether direct payments are needed for this purpose is evaluated in this section.

2.2 Status of EU food security

EU countries generally score well on the Global Food Security Index constructed by the Economist Intelligence Unit (see Economist Intelligence Unit, 2016). This measure is a weighted average of 28 indicators across three categories: affordability, availability, and quality and safety. In 2016, for the first time since the index was launched in 2012, Europe experienced an improvement in its food security due to geopolitical factors, higher economic growth and favourable crop yields. According to the EIU, falling food prices and high food stocks mean that there is a positive outlook for food security in Europe over the next few years. Nonetheless, there are clear differences across EU countries, with Greece, Hungary, Slovakia, Romania and Bulgaria having significantly lower scores than other EU Member States (Figure 1.2).

Figure 1.2: ***Overall food security rankings in Europe***



Source: Economist Intelligence Unit (2016)

The EIU index draws on national-level indicators to draw conclusions about a country's level of food security. How-

ever, national indicators are averages and tell us nothing about how food is distributed within a country, or the sufficiency of household access to food. The rise in the use of food banks in many EU countries, especially after the financial crisis in 2008, attests to a growing level of household food insecurity. Almost 11 million people benefited from assistance under the Fund for European Aid to the Most Deprived in 2014 (European Commission, 2016d). This is borne out by self-reported measures of food insecurity. Analysis of answers to the question 'Can I just check whether your household can afford a meal with meat, chicken or fish every second day if you wanted it?' in successive waves of the European Quality of Life Survey reveals a significant (in a statistical sense) rise in reported food insecurity over the period 2003/2007/2011 (from 6.5 to 8.7 per cent between 2003 and 2011 on average), but with considerable variation across Member States (Davis and Geiger, 2016). These authors attribute the differences across countries to the extent to which their welfare regimes protect against risk factors for food insecurity, such as poverty and social exclusion, and how they shield their citizens from the impact of economic crisis. In other words, food insecurity in EU countries has nothing to do with overall food availability, but is entirely a function of households' purchasing power and their ability to access food.

It cannot be stressed too often that food insecurity is primarily a matter of lack of or insufficient access to sufficient, safe and nutritious food. From the affordability perspective, the share of household expenditure continues to fall in all Member States, with particularly sharp falls over the last two decades in some of the newer Member States (Table 1.4). Indeed, there are those who argue that food has become too cheap given that the external environmental costs of food production are generally not reflected in the market prices paid.

Stimulating domestic food production through further incentive measures in order to increase domestic food availability will do nothing to improve the position of those currently experiencing difficulties in accessing adequate food supplies. Here, the solution needed is targeted public expenditure measures to increase the purchasing power of the food-insecure, such as those supported by the Fund for European Aid to the Most Deprived and similar national measures.

Table 1.4: *Share of food and non-alcoholic beverages expenditure in final consumption expenditure of households*

	1995	2015
United Kingdom	8.6	7.3
Luxembourg	8.9	8.2
Austria	10.1	8.8
Germany	10.6	9.3
Netherlands	11.2	10.7
Denmark	11.5	10.0
EU-28	12.7	11.1
Sweden	12.7	11.2
France	13.0	12.2
Ireland	13.5	8.5
	1995	**2015**
Cyprus	13.5	13.3
Belgium	13.6	12.2
Finland	13.7	11.2
Malta	14.2	10.5
Italy	15.6	13.2
Spain	15.8	12.3
Slovenia	16.1	14.0
Greece	16.4	15.7
Czech Republic	17.1	14.9
Portugal	17.3	16.1
Hungary	20.5	15.7
Bulgaria	25.6	16.1*
Slovakia	25.7	16.2
Poland	27.1	15.2
Estonia	29.2	19.0
Latvia	34.1	16.9
Lithuania	38.1	21.7
Romania	42.4	27.9

*Source: Eurostat [nama_10_co3_p3]. * Figure for Bulgaria is 2014. Expenditure on restaurants and hotels and catering services is not included in these figures.*

2.3 EU already enjoys a high level of food self-sufficiency

Nonetheless, the belief that food security is a function of overall food availability, and particularly domestic food production, is deeply ingrained in EU agricultural policy discourse. For a recent example, the report of the Agricultural Markets Task Force notes that "*Food security is a strategic asset, like defence capability and energy supply. This gives the EU's farm sector critical importance: in an unstable world, Europe should attempt to avoid too great a dependence on other countries for the provision of its food. It is possible to imagine scenarios in which food security could play a greater role than we would dream of.*"

There are a number of well-known caveats to this conclusion. In the first place, the EU is not currently dependent on food imports for major temperate zone food commodities (Table 1.5). The argument that an increase in

Table 1.5: ***Past and projected EU self-sufficiency rates by commodity***

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Common wheat	110.8	108.8	114.2	126.7	127.5	126.2	111.3	119.4	121.4	121.9	123.3
Barley	97.2	106.3	109.4	123.8	124.7	124.8	120.1	115.8	116.5	116.6	116.0
Maize	89.2	101.0	82.0	87.6	102.3	78.1	80.8	87.1	87.9	87.6	87.5
Rice	70.8	73.6	71.2	65.6	62.4	64.0	64.2	60.4	60.1	59.6	59.3
Sugar	83.3	98.9	89.7	88.6	87.3	86.8	88.7	92.8	93.6	94.6	95.6
Cheese	106.7	106.8	107.7	108.2	107.8	107.5	107.4	107.3	108.5	108.7	108.8
Butter	102.0	106.1	105.4	104.3	106.6	108.2	109.0	108.8	109.7	109.4	109.6
Skimmed milk powder	140.6	159.1	163.8	159.1	202.0	207.7	206.8	189.2	176.2	181.8	193.3
Whole milk powder	269.7	227.4	239.0	202.5	202.8	217.0	220.2	221.2	214.4	213.2	211.3
Beef and veal	100.4	102.3	101.2	99.5	100.2	101.1	101.9	101.8	101.3	100.8	100.4
Pig meat	108.9	110.5	110.6	110.9	109.5	110.4	113.0	112.4	112.3	112.1	112.4
Poultry meat	103.0	103.9	103.8	104.1	104.0	103.7	104.3	104.3	104.4	104.3	104.3
Sheep and goat meat	81.3	83.8	86.9	87.6	88.4	86.8	87.8	88.0	86.6	85.9	85.6
Oilseeds	64.4	65.3	61.3	65.4	71.4	63.4	64.4	64.8	64.7	64.6	64.4
Oilseed meal	52.3	51.6	56.2	56.7	57.3	56.1	52.9	54.1	54.0	53.9	53.8
Oilseed oils	91.0	92.8	101.1	101.6	100.4	98.3	95.7	96.4	96.0	96.0	96.3

Source: Own calculations based on DG AGRI, *Prospects for Agricultural Markets and Income in the EU 2016-2026.*

food self-sufficiency is needed to underpin the EU's food security is not supported by these figures. There are, of course, some notable exceptions in the case of sheepmeat, rice and particularly oilseeds and meals imported for animal feed (tropical fruit would probably also show a net import status if data were available). However, the figures in aggregate do not suggest that the EU has an excessive reliance on imported foodstuffs overall.

These self-sufficiency rates are based on current levels and patterns of consumption. There is a widespread awareness that Europeans generally are over-consuming, eating the wrong sorts of foods and thus damaging their health. Obesity levels, and with them the attendant problems of heart disease and stroke, diabetes and certain cancers, are rising; one adult in six in the EU is now considered obese (Eurostat News Release 203/2016). Europeans eat more than the recommended amount of meat, dairy products and sugar and do not consume sufficient fruits and vegetables (Westhoek *et al.*, 2015). If all Europeans followed the dietary guidelines issued by national authorities, calculated food self-sufficiency rates would rise, and dramatically so for some commodities.

The role of food waste also needs to be taken into account. The EU and Member States are committed to meeting the Sustainable Development Goal to halve per capita food waste at the retail and consumer levels by 2030. According to the FUSIONS research project, around 20% of the food produced in the EU is wasted (Stenmarck *et al.*, 2016), so halving this amount would be the equivalent of increasing domestic production by 10% when calculating food self-sufficiency ratios. Taking all factors into account, current levels of food self-sufficiency in the EU do not suggest a need for interventions to further increase domestic food self-sufficiency ratios.

2.4 Threats to food security

While the current situation regarding EU-wide food security may appear satisfactory (we highlight again that this co-exists with a growing problem of household food insecurity which has nothing to do with the overall availability of food supplies), could this change in the future? Concern about the future status of the EU's food security is grounded either in (a) the possibility of a steady rise in real food prices affecting the affordability of food, particularly for low-income households, (b) the possibility of sudden and unexpected shocks to food supplies reflect-

ed in food shortages and food price spikes, or (c) a shock to food supplies arising from environmental degradation and collapse.

The first argument has been expressed as "a world where food is available at the prices we have come to expect cannot be taken for granted" (Benton and Thompson, 2016). It became a popular view following the food price spikes of 2007 and 2011 which drew attention to the challenges of meeting growing food demand under the constraints of limited land and water availability and the threat to yields posed by climate change. While convincing arguments can be made for expecting real food prices to rise, the most probable outcome looking a decade ahead is that real prices will stabilise or continue to fall (OECD/FAO, 2016). Even if real food prices increase, the small share of food in total household expenditure (Table 1.4), the small share of food prices accounted for by farm commodity prices, and the evidence of significant over-consumption of food in the EU, all suggest the consequences for nutrition security in the EU will be manageable.

In the longer-term, it may be that the growth in food demand expands faster than global supply potential and that food prices begin to rise. On the other hand, the large yield gaps in many developing countries and rapid advances in scientific knowledge suggest that there remains considerable potential to increase supply. But if, indeed, global supply is unable to keep up with demand, then rising farm commodity prices would provide the necessary incentives for EU farmers to increase production in any case. The possibility that farm prices might rise in the future is not an argument for providing agricultural support today, though it would be prudent to devote adequate resources to agricultural research and development.

The second argument advanced in favour of support for domestic production is that the world is becoming a more uncertain place and that we can reduce this uncertainty and improve the resilience of our food system by growing more of our own food. Concern that relying on imports is a threat to food security is given credence by the occasional periods of volatile world market prices which lead to importing price instability into EU agricultural markets. But a higher level of EU self-sufficiency, in itself, would have no impact on the transmission of world market price volatility to EU markets. To prevent the import of world market price volatility would require variable border measures such as variable import levies or export subsidies. So long as EU market prices are linked to world market prices, volatility will be imported regardless whether self-sufficiency stands at 40%, 100% or 140%. Increasing the level of EU food self-sufficiency will have no impact on the transmission of world market price volatility.

Excessive world market price volatility is damaging, particularly to consumers in low-income countries and to developing countries with a high dependence on agricultural commodity exports. Initiatives at the international level, such as the Agricultural Market Information System launched by the G20 Agricultural Ministers in 2011, can help to lower global market price volatility by enhancing transparency and policy coordination in international food markets. Excessive world market price volatility is due, in part, to attempts by countries to insulate their domestic markets from variations in world market prices through border measures. This is why the EU, along with all other countries that are members of the WTO, agreed in 1995 to eliminate the use of variable import barriers. Work needs to continue on similar disciplines on export restrictions. There may also be scope for regulation of non-commercial engagement in commodity futures markets to reduce price spikes (Kalkuhl, von Braun, and Torero, 2016).

Awareness of the impact of potential shocks to our food supply rightly focuses attention on food system resilience (Benton and Thompson, 2016). An important way to build resilience is diversification, thus not relying on a single source of food supply such as domestic production. Advocates of increased EU food self-sufficiency often ignore the potential threats to domestic production from weather or disease, and the balancing role that trade can play in these circumstances. The argument that relying on local production makes us more food-secure assumes that domestic production is less vulnerable to the weather risks, pests and diseases which cause variations in import supplies and prices. In fact, the opposite is the case. Simply because global supplies are more diversified, variation in import availability will always be smaller than the variation in domestic production.[14] Or, to look at it from the producer's point of view, if agricultural prices were determined on the basis of national conditions alone (that is, assuming autarky and no trade), then producer prices would be much more volatile than they are in open economies where trade can help to moderate the extremes of price variability.

While trade helps to diversify weather and disease risks, it might be argued that it is subject to additional uncertainties that do not apply to domestic production which would justify some support to domestic production on food security grounds. Imported produce must usually be transported over longer distances, making it more vulnerable to logistical difficulties. Imported supplies may also be at risk from political disturbances, ranging from politically-motivated export embargoes to war.

Whether domestic food production (with its dependence on imported inputs, particularly energy) would be immune to disturbances which might lead to a disruption of imported food supply chains is an open question. The EU's dependence on a narrow range of energy suppliers means that disruption to energy supplies (and thus domestic food production) is much more likely, and also

14 This is not to rule out that there can also be variability in import supplies, especially if there are relatively few import suppliers. Cold weather in southern Europe in early 2017 led to a shortage of some vegetables such as lettuce, courgettes and broccoli in UK supermarkets (http://www.bbc.com/news/uk-38851097). However, this is also a lesson of what can happen when trade is not allowed to fulfil its balancing role, as high tariffs make it uneconomic to source supplies outside the European Union when such shortfalls occur.

potentially more damaging, than disruption to supplies of imported foodstuffs. In any case, it is not obvious that mainly-decoupled direct payments are a necessary or efficient instrument to improve food chain resilience.

The third threat to food security can potentially affect both EU and imported supplies alike. There are fears that modern agricultural practices may have sufficiently negative effects on ecosystems that the future resilience of the sector and its ability to respond to shocks may be under threat. In Section 6 of this chapter, whether CAP Pillar 1 direct payments contribute to greater environmental sustainability is considered in more detail. Addressing this threat means changing the incentives and rewards, and also the knowledge and skills, of the farming sector to do better. We conclude that decoupled area-based payments do not help to promote these changes.

2.5 Trade is the ultimate guarantor of national food security

The possibility of trade is the ultimate guarantor of food security. If the EU really wants to improve its food security (and, incidentally, food security elsewhere in the world), then it should focus primarily on improving the risk-sharing capacity of global food markets. This means encouraging a diverse range of alternative exporters and traded commodities, discouraging the use of export restrictions and other barriers to trade, and ensuring market transparency and a high level of reliable information on supplies and stocks to avoid outbreaks of panic buying such as contributed to the 2007 food price spike.

As the former Commissioner for Agriculture and Rural Development Mariann Fischer Boel put it at the height of the 2008 food crisis: "in the 21st century it is not possible to ensure food security by limiting agricultural trade. The attempt to return to self-sufficiency is a blind alley and would be a disaster both in terms of development and in terms of food security."[15]

Despite the critical role of trade for food security, there is persistent scepticism and suspicion of trade in EU agricultural policy and food policy discourse. This has found expression most recently in attempts to measure the 'external footprint' of EU food consumption, expressed as the number of virtual hectares of land, or the amount of virtual water, or the embedded carbon, embodied in EU food imports. Resource accounting of this type can provide useful insights into the impact of consumption patterns on resource use and can provide warning signals of over-consumption where there is a risk of exceeding planetary boundaries. However, resource use outside a country's borders is often viewed more critically than domestic resource use which, in the case of planetary boundaries, does not make sense.

Exchanging country's resources through trade allows the total resource use of producing a given food supply to be minimised, as each country can specialise in those lines of production where it has a relative cost advantage. Trade is also, in principle, an important route for poor countries, in particular, to raise their living standards and thus improve their resilience and food security. Nonetheless, this literature is right to highlight the conditions for trade to be welfare-enhancing, including proper enforcement of the property rights of current users of land and the avoidance of negative externalities through, for example, deforestation. It should also be clear that trade should not be pursued for its own sake. Local foods are an important source of pleasure for consumers and a premium market for producers. They are a highly desirable part of the mix of food supplies where they are the result of consumer preferences and not a regulatory diktat imposed by governments.

2.6 Europe and global food security

Sometimes, the case for support for EU agriculture is made on the grounds that the EU has a responsibility to increase agricultural output in order to contribute to greater global food security. This is occasionally summarised as Europe's vocation to contribute to feeding the world. The increase in food demand worldwide, driven by a combination of population growth, increasing income per capita and world hunger presents a real test of food security on a planetary scale.

Indeed, the EU has a responsibility for global food security but this is best expressed through providing assistance and incentives to increase food production in those countries which are experiencing rapidly-growing food demand and high levels of food insecurity. An important step in this regard has been the dismantling of the high levels of market price support under the 'old' CAP and which led to the dumping of EU food surpluses on the markets of developing countries with the aid of export subsidies. The EU's leadership in the recent decision of the WTO Ministerial Conference in Nairobi in December 2015 to prohibit the use of export subsidies in agricultural trade was a further commendable step to reducing disincentives for increased food production in net-importing developing countries.

The other important way in which the EU can contribute to global food security is through providing support for agricultural research and innovation and for sustainable food systems in developing economies. However, projections of global food security under climate change emphasise that increased trade flows will be an important response to maintaining global food security. Increased net food exports from the EU can make an important contribution in this respect. But these will be driven by normal market forces reflecting the balance of supply and demand, and should not be driven by agricultural support. Contributing to global food security does not justify the continued transfer of income transfers to EU farmers.

15 http://eu-un.europa.eu/who-will-feed-the-world-the-answers-from-the-eu-%C2%96-speech-by-eu-commissioner-fischer-boel/

3 Risk and resilience

3.1 Variability of prices and incomes

Farming is a risky business because forces, such as weather and market conditions, beyond the control of farmers affect their income. Evidence from EU countries shows that farm income variability is generally high and that differences among countries and types of farms exist: more specialised and smaller farms are often faced with relatively higher income variability (Vrolijk *et al.*, 2009; Agrosynergie, 2011). In terms of risk management, the trade-off between diversification leading to lower income variability and expected income should be underlined (Abson, Fraser, and Benton, 2013).

There are good reasons to expect that both production and price variability will increase further in the coming years. On the production side, climate change is likely to increase the probability of extreme events such as droughts and flooding. Both climate change and increased trade increase the risks of importing new and damaging pests and diseases. Under the more market-oriented CAP, EU farm prices are now more linked to world market prices and have become more variable as a result (Matthews, 2010). This also tends to amplify income variability as the traditional negative correlation between domestic yields and market prices which provided a natural hedge in the past is now much weaker. Some commentators also argue that the growing concentration among firms buying from and selling to farmers allows these firms to shift risk to the primary producer, thus exacerbating the amplitude of fluctuations at the farmgate arising from market disturbances further along the food supply chain.

3.2 Do direct payments help to stabilise farm incomes?

Direct payments help to stabilise farm income because they are a less variable part of income than market income alone, as the comparison of the coefficients of variation earlier demonstrated. Direct payments thus help to improve the resilience of farmers to unexpected shocks to their income from either production or price variability, although they may also encourage more risky behaviour and reduce incentives for farmers to manage risk in other ways (see discussion below). For defenders of the policy status quo, this safety-net function has become one of the main justifications for direct payments.[16] Whether area-based decoupled payments are a good way to help farmers to cope with production and price risks, however, is a question on which opinions differ.

One obvious issue is that the justification of direct payments as a safety-net fits uneasily with the evidence that, at least for some production sectors, direct payments have become the main source of income on these farms. While there may be good reasons to support some of this production (for example, grazing livestock in upland areas for environmental reasons), this is a different rationale to offering a 'safety-net' that becomes the main source of income on many farms.

Area-based payments paid to all farms do not distinguish between different lines of production, some of which are more vulnerable to production and price risks than others. Thus, it is not necessarily the case that direct payments make the biggest contribution to risk reduction on those farms facing the largest income variability (Severini *et al.*, 2016). These authors investigate whether direct payments are specifically targeted to stabilise the income of those farms facing large income variability levels or not. They conclude that direct payments are not well targeted as an income stabilisation measure because the correlation between the variability of market income and the relative importance of direct payments in farm receipts is very low on average and in many of the types of farming they consider.

That study looks at the correlation between farm (market) income and direct payments across different farm enterprises. It does not take into account other sources of income available to the farmer. Income diversification, including taking up off-farm employment, is one of the strategies open to a risk-averse farmer to reduce his or her exposure to risk. When nonfarm sources of income are taken into account, based on US and Canadian evidence, the total income of agricultural households is more stable than their income from farming alone (Mishra and Sandretto, 2002; Poon and Weersink, 2011).

Another problem with area-based direct payments as a risk management instrument is that they are poorly designed to deal with variations in income over time. Payments are made to farmers when prices are low, but also when prices are high. As noted by the Agricultural Markets Task Force (2016):

> *"… farmers do not consider direct payments as a 'risk cover' although direct payments were originally introduced to make up for - as a quid pro quo - decreasing intervention prices (the latter having aimed at stabilising markets). In situations of market crises producers ask for exceptional (market) measures; the existence of direct payments is not considered a crisis response. The latest milk crisis is a case in point: two solidarity packages, together worth EUR 1 billion, have been adopted notwithstanding the existence of direct payments" (AMTF, 2016, p. 51).*

A crisis reserve funded through the financial correction mechanism linked to direct payments was introduced in the 2013 CAP reform. Each year, €400 million (in 2011 prices) is withheld from the overall direct payments envelope and maintained as a crisis reserve. The intention is that this reserve can be called upon to finance emergency payments to farmers which cannot be financed

16 DG AGRI notes: "Direct payments are payments granted directly to farmers to ensure them a safety net. They are mainly granted in the form of a basic income support, decoupled from production, stabilising their income stemming from sales on the markets, which are subject to volatility", https://ec.europa.eu/agriculture/direct-support_en, accessed 25 February 2017.

under the Heading 2 sub-ceiling in the MFF. However, this crisis reserve has proved of limited use in practice. It is of relatively modest size and cannot grow over time, as if it is not used in one year it is returned to farmers as part of their direct payments in the following year. Also, the experience during the milk crisis in 2015 and 2016 showed that there was a very great reluctance to make use of this fund given that it implicitly involves a transfer from one group of farmers (who may well have lower overall farm income) to another group (who despite the market crisis may well have higher overall farm incomes on average).

Another objection to making generalised direct payments available to all farmers as a risk reduction instrument is that it makes farmers less likely to adopt other risk management strategies, and may even encourage them to increase the amount of risk that they take on (for example, the cushion of direct payment may encourage greater specialisation particularly on larger farms, which may also have adverse environmental consequences). All public interventions to reduce risk are likely to reduce farmers' incentives to use other strategies (e.g. insurance or diversification) to reduce risk – a phenomenon known as 'crowding out'. Simulation analyses undertaken by the OECD found that highly decoupled payments (such as the EU's Single Farm Payment/Basic Farm Payment) have very limited crowding-out effects on other risk management strategies but also have a very limited effect in reducing income variability (OECD, 2011). Its conclusion is that *"Overall, simulation analysis implies that policies need to empower farmers to take their own risk management decisions and to have access to a diversity of instruments and strategies, recognising that the farmer has much better information on the nature of his own risk environment than do researchers or governments"* (OECD, 2011, p. 73).

Direct payments (in the broader sense defined in the Introduction) will continue to be needed as part of EU's agricultural policy. They will thus continue to contribute to stabilising farmers' income. For example, agri-environment payments and payments for the provision of public goods can also contribute to stabilising farmers' income. The safety-net function of direct payments could be provided using payments that are much more targeted and used to contract for the delivery of valued services from farmers.

4 Do direct payments compensate for higher regulatory standards?

Another justification put forward for CAP Pillar 1 direct payments is that they are compensation to farmers for the higher production standards they have to meet compared to their competitors. In this context, it is useful to distinguish between technical regulations (e.g. food safety requirements, with which compliance is mandatory) and standards (e.g. organic or fair trade standards, for which compliance is voluntary). In this section, we will refer to these as regulatory standards and voluntary standards, respectively.

EU farmers are required to meet high food safety, environmental and animal welfare regulatory standards. Only authorised medicines and phytosanitary products may be used by farmers. The use of hormones and of β-agonists is prohibited. The range of crop protection products may be more limited than in other countries. Welfare standards for laying hens, broilers and pigs have been strengthened. Farmers must comply with practices that ensure the conservation of species and their natural habitats, the protection of water resources including nutrient and pest management, and reduce GHG emissions. Traceability rules apply throughout the food chain.

Regulations in the fields of the environment, animal welfare and food safety have the potential to generate a cost increase at the farm level. Hence, the global competitiveness of European agriculture may be adversely affected by these standards. However, standards also raise the quality and reliability of EU food products, enhancing their reputation and making them more attractive to consumers on both home and export markets. They help to avoid disease outbreaks and the loss of consumer confidence. They can also increase efficiency and promote cost-reducing innovations. Standards may thus enable EU producers to obtain a premium price or to avoid the costs of market crises which may offset the cost of compliance with these standards. Moreover, while the EU has been a leader in food standards, similar legislation has often been adopted in third countries that are import and export partners of the EU so that farmers in these countries may equally face compliance costs. Thus, whether EU farmers are disadvantaged by a particular standard or not is an empirical question.

The increasing role of private standards also plays an important role. Although these are not mandated by governments, retailers and processing firms are increasingly demanding that their suppliers comply with private standards which, in many cases, go beyond what may be statutorily required. These standards apply to domestic and imported production alike. The increasing role played by private standards may mean that competitive conditions in food markets are actually more similar than differences in legislation between countries might suggest.

A comprehensive study undertaken for DG AGRI found that there is a wide range of costs of compliance with legislation in the field of animal welfare, environment and food safety with regard to the different products and countries, including third countries (CRPA, 2011). It found that compliance costs with legislation in these three fields for pig and poultry farms varied between 5 and 10% of production costs, as compared to 2-3% of production costs for dairy, beef and sheep farms. Crop farms were less affected by legislation than livestock farms, and typical compliance costs varied between 1-3.5%. It also examined the impact of these compliance costs on the competitiveness of different sectors. In the animal sectors, it noted a considerable cost gap between the EU and third countries which would only experience a limited improvement in the hypothetical absence of food safety, environmental and animal welfare legislation. As in the

crop sectors, the differences in costs of production were mainly driven by other determinants such as productivity, labour costs, feed prices and other inputs. This conclusion is supported by other literature which suggests that regulatory differences between the EU and its trading partners have had only a minor impact on competitiveness due to cost increases (Andersson, 2011).

Even assuming that EU producers do face increased costs as a result of higher regulatory standards, this is not always a reason for intervention. In many cases, the regulations are introduced to prevent unintended costs being borne by other groups in society. For example, nitrate regulations prevent the damage to water quality that excessive leakage of nitrogen into waterways would cause. This negative externality of agricultural production needs to be internalised and recognised in farmers' decision-making, and it is not appropriate to compensate farmers for the additional costs of managing their nutrient balance. Many food safety and environmental regulations fall into this category.

There are thus a limited number of regulations which reflect societal preferences and where a case for compensation might be made for the higher costs that farmers may incur. However, it is evident that decoupled area payments are not an efficient way to compensate farmers for these costs. As shown in the CRPA study, the costs of compliance differ significantly across commodities and flat-rate per hectare payments bear no obvious relationship to these costs. Targeted payments may be justified on occasion. For example, when a new regulation or restriction is introduced, temporary and limited support could be provided to help producers to adjust, for example, to invest in new facilities to meet higher animal welfare standards. In other cases, for example, a requirement to manage land to meet special conservation purposes, compensation can be provided through targeted agri-environment payments. The need to meet high regulatory standards does not legitimise the continued payment of Pillar 1 payments to all farmers on all land.

5 Do direct payments contribute to environmental sustainability?

5.1 Environmental impacts of agriculture

Food production inevitably has an impact on the natural environment. In some cases, farmed landscapes have helped to create valued ecosystems which contribute to biodiversity and the provision of other ecosystem services such as greater resilience to natural disasters such as flooding, drought and fire. On the other hand, changes in land use and farming practices, linked to specialisation and intensification, have also been associated with negative impacts on water, soil, air, biodiversity, habitats and cultural landscapes. At the same time, the abandonment of farming in marginal areas, driven by social and economic factors, can pose a serious threat to the farmed environment and to rural landscapes, although even here there are those who advocate the benefits of rewilding and the return of marginal agricultural land to natural succession (Merckx and Pereira, 2015).

Agriculture is also required to contribute to the EU's climate and energy agenda by reducing GHG emissions, improving energy efficiency, increasing biomass and renewable energy production, and protecting and sequestering carbon in soils. At the same time, agricultural production conditions will be increasingly affected by ongoing climate change. Helping to mitigate and adapt to climate change has become a major new challenge for the agricultural sector. Managing scarce resources more effectively and increasing resource efficiency in agriculture in terms of external chemical inputs, water and energy use, land use and waste generation is also one of the goals under the flagship initiative *A resource-efficient Europe* under the Europe 2020 strategy (European Commission, 2011a).

Agriculture thus faces major environmental and specifically, climate challenges. There has been progress in limiting agriculture's negative impacts on the environment as well as encouraging more environmentally-friendly agricultural practices on a proportion of European farmland.[17] Emissions of nitrogen and phosphorous into waterways as well as greenhouse gases have been falling. However, other indicators which point to a continuing decline in the populations of farmland birds, high rates of soil erosion by water and wind, a depletion of soil organic matter, and high levels of water abstraction, particularly in water stressed areas, underline that much more needs to be done to reverse the degradation and loss of natural capital.

5.2 What is the CAP doing?

Given that successive investigations of the state of the European environment show that we are not yet meeting environmental standards which are set in legislation, the EU has set ambitious targets for further environmental improvement in connection with water, soils, air, climate and biodiversity. Sustainable management of natural resources and climate action is one of the three objectives of the CAP post-2013. In that reform the new measures to address this objective were the mandatory 'greening' component of direct payments supporting environmental measures which were intended to apply across the whole of the EU territory; plus changes in cross compliance; and through more strategic targeting in Pillar 2, with the environment and climate change as guiding considerations.

17 The environmental impact of agriculture is monitored through a set of 28 agri-environmental indicators (AEIs) maintained by Eurostat based on the foundation set out in the Commission Communication for monitoring the integration of environmental concerns into the common agricultural policy (COM(2005)0508). These indicators are classified according to the Driving force — Pressure — State — Impact — Response (DPSIR) model. These indicators are complemented by the CAP Context Indicators used for monitoring and evaluation of the CAP.

The green targets set out in the Member State/region Rural Development Programmes 2014-2020 give some idea of the scope of CAP interventions through Pillar 2 (DG AGRI, 2015):

- 17.7% of agricultural land and 3.45% of forest area under management contracts supporting biodiversity and/or landscape
- 15% of agricultural land and 4.3% of forestry land under management contracts to improve water management
- 14.3% of agricultural land and 3.6% of forestry land under management contracts to improve soil management and/or prevent erosion
- 7.6% of agricultural land under management contracts targeting reduction of GHG and/or ammonia emissions
- 2% of Livestock Units concerned by investments in live-stock management in view of reducing GHG and/or ammonia emissions
- 15% of irrigated land switching to more efficient irrigation systems
- 4% of agricultural and forestry land under management to foster carbon sequestration/conservation
- € 2.8 billion total investment in energy efficiency
- € 2.7 billion invested in renewable energy production

These targets are supported by an allocation of 49% of total Pillar 2 funding to environmental and climate objectives (DG AGRI 2015) which works out at an average annual expenditure of approximately €6.2 billion per annum (in 2011 prices) over the period 2014-2020. However, this is only about half of the value of the greening payment in Pillar 1. With 30% of the direct payments envelope allocated to the greening payment, around €12 billion annually of direct payments is now focused on environmental and climate objectives. Do the farm practices required by the conditions attached to the greening payment really make a significant contribution to improving the environment and fighting climate change in return for this expenditure? Although it is arguably too early to provide a complete answer to this question, the Commission has prepared a review of greening after its first year of implementation in 2015, focusing in particular on level-playing-field aspects, production impacts and possible simplifications of the greening framework that could reduce the administrative burden. The findings in this section summarise the conclusions of that review (European Commission, 2016c; see also Pe'er *et al.* 2014; Hart, Buckwell, and Baldock, 2016).

Obligations under the green direct payment scheme cover most of the agricultural area in the EU. Agricultural land subject to at least one green direct payment obligation amounts to 72% of the total EU agricultural area. This wide coverage demonstrates the potential of green direct payments to deliver environmental and climate benefits on a large share of EU farmland, including areas that are not covered by agri-environment-climate measures (AECMs) under RDPs. The proportion of farmers under at least one greening obligation stands at around 36% of direct payment beneficiaries. The situation is uneven across Member States reflecting the relative importance of exempt farms at national level. Some 75% of arable land is affected by the crop diversification obligation, again with significant variations across Member States, ranging from less than 10% to more than 90% of arable land. Around 16% of the permanent grassland area is classified as environmentally sensitive with a view to protecting biodiversity and carbon storage. The 5% EFA obligation is applicable to around 68% of EU arable land, again with variations between 40% and 90% by Member State. Equivalent measures only affect a small proportion of farmers and arable land (2% of farmers and 6% of arable land) except in Austria where equivalent practices under AECMs account for 19% of farmers and 53% of arable land.

Environmental performance depends on choices made by Member States and farmers. The three greening practices were primarily targeted at different environmental objectives – crop diversification at soil health, EFAs at biodiversity and permanent grassland preservation at carbon storage. However, in the impact assessment accompanying these proposals in the 2013 reform, little evidence was available to indicate what environmental improvement might be expected from the implementation of these practices, a task made more difficult by the absence of established reference baseline levels of performance. This remains an area without much quantification.

The crop diversification and permanent grassland measures have led to little or no immediate changes at farm level. In the case of the crop diversification requirement, while three-quarters of arable land is covered by the requirement, the Commission estimates that cultivation practices have changed on about 1% of this land. Most farmers were following these practices in any event as part of good farm husbandry.

The permanent grassland protection has also had no immediate impact as no Member State breached the limit in 2015 (and, in any case, this measure merely replaced a similar measure as part of cross-compliance prior to 2013). Much of the environmentally-sensitive permanent grassland was already protected as part of Natura 2000 areas, but four Member States decided to designate such areas outside Natura 2000 areas where a ban on ploughing will be implemented. For both of these measures, it is argued that they contribute to the maintenance

if not the enhancement of environmental services.[18] However, the recalibration of the permanent grassland reference level to a lower level implies some weakening of protection compared to the situation prior to the 2013 reform.

In the case of EFAs, the environmental effects depend very much on the choices made by Member States and farmers because of the large margin of discretion in fulfilling the EFA requirement. Overall, the area covered by declared EFAs has turned out to be the surprising figure of 14% of arable land before application of the weighting factors and to 9% after this application, which is well above the regulatory requirement of 5%. The explanation is the inclusion in the range of EFA options nitrogen-fixing crops (45.4% of the physical area of EFA on the ground) and catch crops (27.7%). The remainder of the EFA is made up by land lying fallow (21.2%), landscape features (4.3%) and buffer strips (less than 1%). Thus, EFAs linked to a productive activity — nitrogen-fixing crops and catch crops — amount to 73.1% of the total declared EFA area.

When corrected by their weighting factors according to their expected environmental value, the share and order of each declared EFA type appear different: nitrogen-fixing crops (39.4% of the weighted area), land lying fallow (38%), catch crops (15%), landscape features (4.8%) and buffer strips (less than 2%). While after correction nitrogen-fixing crops remain the most common declared EFA type in the EU, the share of fallow land appears more important and ranks second. Overall, the 2015 figures show that only 26.9% of the physical area of EFAs was devoted to the most beneficial elements for the environment. However, a number of Member States have imposed management conditions such as restrictions on the use of pesticides or fertilisers on the productive areas.

These data do not tell us anything directly about the environmental benefits from the greening measures. However, they are certainly suggestive in helping to understand the likely environmental effectiveness, the degree of environmental additionality achieved, and overall value for money of the greening payment. The fact that the maintenance of permanent grassland requirement and the crop diversification obligation have led to minimal changes in land use, and the fact that the great majority of the land enrolled in EFAs is used for productive options, are pointers that the additional environmental benefits, relative to the pre-greening baseline, in return for the expenditure of €12 billion annually are likely to be low. The Commission makes the argument that the payment contributes to 'holding the line' in maintaining the flow of existing environmental services, but it provides no evidence that the relevant environmental features would be under threat in the absence of the payment.

18 "The introduction of greening practices does not necessarily entail changing all practices in all farms. Where these sustainable agricultural practices are already implemented, the application of the green direct payment scheme guarantees the preservation of these practices. In all cases, the scheme ensures that the required practices are applied on all concerned farms" (European Commission, 2016).

The conclusion of one set of seasoned observers is that "*From an initial review of these choices, it looks as if the opportunities for delivering significant environmental value through the greening measures have not been taken in most cases*" (Hart *et al.*, 2016).

To summarise, initial evidence from the implementation of the 2013 CAP suggests that Member States have devoted a substantial share of their RDP Pillar 2 funding to environmental and climate measures and that significant environmental benefits are expected as a result. On the other hand, the expected environmental benefits from the greening payment in Pillar 1 which has twice the funding would seem to be extremely limited. It seems clear that a redesign of this payment could result in significantly greater environmental impact for the CAP budget. The positive element arising from the introduction of the greening payment is that it recognises the importance of paying farmers for the achievement of environmental objectives. This can be built upon in the next CAP reform.

6 A tighter EU budget constraint

Farmers undoubtedly benefit from the transfers from consumers and taxpayers brought about by the CAP. Farm groups therefore have a strong interest in maintaining the status quo. From the point of view of the taxpayer or the public interest, however, the question is whether the additional euro spent through the CAP budget gives a return (in terms of greater food security, a more viable agricultural industry, or more sustainable management of natural resources) than the benefits from using those funds in other areas of the EU budget. While such a comprehensive benefit-cost analysis cannot be attempted here, this section highlights some reasons why the budget constraint facing EU agricultural policy is likely to be even stricter in the future.

6.1 Other spending priorities are pressing

The main aspects of implementation of the current MFF since 2014 have been characterised both by concerted efforts to promote economic recovery and the urgent imperative to respond to the refugee crisis and security threats. Some pointers to future EU spending priorities are given in the Commission's MFF Mid-Term Review Communication (European Commission, 2016a). The focus of the Mid-Term Review is on managing the trade-off in constructing the MFF between providing essential medium-term predictability for supporting investment in Europe's priorities and being able to adjust swiftly to changing priorities and unforeseen events. The Communication identifies the most significant challenges facing the EU as strengthening Europe's economy and social fabric; ensuring security inside the EU and at its external borders; managing migration; and addressing the causes and consequences of climate change.

The mid-term review financial package proposes about €13 billion of additional EU funding in 2017-2020 for jobs and growth, migration and security. Closing the investment gap left behind by the financial and economic crisis as well as promoting employment, in particular youth employment, remains a key challenge for the Union. The challenges of migration and security are rooted in geopolitical and societal developments which need to be addressed in the longer-term. The Communication argues that the EU budget must further develop its capacity to support the management of migration flows as well as the protection and integration of refugees and to address the root causes of migration.

The mid-term review proposals are explicitly seen as a stepping stone towards the next MFF after 2020. The Communication notes that "*They should allow for a considerable further modernisation of the EU budget, paving the way for more far-reaching changes in the next MFF*". With respect to the MFF after 2020, the Communication provides the following guidelines:

> *"The Commission is due to make a proposal for the next MFF by the end of 2017. This proposal will be guided by the BFOR [Budget Focused on Results] initiative and reflect the future challenges and needs of the Union post-2020, assessing both the effectiveness of existing approaches in areas such as cohesion policy, the Common Agricultural Policy and the external action instruments; and the potential for the EU budget to contribute in new areas, such as for example in relation to the completion of Europe's Economic and Monetary Union, following the roadmap in the Five Presidents' report, and in defence and security.*
>
> *This will also be an opportunity to look again at the structure, financing and duration of the budget to ensure that they maximise its ability to support Europe's political objectives."*

6.2 Impact of Brexit

A complicating factor in negotiating the size and composition of the post-2020 MFF is the timeline around the arrangements for the UK exit from the EU (Brexit). The UK is the second-largest net contributor to the EU budget, so Brexit will play an unavoidable role in the forthcoming MFF negotiations. When the net contribution figures are averaged over the four years 2011-2015, the average annual UK net contribution has amounted to €10.3 billion, which compares to total expenditure in the remaining EU-27 member states of €138 billion (Matthews, 2016c). Indeed, if Brexit were to occur as currently planned by March 2019, it could potentially also open a financing gap in the current MFF, depending on future relationships between the UK and the EU.

There are a number of possible ways in which this financing gap might be addressed (the following options are not mutually exclusive):

- In the negotiations on withdrawal under Article 50 of the Treaty, one of the items for discussion will be the UK's liability for EU budgetary commitments entered into while it was an EU Member. On some calculations this could amount to as much as €60 billion (Barker, 2017). If this amount were paid off over a six-year period, this would imply that the UK's exit from the EU in budgetary terms would not be noticed until the mid-2020s. Of course, such figures are purely speculative until the negotiations are concluded, and the final figure might be much smaller.

- The UK might continue to make unrequited payments into the EU budget for other reasons after Brexit. Here it is important to distinguish between potential UK contributions to EU programmes from which the UK will benefit (e.g. Horizon 2020, ERAMUS) and which will not contribute to reducing the loss of its net budget contribution, and payments which the UK might make in return for access to the single market. The payments made by Norway and Switzerland in return for access to the single market are paid directly to the new Member States as part of their development aid budgets and are not paid into the EU budget. Any such UK contributions which followed these precedents would only impact on the overall budgetary balance in the EU if it led to an offsetting reduction in cohesion spending in these countries from the EU budget.

- If after Brexit the UK fails to agree a free trade agreement with the EU, then tariff revenue levied on UK imports into the EU under the Common External Tariff would be additional source of EU budget revenue.

- Other Member States might agree to increase their contributions to the EU budget in order to maintain the existing level of EU expenditure. What might make this option more difficult to implement is that, under current rules, these additional contributions would not be allocated proportionately across the remaining Member States but would be borne disproportionately by four Member States – Germany, Austria, Netherlands and Sweden. This is because these four countries would lose the benefit of the 'rebate on the UK rebate' that they currently enjoy under the EU budget rules (Matthews, 2016c).

- EU expenditure could be reduced to avoid increasing the budget contributions of remaining Member States. If this were to happen, it would add to the difficulties in prioritising areas of expenditure in the coming MFF negotiations.

6.3 Subsidiarity issues

If CAP spending were reduced in the post-2020 MFF, this could open a debate on allowing individual Member States to increase their national spending on agricultural support. National spending on agricultural policy is already quite significant and has amounted to around €18 billion annually in recent years (Matthews,

2013). This spending takes the form either of Member State co-financing of CAP Pillar 2 expenditures (plus some allowed top-ups of Pillar 1 payments), as well as state aids paid by Member States to their farmers.[19] Some, but not all, agricultural state aid represents Member State spending on measures equivalent to rural development measures which would be eligible for funding under Pillar 2 if the national allocations were bigger, but which are funded instead by national exchequers.

The most obvious way to substitute national spending for EU budget spending on agriculture would be to require national co-financing of Pillar 1 direct payments expenditure. The extension of national co-financing to all CAP expenditure can be justified on a number of other grounds. First, it is an important accountability mechanism. It would give Member States a greater incentive to ensure that value for money is obtained from CAP spending if they are required to contribute directly to its cost. Second, it would recognise that, unlike the old CAP which was primarily concerned with market regulation which could only be managed in a single market at the EU level, the new CAP attempts to achieve a much broader range of objectives, many of which are primarily of national or even local importance rather than of EU-wide significance. This is particularly true with respect to the provision of environmental services where valuations will differ from region to region because spatial pressures differ.

Under the principle of subsidiarity, it makes good sense to provide Member States with greater flexibility on whether they want to use national resources for these purposes. It will be important to ensure that greater flexibility and national spending on agricultural policy does not undermine the principle of the single market and lead to distorted conditions of competition between farmers in Member States. These disciplines are enshrined in the EU's state aid guidelines which may need to be revised and strengthened if there were to be a significant return to national spending on agricultural policy.

7 Conclusions

Direct payments to farmers are the largest single item of expenditure in the CAP budget: they also account for more than one-quarter of the entire EU budget. They were introduced following the MacSharry CAP reform in 1992 as compensation for the reduction in intervention support prices at that time. Their importance has grown with successive reforms of the CAP. While the rules on common market organisations and Pillar 2 rural development programmes are also important components of the CAP, in asking why further reform of the CAP is necessary it is natural to focus on the role of direct payments.

While around 7-10% of the Pillar 1 direct payment envelope is paid as coupled direct payments, the remainder is paid as an area-based decoupled payment (the Basic Payment Scheme in 16 Member States and the Single Area Payment Scheme in the remaining 12 Member States). These payments are variously justified as contributing to higher farm incomes, as a necessary support for food security, as providing a safety net for farmers against unexpected market shocks, as compensating for higher regulatory standards and as ensuring more sustainable management of natural resources. These are all important objectives of farm policy, but there is little evidence that decoupled area-based payments are an effective, efficient or equitable way of achieving these objectives. If one were designing from scratch an agricultural policy to help farmers better meet the emerging challenges they face, it is highly unlikely that one would arrive at paying a lump sum amount per hectare of agricultural land with minimal conditionality attached as the optimal policy. We conclude by identifying two major flaws in the current system of direct payments.

7.1 The need for greater targeting

The first is that paying a (broadly similar) lump sum for every hectare of agricultural area across the EU is a scattergun, generalised, approach to making transfers to farmers. Of course, it helps to achieve some of the objectives of agricultural policy, but this is an accidental by-product of the payment. Almost by definition, it is bound to be both inefficient and ineffective because the payment is not targeted on specific outcomes. As shown above, it is also highly inequitable in that the bulk of payments go to farms and farm businesses with substantial incomes and sizeable assets.

Linking CAP payments to specific objectives is one of the recommendations in the Cork 2.0 Declaration 2016 *A Better Life in Rural Areas*. It includes a call that "*The architecture of the CAP must be based on a common strategic and programming framework that provides for targeting all interventions to well-defined economic, social, and environmental objectives*." (p. 4).

Targets set out for the CAP would relate primarily to the management of ecosystems, water, nutrients and soils, the reduction of air and atmospheric pollution, the protection of climate, biodiversity and cultural landscape, risk management, farm household income and competitiveness. Public interventions to deal with these concerns should be related to the achievement of specific objectives within each of these domains rather than provided as a general decoupled payment entitlement to farmers. Not all such interventions will require direct payments.

Arguing for the replacement of area-based decoupled payments by more targeted direct payments leaves open the relative priorities that should be attached to these targets. The weighting of priorities is a political process

19 In addition, farmers may enjoy concessions in the tax code which are not available to other taxpayers though the value of these tax reliefs is rarely assessed.

and opinions will legitimately differ. However, a listing of the emerging challenges facing agriculture underlines that efforts to promote sustainable intensification and the circular economy, greater protection of natural capital including soils, biodiversity and ecosystems, as well as efforts to mitigate and adapt to climate change are increasingly urgent priorities that require a higher share of CAP resources in the future.

7.2 From entitlements to contracts for services

The second major flaw in the current system of decoupled direct payments is that it is based on an entitlement culture rather than contracts for the provision of specific services. Decoupled payments give a right to receive a payment provided an active farmer observes the minimum requirement of maintaining land in good agricultural and environmental condition (meeting cross-compliance requirements) and maintains a minimum level of activity on that land. Nothing more is asked of farmers in return for this payment. While the receipt of the greening payment requires compliance with a broader set of environmental conditions, the evidence to date suggests most farmers had to make limited adjustments to their farming practices to meet these conditions.

Yet cross-compliance standards are often seen in a negative light and parodied as interference by mindless bureaucrats in Brussels in a farmer's right to manage their land in the way they see fit. The greening payment is perceived in a similar light. Not only does this system give woefully bad value to the taxpayer, but it also sets up perverse incentives and creates negative attitudes among farmers to the delivery of public goods. Instead of seeing the greening payment in a positive light as remuneration for performing a service, farmers (or their organisations) complain that the restrictions limit their production and income-earning potential. The presumption is that direct payments are an entitlement to additional income, and that any associated obligations should be minimised and simplified (farmers are even allowed to transfer or sell this entitlement to a benefit granted by the taxpayer and retain the proceeds, something unheard of in other sectors).

This entitlement culture should be replaced by a system in which farmers would be offered the option to enter into a contract with the public authorities to provide stated services (which will mostly be of an environmental nature but not necessarily so). The farmer would have complete choice as to whether to opt in or not, and the extent to which he or she wanted to opt in. There would be no compulsion, and if a farmer did not like the conditions, he or she could remain outside the scheme. This flexibility refers to meeting standards or engaging in farm practices which go beyond the reference standard set by statutory requirements. It goes without saying that meeting statutory requirements would be required of every farm.

It is appropriate to finish by asking if such a move to contractual, targeted payments would open the possibility of a more simplified CAP, given that simplification is one of the two objectives of the consultation on the CAP launched by the Commissioner in February 2017. Simplification means that the rules for receiving payments should be clear and easy to understand, and the transactions costs of making payments should be low. There is no doubt that paying agencies find making Pillar 1 payments to farmers simpler and easier than dealing with the more complicated payment arrangements of Pillar 2 schemes. However, the scope for simplification needs to be seen in the context of what the different types of schemes can deliver.

If the objective is simply to make a specific payment to farmers, this can be done very simply as pensions offices in each Member State demonstrate each day. But CAP payments are intended to achieve specific objectives by changing farmer behaviour. The range and ambition of the objectives sought in the context of land management suggest that the schemes and measures introduced to achieve these objectives will, by their nature, be complex.

This does not mean that simplification should not be pursued. The potential of modern technologies to collect and exchange data should be fully exploited to reduce the burden of 'form-filling' on individual beneficiaries. It should be possible to communicate the rationale of more targeted policies more easily, so that there is greater buy-in among farmer beneficiaries. There is a need for a more proportionate approach to dealing with errors and to permit deviations from the regulations when justified by local conditions. Ultimately, however, simplification cannot be an end in itself. What must count is whether value can be demonstrated for the money contributed by the EU taxpayer to the CAP through the EU budget. On the evidence in this chapter, this is not the case for current CAP Pillar 1 direct payments.

References

Abson, D., Fraser, E., and Benton, T., 2013. *Landscape Diversity and the Resilience of Agricultural Returns: A Portfolio Analysis of Land-Use Patterns and Economic Returns from Lowland Agriculture.* Agriculture & Food Security 2: 2. doi:10.1186/2048-7010-2-2.

Agricultural Markets Task Force, 2016. *Improving Market Outcomes: Enhancing the Position of Farmers in the Supply Chain.* Brussels.

Agrosynergie, 2011. *Evaluation of Income Effects of Direct Support*. Final Report. Brussels. http://ec.europa.eu/ agriculture/eval/reports/income/fulltext_en.pdf. Accessed 30 June 2016.

Andersson, A., 2011. *Societal Concerns - Domestic Policy Choice and International Competitiveness*. Report 2011:2. Lund: Agri-Food Economics Centre.

Barker, A., 2017. *The €60 Billion Brexit Bill: How to Disentangle Britain from the EU Budget*. London: Centre for European Reform.

Bartolini, F., and Viaggi, D., 2013. *The Common Agricultural Policy and the Determinants of Changes in EU Farm Size.* Land Use Policy 31: 126–35.

Benton, T., and Thompson, C., 2016. *Food System Resilience.* Food Science & Technology. http://www.fstjournal.org/features/30-3/food-system-resilience.

Brady, M., K. Kellermann, C. Sahrbacher, *et al.*, 2009. *Impacts of Decoupled Agricultural Support on Farm Structure, Biodiversity and Landscape Mosaic: Some EU Results.* Journal of Agricultural Economics 60 (3): 563–585.

CRPA, 2011. *Assessing Farmers' Cost of Compliance with EU Legislation in the Fields of Environment, Animal Welfare and Food Safety.* AGRI-2011-EVAL-08. Brussels: Commission of the European Union Directorate-General for Agriculture and Rural Development.

Davis, O., and Geiger, B., 2016. *Did Food Insecurity Rise across Europe after the 2008 Crisis? An Analysis across Welfare Regimes.* Social Policy & Society doi:10.1017/S1474746416000166 (May): 1–18.

DG AGRI, 2015. *Rural Development Programmes 2014-2020.* Brussels: Directorate-General for Agriculture and Rural Development. http://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/common/rdp-list_en.pdf.

DG AGRI, 2016. *Report on the Distribution of Direct Aids to Agricultural Producers* (Financial Year 2015). Brussels: European Commission Directorate-General for Agriculture and Rural Development.

Economist Intelligence Unit, 2016. *Global Food Security Index 2016: An Annual Measure of the State of Global Food Security.* London.

Eurobarometer, 2012. *Europeans' Attitudes Towards Food Security, Food Quality and the Countryside*. Special Eurobarometer 389 "Europeans and Agriculture." Brussels: DG Communication.

European Commission, 2011a. *A Resource-Efficient Europe: Flagship Initiative under the Europe 2020 Strategy.* COM(2011)21. Brussels: Commission of the European Union.

European Commission, 2011b. *Common Agricultural Policy towards 2020 Impact Assessment. Commission Staff Working Paper*, SEC(2011)1153. Brussels: European Commission.

European Commission, 2016a. *Mid-Term Review/Revision of the Multiannual Financial Framework 2014-2020: An EU Budget Focused on Results.* COM(2016)603. Brussels.

European Commission, 2016b. *Next Steps for a Sustainable European Future: European Action for Sustainability.* COM(2016)739. Brussels.

European Commission, 2016c. *Review of Greening after One Year.* SWD(2016) 218. Brussels: Commission of the European Union.

European Commission, 2016d. *Summary of the Annual Implementation Reports for the Operational Programmes Cofinanced by the Fund for European Aid to the Most Deprived in 2014.* COM(2016)435. Brussels.

European Commission, 2016e. *Technical Adjustment of the Financial Framework for 2017 in Line with Movements in GNI and Adjustment of Cohesion Policy Envelopes.* COM(2016)311. Brussels.

Eurostat, 2016. *Small and Large Farms in the EU - Statistics from the Farm Structure Survey.* Statistics Explained. October. http://ec.europa.eu/eurostat/statistics-explained/index.php/Small_and_large_farms_in_the_EU_-_statistics_from_the_farm_structure_survey.

Hart, K., Buckwell, A., and Baldock, D., 2016. *Learning the Lessons of the Greening of the CAP.* London: Institute for European Environmental Policy.

Hill, B., and Bradley, B., 2015. *Farmers' Incomes in the EU Member States.* IP/B/AGRI/IC/2014-68. Brussels: European Parliament, Directorate General for Internal Policies.

Hirschman, A.O., 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States.* Cambridge, MA: Harvard University Press.

Juncker, J.-C., 2014. *A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change.* Political Guidelines for the next European Commission. Brussels.

Kirwan, B. E., 2009. *The Incidence of US Agricultural Subsidies on Farmland Rental Rates.* Journal of Political Economy 117 (1): 138–164.

Kalkuhl, M., von Braun, J., and Torero, M., eds. 2016. *Food Price Volatility and Its Implications for Food Security and Policy.* Switzerland: Springer International Publishing.

Latruffe, L., and Le Mouël, C., 2009. *Capitalization of Government Support in Agricultural Land Prices: What Do We Know?* Journal of Economic Surveys 23 (4): 659–691.

Matthews, A., 2010. *Perspectives on Addressing Market Instability and Income Risk for Farmers.* In Paper Presented at a Joint AES and SFER Conference on "The Common Agricultural Policy Post 2013" Edinburgh. http://www.agripressworld.com/_STUDIOEMMA_UPLOADS/downloads/201_paper.pdf.

Matthews, A., 2013. *Does National Spending on Agriculture Follow a Different Path to the CAP?* Capreform.eu. December 1. http://capreform.eu/does-national-spending-on-agriculture-follow-a-different-path-to-the-cap/.

Matthews, A., 2016a. *The Future of Direct Payments. Paper Prepared for Workshop on 'Reflections on the Agricultural Challenges Post 2020 in the EU: Preparing the next CAP Reform.* Brussels: European Parliament, Directorate General for Internal Policies.

Matthews, A., 2016b. *Focus on the Distribution of Direct Payments.* Capreform.eu. August 26. http://capreform.eu/focus-on-the-distribution-of-direct-payments/.

Matthews, A., 2016c. *Impact of Brexit on the EU Budget.* Capreform.eu. September 10. http://capreform.eu/impact-of-brexit-on-the-eu-budget/.

Matthews, A., Salvatici, L., and Scoppola, M., 2016. *Trade Impacts of the Common Agricultural Policy.* IATRC Commissioned Paper 19. Minneapolis: International Agricultural Trade Research Consortium.

Merckx, T., and Pereira, H.M., 2015. *Reshaping Agri-Environmental Subsidies: From Marginal Farming to Large-Scale Rewilding.* Basic and Applied Ecology 16 (2): 95–103.

Mishra, A., and Sandretto, C., 2002. *Stability of Farm Income and the Role of Nonfarm Income in U.S. Agriculture.* Review of Agricultural Economics 24 (1): 208–21.

OECD, 2003. *The Incidence and Income Transfer Efficiency of Farm Support Measures.* In Farm Household Income: Issues and Policy Responses. OECD Publishing, Paris.

OECD, 2011. *Managing Risk in Agriculture Policy Assessment and Design.* OECD Publishing, Paris.

OECD/FAO. 2016. *OECD-FAO Agricultural Outlook 2016-2025*. OECD Publishing, Paris.

Pe'er, G., Dicks, L. V., Visconti, P., *et al.* 2014. *EU Agricultural Reform Fails on Biodiversity*. Science 344 (6188): 1090–92.

Poon, K., and Weersink, A., 2011. *Factors Affecting Variability in Farm and off-Farm Income*. Structure and Performance of Agriculture and Agri-Products Industry Network, Cahier de recherche/Working paper #2011-3. Ontario: University of Guelpæh.

Severini, S., Tantari, A., and Di Tommaso, G., 2016. *Do CAP Direct Payments Stabilise Farm Income? Empirical Evidences from a Constant Sample of Italian Farms*. Agricultural and Food Economics 4 (1). doi:10.1186/s40100-016-0050-0.

Stenmarck, Å., Jensen, C., Quested, T., *et al.* 2016. *Estimates of European Food Waste Levels*. IVL Swedish Environmental Research Institute.

Vrolijk, H., C. de Bont, H. van der Veen, *et al.*, 2009. *Volatility of Farm Incomes, Prices and Yields in the European Union*. Report 2009-005. The Hague: LEI Wageningen UR.

Westhoek, H., J. Lesschen, A. Leip, *et al.*, 2015. *Nitrogen on the Table: The Influence of Food Choices on Nitrogen Emissions and the European Environment*. NERC/Centre for Ecology & Hydrology.

APPENDIX 2

Integrating environmental land management into a streamlined CAP.

David Baldock

1. Introduction

In recent decades the goals of agricultural policy in the developed world have shifted significantly and the CAP is no exception to this. Engaging with an emerging environmental agenda has been one dimension of this adjustment. The inextricable linkages between the extent, location and methods of land management for agriculture and the qualities and health of the environment have become much more apparent at a variety of scales. The environmental consequences of production decisions on farms have been of growing concern and are perhaps clearer in Europe than in many other parts of the world because of the combination of relatively intensive agriculture, high population density and almost complete absence of wilderness.

Most of these consequences, whether positive or negative, can be considered as externalities. Assuming that one of the principal roles of contemporary agricultural policies, such as the CAP, can be viewed as redressing market failures, then the goals of helping to minimise negative externalities and maximise positive ones, and more broadly to increase the flow of public goods, are central to bringing environmental land management concerns into the policy.

This has been one of the directions of travel in the CAP starting in the mid 1980s, when the first agri-environment measures were introduced, although the environment was not a formal objective initially. By 1997, the Amsterdam Treaty crystallised the legal foundations for this, stipulating that "Environmental protection requirements must be integrated into the definition and implementation of the (other) Community policies…" (Article 6). Although non-binding, there was an associated Declaration attached to the Treaty that committed the Commission to undertake to prepare environmental impact studies when putting forward proposals "which may have significant environmental implications". The principle of integration has been a theme of Commission proposals for CAP reform in the periods that have followed, particularly from 2003 onwards as political pressures to address environmental concerns and justify CAP interventions in a changing context have come into play.

However, as policy has moved ahead it has not been entirely clear what the essential goals and key priorities are for the CAP in the environmental sphere; here the Treaty does not provide a guide. To fill this gap the Commission has proposed its own formulations, most recently of the three objectives of the current CAP to 2020, first published in 2010 prior to the 2013 reform agreement (European Commission, 2010).

One of these three objectives was the sustainable management of natural resources and climate action. The latter refers to both mitigation and adaptation to climate change. Natural resources include soil, water, air, biodiversity and, probably, cultural landscapes which are a distinctive and widely valued part of Europe's heritage. The EU has ambitions in all these areas and there is a considerable body of environmental legislation in which many of them are expressed, for example as targets, binding standards, stipulations about land management and product specifications. There are Directives and Regulations aiming at clean air and water, a halt to the decline of biodiversity, improvements in waste management and many other issues relevant to agricultural land management. Relatively few of these measures apply solely to agriculture but they do represent a baseline of required standards to be met in most areas (soil health and functionality is one important exception) and full compliance with these standards would represent a major step in the removal of negative externalities.

As well as specifying standards to be met now, this baseline of legislation sets some goals to be met at future dates. Whilst there are not many specific environmental targets for agriculture *per se*, particularly at the EU level, some environmental legislation lays down quantified standards to be achieved by future dates. Surface and groundwater for example should be clean enough to meet the criteria of ecological "good status" set out in the Water Framework Directive (2000/60/EC), as a result of national authorities implementing river basin management plans over the period to 2027. In practice this means achieving a substantive reduction of pollution from agricultural sources in large expanses of the farmed countryside in Europe. This detailed legislation provides a fairly concrete set of goals, attached to a timescale and is one of the most significant exemplars of what removing negative externalities will entail.

In parallel to reducing levels of pollution and negative ex-

ternalities, agricultural land management has an important part to play in contributing to wider environmental goals, such as the maintenance of valued cultural landscapes. The concept of agricultural land as a form of natural capital that, under the right management regimes, provides ecosystem services of benefit to humanity increasingly is used to capture this beneficial relationship. Appropriate agricultural land management can increase the flow of ecosystem services such as carbon sequestration, flood risk mitigation, and water regulation (OECD, 2016). It will be difficult to conserve many wildlife species and habitats in Europe without sensitive environmental management on farmland outside the dedicated protected areas. Policies to reward the provision of environmental public goods have an important role to play in guiding the management required.

Meeting environmental goals in the farmed countryside is a rather large-scale enterprise, requiring sustained activity over a considerable period of time and involving the whole agriculture sector to varying degrees. It is not only a question of reducing negative externalities; the longer-term sustainability of agricultural soil and water management in parts of Europe is in doubt. Full environmental integration into the agricultural and forestry sector involves a transition to a significantly different model of production where land managers must pursue a wider range of goals than in the past alongside the core role of food production. Environmental sustainability implies both the establishment of a production system that is durable and resilient over the long term and in addition to this making a substantial contribution to the attainment of wider environmental goals and the provision of ecosystem services in the countryside through appropriate land management. These goals are linked. For example, helping to halt the decline of biodiversity in Europe includes action to create better conditions for pollinators that are essential for the production of many crops, so contributing to a range of ecosystem services. Measures to increase carbon sequestration in soils by increasing soil organic matter can contribute both to improved soil fertility over time and to the mitigation of climate change.

Farmers are being asked to attune their operations to a much broader suite of public concerns and priorities than were articulated previously (although many may have been implicit) and to risk penalties if they fail to do so. Whilst some of this transition entails increased effort or increased cost, or both, for producers and, therefore, in principle for consumers, there are also economic opportunities for those who can meet the demand for environmental products and services. These may arise through the market, by farming organically for instance or through qualifying for greener elements of the CAP and national agricultural support schemes. The proportion of support under the CAP that is linked to environmental requirements in some way is growing although it may not be closely related to actual environmental performance. Most obviously, payments related to environmental agreements and obligations on farmland have expanded rather sharply under the 2013 CAP, with 30% of Pillar I direct payments attached to the "Greening" measures and at least 30 % of Pillar II support directed to land management payments.

Whilst this appears a major step towards integration of the environment into the core of the CAP it is proving to be a challenge to deliver the outcomes intended. In particular there is widespread dissatisfaction with the operation of Greening, not least by many farmers who point to the levels of bureaucracy and risk of penalty involved without being convinced of the environmental benefits. Whilst change on this scale can't be expected to be popular necessarily, a recent review of the early phase of implementation of the new Greening rules and options by agricultural authorities in the Member States suggests that the environmental achievements on the ground may turn out not to be very extensive because of the way in which the rules are devised and applied (Hart *et al.,* 2015, Pe'er *et al.,* 2014). The experience of applying the Greening regime in practice has also underlined the extent to which the detailed mechanics of agricultural policies linked to environmental public goods and the mode of delivery are both critical to the sense of engagement by farmers, to the type of response on the ground and so to the ultimate outcome.

The principle of careful targeting and tailoring of CAP support measures to particular recipients and conditions is widely accepted as necessary in order to secure the environmental outcomes desired (OECD, 2007). However, operationalising it in practice within the CAP is proving less easy. It requires investment in additional information, greater capacity to fine tune interventions to suit local conditions and contexts and to follow them up, new demands on farmers in relation to compiling information, completing forms and adopting modified practices, adjustments to farm inspection regimes and monitoring systems and a wider cultural change. This step change from traditional practice can be in tension with efforts in many Member States to reduce staff numbers in agricultural ministries and extension services and a desire to simplify administration on the farm as well as in the public services. The problem of meeting the transaction costs of improved environmental land management within the CAP, real and perceived, has become a central concern in this policy arena. It has become a significant driver of a contemporary simplification agenda that increasingly is in danger of conflicting with effective environmental delivery.

This is not a reason to shrink from the imperative of environmental integration within the CAP. Rather, experience of the 2013 model provides an occasion to acknowledge some of the barriers that have been encountered and to consider which general strategy and which individual policy tools and delivery systems might best be deployed in which combinations in the coming decade and the implications for the future CAP. Some of the transaction costs can be reduced by adopting different approaches and new technologies, including those based on earth observation systems and simulation tools to assess the contribution of different interventions to ecosystem service provision.

It is also an opportunity to widen the frame. Europe's environmental objectives must be set in the context of a changing and more demanding international context, including both the Paris Agreement on the climate and the UN Sustainable Development Goals (SDGs). The EU's response to the former begins with the emission reduction goals for 2030 already agreed and the EU contribution to meeting the SDGs is in the process of being defined but it will have food production, food consumption and well-being, and environmental dimensions. The frame for setting policy is expanding; the overall resource cost and environmental footprint of food production in different parts of the world increasingly is relevant to measures under the CAP; technological change is allowing such factors to be assessed more precisely and potentially used to inform policy more systematically. It is already clear that measures within the CAP should be informed by the need to build low carbon food production chains but European land management will have to be directed to other environmental imperatives as well, such as biodiversity and soil conservation.

The principles behind a new approach and a greater focus on public good provision are now well established and progress has been made in a transition to a sustainable and environmentally attuned agriculture. Furthermore, we have some experience of the process of harnessing the CAP to this goal. However, it needs to be taken very considerably further if current and emerging goals for sustainability are to be met. In this perspective, the 2013 CAP can be seen as an experiment in developing environmentally focussed policy measures that apply over the majority of farmland in the EU and lessons from this are emerging. How can these be applied in the next CAP round?

2. Setting Goals

In considering how the CAP can be taken forward in this direction it is reasonable to consider the objectives and question whether the rather broad goal of the sustainable management of natural resources related to agriculture in Europe can be translated into a set of more specific outcomes, especially at the EU level. These would sit alongside others developed more nationally or regionally. Greater precision in environmental objectives for land management would help to drive progress in a clearer direction and allow more measurement of results and the effectiveness of policy.

Starting at the highest level, setting more concrete objectives in Europe and mapping the policies to achieve them would be a substantive response to the UN's 17 Sustainable Development Goals (SDGs), representing an agenda for sustainable development at a global scale to 2030 (UN, 2015). This is an unambiguous statement that the status quo is no longer tenable and that planetary boundaries are being breached. Land-system change and climate change have gone beyond the safe operating space. For Nitrogen and Phosphorus as well as for Genetic Diversity, the world has entered a high risk zone according to assessments by the Stockholm Resilience Centre. Some are arguing that environmental tipping points are in view that could have significant effects on food security at a global scale (Benton *et al.,* 2017).

Several of the SDGs are relevant to land management, including No2, Zero hunger, No6, Clean water and Sanitation, No12, Responsible production and consumption and No 15, Life on land. No2 addresses improved nutrition, sustainable agriculture and food security as well as the end of hunger. The EU's response is evolving but it should include a substantive element concerned with agriculture and land use, as pointed out in a recent report by Karl Falkenberg for the European Political Strategy Centre (EPSC). A key message in this report is the importance of building natural capital to support ecosystem service delivery with the example given that the economic value of insect pollination in the EU is more than Euro 14 billion per annum (EPSC, 2016). This is a helpful starting point for considering the priorities in Europe in an international as well as domestic context.

Given the current context in the EU and the need to achieve and demonstrate clearer results and achieve greater added value from the EU budget as a whole, as well as from the CAP, it would be timely to stipulate more concrete outcomes against which the success of interventions can be judged. It is a regular complaint from the Court of Auditors that environmental payments to farmers under the CAP are not good value for money but this is difficult to assess because of the imprecise nature of the objectives. (e.g. Court of Auditors, 2011). Some of such criticism can be misplaced because of a tendency to under-estimate the challenges of measuring complex, long-term, multi-faceted changes in the farmed environment arising from a number of different drivers. Nonetheless, greater precision would also help to reveal and delineate trade-offs and synergies between objectives that are undoubtedly important in the land management sector (German *et al.,* 2016).

For example, some low carbon strategies for agriculture in the EU might be designed to scale back grazing cattle and sheep numbers in the uplands and mountains given the low returns they generate and the fact that ruminants are a major source of methane emissions (See Figure 2.1). However, leaving aside socio-economic considerations, even in purely environmental terms such an approach must be balanced against the fact that these are often the areas where grazing can be most appropriate as a means to manage semi-natural vegetation and secure the conservation values that are sought by environmental legislation such as the Habitats Directive. Clearer goals could help to establish what weighting should be given to managing emission reductions in the different segments of the livestock sector and the extent to which reductions in the grazed area at what scales and sites might be reconciled with other means of retaining conservation values and in which locations. Site and context specificity is critical in assessing and resolving many trade-offs.

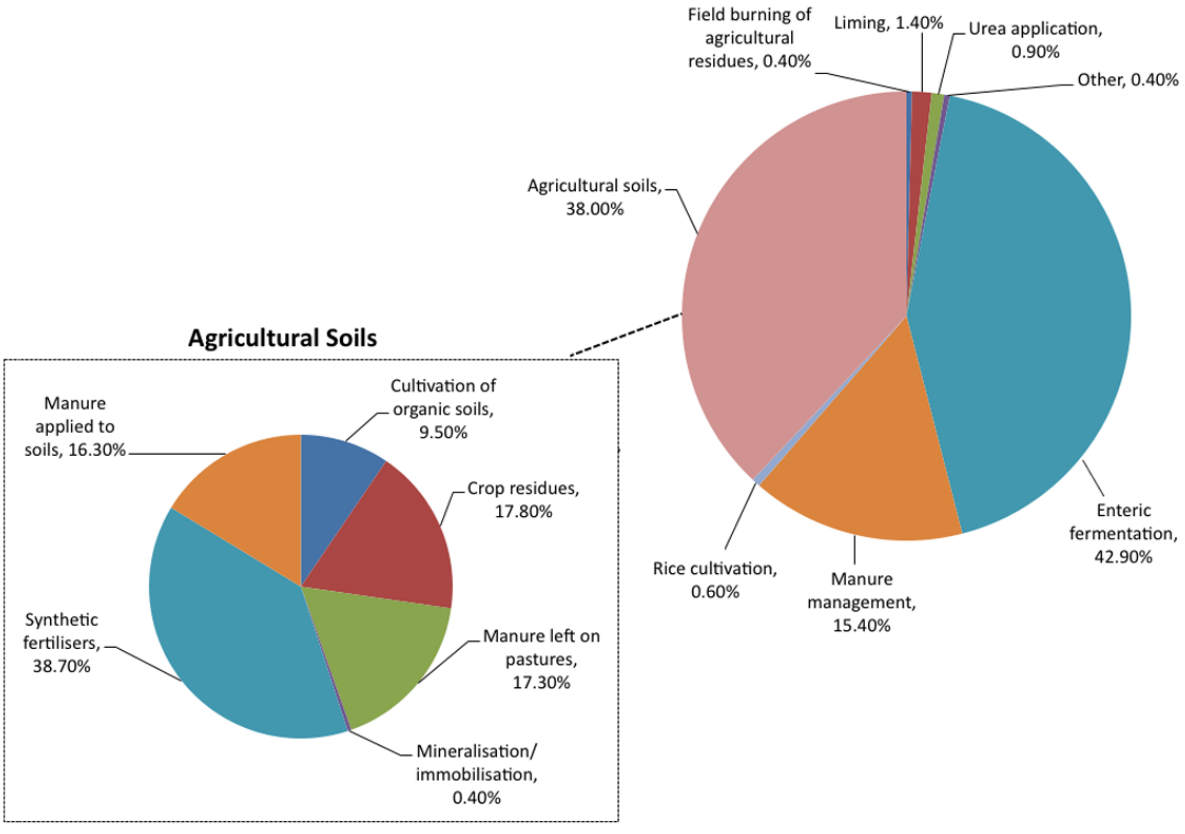
A detailed European blueprint for land management is not required and would not be politically realistic but a EU frame and synthesis of different goals would be helpful. The process of setting goals and addressing the trade-offs needs to be applied at the different layers of governance within Europe with much of the activity focussed at the local level and engaging local stakeholders, including farmers, but it clearly should have an EU dimension. This is because of the link to common environmental objectives and need for spatially coherent responses, the impacts on competitiveness and the European level on which so much of environmental policy is organised.

Several environmental requirements and goals of particular relevance to agriculture are specified already in EU environmental legislation. These include the need to establish "favourable conservation status "for habitats and species of European interest and to halt the decline of biodiversity by 2020 and the Water Framework Directive goals mentioned already. They apply to most environmental media, although in a limited way to soil, despite substantial concerns about agricultural soil quality and functionality, which seem likely to grow and result in new standards in the coming decade. New targets and goals continue to be added as issues are assessed more thoroughly. Recently for example targets have been agreed for reductions in emissions of ammonia and fine particulate matter (including from farm machinery) by 2030 as part of a revision to the National Emissions Ceiling Directive, while a target for methane emissions was dropped despite its importance as a greenhouse gas because of vigorous opposition from the agriculture sector on account of potential costs.

Setting longer- term targets with increasingly demanding milestones can be an effective way of managing and communicating a transition. Meeting the existing EU targets and binding requirements at farm level will involve substantial further changes in practice, new investment and the exercise of a range of skills that will need to be developed and applied. In addition, a further set of requirements needs to be put in place to move agriculture closer to a zero net carbon sector over the coming decades. This amounts to a substantial transition programme, with several milestones to be reached by 2030.

However, there is often a lack of clarity, or at least of understanding, about the potential significance and impact on the agricultural sector of a substantial and probably growing corpus of environmental legislation and associated targets. It is far from clear that the scale of adjustment

Figure 2.1: ***Agriculture emissions in the EU (2014)***



Source: Adapted from Šucha, V *(2016)*

that will be needed over time is fully appreciated. Levels of enforcement of extant legislative measures have been mixed in the Member States and often lack the sense of a driving strategy of the kind now being advanced in the French agricultural ministry under the agro-ecology banner. For many years farmers' organisations have reacted to cross compliance in a way that suggests that some farmers were not fully aware of environmental obligations that already were in force prior to their inclusion in cross-compliance rules. Even the complete removal of cross-compliance would not take away the great majority of these obligations or the need to implement and enforce them.

The future of pest management techniques and technologies is a case in point. The very broad direction of travel in policy is fairly clear but while attention focuses on episodic developments such as the authorisation or banning of certain products, itself important of course, there is little debate about how to apply the more strategic commitment to adopt integrated pest management in the EU, even though this goal is clearly set out in Directive 2009/128/EC. This Directive requires EU countries to take all necessary measures to promote low pesticide approaches to pest management.

In France there has been a vigorous national debate about targets for reducing the use of pesticides by certain dates under the "plan Ecophyte 2018" and the government has been promoting the concept of agro-ecology. The original target of cutting pesticide use in half by 2018 was not met and the date has been reset for 2025, underlining the scale of the challenge. However, there is not a corresponding European strategy for moving towards integrated crop management or spelling out more specifically what it would entail. The strategic picture is in danger of being lost in the detail and the scale of transition envisaged is inadvertently obscured.

The same reasoning applies to the general goal of supporting climate action through more systematic adoption of appropriate land management. There is no EU target for the contribution that agriculture or the rural land management sector as a whole (including forestry) is to make to the reduction of Greenhouse Gas (GHG) emissions in the period to 2030 or beyond, while the EU as a whole is committed to a 40% reduction against the 1990 baseline and much further reductions by 2050. By 2050 the target set by the European Council in 2009 is to have achieved a 80-95% reduction in emissions against the 1990 baseline. The COP 21 Paris Agreement sets goals that require a higher level of ambition, with signatories signing up to pursuing efforts to limit the global temperature increase to 1.5 degrees C above pre-industrial levels. This may require achieving zero net emissions from human activity at a point around 2050 or not too long afterwards.

While mitigation is more challenging in agriculture than in many other sectors for a combination of reasons and a proportion of mitigation technologies are relatively expensive to implement (see Martineau *et al.,* 2016, Frank *et al.,* 2015) there is no question that a step change in thinking and action is going to be required in the coming decades. Even with a more active approach, the agricultural share of total EU emissions is likely to rise significantly from the current level of 9.9 %, (excluding its share of energy for inputs such as inorganic nitrogen fertiliser and imported feed for livestock). Increasingly this will point a spotlight on a sector that appears to be lagging. These considerations provide good reasons to scrutinise agricultural and land use emissions and the potential for stepping up carbon sequestration on farmland and forests with some vigour and to develop pathways or an orderly transition to a low carbon or zero carbon sector, as is occurring in the energy supply sector.

In fact however, there is no clear roadmap for the sector, or serious debate to set alongside the considerable impetus behind increasing livestock production in the EU (in 2015 there was a 3.3 % increase in volume of animal production in the EU accompanied by a 8.5 % fall in prices according to Eurostat) (Agra Europe 2/12/16). According to the European Commission's Outlook 2016, beef production in the EU may rise by about 5 % by 2025.

One reason for this is the rather complex and significantly devolved EU climate policy framework currently in place for farming and land use. This leaves it to the Member States to determine how much contribution is required from their agricultural sectors to meet national reduction targets for the component of their economies outside the ETS. Overall national emission reductions (or permitted increases for some countries) are set for each country by the "Effort Sharing Decision", the principal regulation governing emissions in the sector in the period to 2020, which will be followed by a recently proposed Effort Sharing Regulation covering the period from 2021 to 2030. This Regulation covers important elements of agriculture, together with several other sectors such as transport and commercial buildings. However it does not cover the separate category of "land use, land use change and forestry", which constitutes a mixture of activities, some causing emissions, others resulting in carbon sequestration.

The share of the overall emission reduction effort that is required of domestic agriculture is decided by the Member States in this framework and in some it is possible that agriculture may not be expected to reduce emissions at all prior to 2030 because broader national commitments can be met in other ways and there are several flexibility mechanisms being proposed by the Commission. This contrasts with the approach in certain other sectors such as the major energy using industries that are bound into a system of progressive reductions over time within the Emissions Trading System. There are also differences of view about whether the methods used by the Commission have the effect of exaggerating the costs of mitigation in agriculture in the Impact assessment for the recent package of EU climate legislation and whether it is opposed to reductions in output which could arise from some mitigation technologies, for example through greater afforestation or reducing methane emissions from livestock (Matthews, 2016). The political and legislative messages being presented to the agricultural sector do not provide the sense of the scale and significance of

the challenge in a way that would be helpful and there is an implication that current levels of food production in the EU are sacrosanct for reasons that are far from clear and difficult to justify (see Box 2.1).

Box 2.1:

Political messaging on climate and agriculture

At the 2016 Agricultural Outlook Conference, Commissioner Hogan made it clear that 'agriculture must play its full part' in addressing the climate challenge, looking to innovative and smart solutions and ways of ensuring generational renewal in the sector as important means of achieving this goal. Commissioner Arias Cañete reinforced the 'triple challenge' facing the agricultural sector of adapting to the impacts of climate change, while enhancing mitigation from agriculture and producing more food, stressing that 'while EU policies have supported a significant reduction in EU agriculture emissions since 1990. Further efforts are needed to contribute to the EU's decarbonisation efforts'.

The scale of the challenge should be delineated more clearly, as does the question of producing more food in Europe (Over what timescale, and in which sectors? Why is this necessary at the moment?). However, meeting tougher targets is far from trivial. While non-CO_2 emissions from the agricultural sector fell by 21% between 1990 and 2014, by 2030 EU agricultural emissions are projected to decrease by only 2.3% compared to 2005 (Šucha, V., 2016). A large proportion of reductions since 1990 have been the result of declines in livestock numbers in the EU, reflecting the previous over-stimulation of this sector and brought about by policy change, including decoupling of support payments within the CAP. Because a further large adjustment of this kind is not foreseen, a more focussed and directed effort will be required in future with more active interventions than currently planned. A first roadmap for the agriculture, forestry and land use sector to 2050 would help to frame thinking in this area and is now needed.

In looking forward there is thus a case for a more strategic statement of the environmental challenges and opportunities for agriculture and land management in Europe over the period to 2030 and beyond. This could identify the role of the CAP, alongside that of other drivers, enablers and actors in securing change for the period to 2030 and beyond. The more strategic frame would include indicative roadmaps for reaching certain goals. It becomes necessary now because of the increased importance of the climate agenda for the EU and the uncertainty about how the contribution from agriculture will be agreed and managed. It should consider the period to 2050, by when there is an expectation of a much lower emissions profile as well as a significantly expanded role for sequestration in agricultural soils and forests. European agriculture could be a pathfinder in this realm and the CAP could play a key role in guiding elements of change, providing support for modifying and enhancing land management where it is most needed to secure the transition. Framing the direction of travel and building more of a consensus behind it would be a timely step. As well as bringing together emerging targets and aspirations, such a strategy could propose some ways of answering difficult questions, such as the best means of addressing trade-offs between different goals and how they can be approached in the great variety of contexts to be found in the EU. This would also help to define the data, analytical and policy tools that will be required at different levels from the local to the more global.

A strategic statement about the pathways to a more sustainable agriculture in Europe would include both social and economic components while sharpening the environmental focus. It could be presented as part of the preparations for the next round of CAP reforms or as a freestanding document supported by the key Commission services in this field. There is already evidence of increased co-operation between lead Commissioners in the agricultural policy sphere and this can be built on further. This would form a stronger frame for identifying the type and level of interventions required under the CAP.

3. Refining Policy Tools and Delivery

Moving to the level of concrete policy measures and interventions to achieve environmental goals under the CAP, there is a need to ensure that the toolkit of measures and the related implementation, compliance and support systems are fit for purpose and work effectively alongside other drivers, such as market forces and environmental regulation. Undifferentiated support for all agriculture within the EU does not provide an incentive for adopting more sustainable land management and the requirement for more targeted and tailored policies is well understood (OECD, 2007 and various).

The current tools within the CAP for maintaining or improving environmentally sound land management are voluntary agri-environmental schemes involving contracts with farmers, geographically targeted area and livestock headage payments (e.g. within the LFA/ANC zones and under voluntary coupled support), aid for capital investment, advice and training within Rural Development Programmes, cross-compliance and the new Greening requirements within Pillar I which are a development of cross-compliance in many respects. This repertoire of measures has been built up over time and has a number of strengths, including familiarity, but that does not mean that it is adequate for addressing the scale of challenge ahead. Amongst the weaknesses are the reliance on rules based approaches and prescriptions that do not always deliver, an insufficient focus on results and widespread difficulties in engaging in sufficiently positive ways with farmers, although this is critical.

Some of the lessons of recent experience with these instruments point to the importance of matters of detailed design, delivery and broader administrative culture rather than the principle of, say, contractual payments or cross-compliance. Using public money to bring about improved land management is a multi-layered endeavour with aspects of craft, judgement and often trust, rather than a simple commodity transaction. Policy tools should be deployed within an appropriate culture and delivered by skilled personnel. As noted above, there are concerns about effectiveness and potentially high transaction costs in many current measures but this does not necessarily mean that the policy tool itself needs to be replaced.

Some transaction costs are unavoidable, especially with the need to increase precision and targeting in direct payments and other support measures. The structure of relatively small farms in Europe accentuates this risk. It is not suggested that there are entirely simple answers to this. Measures to promote collective action by groups of farmers for example can be a helpful response to managing the problem of a multiplicity of contracts and transactions with small individual farms in some circumstances. For example, there is encouraging progress in the Netherlands in taking forward this approach and transferring considerable control and ownership of local landscape management to the farming community in the process. However such models are not feasible or desirable everywhere and address only one of several issues. New forms of remote sensing may help to monitor land management in more accurate, less intrusive and cheaper ways but relationships on the ground will remain important as well.

Another major concern, especially in relation to greening and cross-compliance within the CAP, policy tools which have the merit of applying to a large proportion of land under agricultural management in most countries, is the influence on national administrations of the CAP monitoring and control rules and the rigid enforcement culture operated by the Commission.

These rules have a rationale that is entirely reasonable in relation to controlling waste and fraud. However, they were not designed for guiding environmentally sensitive land management and can have the effect of focussing the attention of routine Commission audits on farm level or administrative compliance failings that are relatively trivial from an environmental perspective, such as the precise width of a hedge being wrongly reported. Some embody a measurement based approach that can be difficult to reconcile to the variations in more natural features on farmland (as opposed to most commercial crops) and the need for considered use of discretion by administrations in setting, interpreting and enforcing requirements. Some rules, for example restricting the number of trees in fields receiving direct payments, can be positively counterproductive in environmental terms, where they create incentives for tree removal to avoid the hazard of losing payments.

To be successful in building sustainable land management in Europe the policy toolkit has to be kept under review, refined as required and implemented within a delivery and compliance culture which reflects the character of the environment and the role of farmers in an appropriate way. This implies dynamism but not frequent changes that impose disproportionate costs on farmers and prevent beneficial outcomes from being achieved, Local conditions can be critical. For example there may be an existing network of farmers in some areas that could play a larger role in delivering a package of environmental measures, as in the Netherlands. Elsewhere this may not apply and a different route may be more effective. It is widely understood that farmers can resent or be critical of the rules imposed on them even in well-designed agri-environment schemes and issues of engagement, consultation, advice and sensible flexibility are all critical. New approaches, such as results based payment schemes, which give farmers more discretion in how they meet the required outcomes, have real potential; while they are not a panacea they do merit a larger role in the toolkit (Allen *et al.*, 2014).

Most patches of farmland provide a range of different but related ecosystem services and results based incentive schemes should be supple enough to accommodate this. In parallel, the level of precision in environmental goals for land management must increase in many cases to achieve more robust results. However, it will generally be better if administrative procedures were more plastic and carefully applied than a standardised pollution permitting system for an industrial plant. There are more natural forces at work on farmland than in a self-contained factory and the environmental consequences of a management action may depend on the weather, the activities of neighbours and others and may take a long period of time to be apparent. In some cases the scientific and technical foundations for predicting the environmental consequences of a farming practice and determining the right form of management to secure the required outcome are far from perfect. Consequently there can be an element of uncertainty and experimentation that can make it difficult to require a precise environmental outcome of a farmer. Furthermore, the range of different environmental goals being pursued simultaneously on a single area of land complicates the selection of the ideal management regime and the best policy tool to apply. Often optimising for one outcome affects the supply of other environmental services as well as the primary production process and there is a natural tendency to select compromise measures that may not be very effective for the headline environmental objective, even if this is clear.

Nonetheless, it is often necessary to frame environmental goals in the form of increasing the adoption of preferred practices, such as injecting slurry directly into the soil or maintaining buffer strips around the edges of watercourses. Of course these practices are generally only a means of trying to secure an outcome and where the goal is to secure a high level of uptake of the practice this is a proxy for a more fundamental goal. The "green" components of agricultural policies, including the CAP, rely heavily on promoting such management prescriptions, some of which serve, or have the potential to serve, more than one environmental purpose at the same time. For example a

well designed buffer strip may both inhibit certain forms of pollution from entering the water course and create a marginal habitat for some species and may also make a modest contribution to carbon sequestration.

Multi-purpose management practices of this kind are useful and unavoidable on farmland and promoting the application of selected good practices will continue to be one of the environmental goals of agricultural policy. However, there is a good case for honing policy to be more precise in specifying practices that have clear environmental goals, are supported by an evidence base that demonstrates how and in what conditions they are effective. Recent work by the OECD emphasises the importance of careful policy design to take account of trade-offs, including proper selection of the "base" i.e. the land use, tillage method or input use that is being targeted. A model to explore approaches to such trafe-offs suggests that one single policy instrument, in this case incentives to create a buffer strip, "can promote a reasonably well-balanced set of services with small efficiency losses" while in the case of trade-offs employing constraints on fertiliser use as a single instrument "results in strong imbalance and efficiency losses" (OECD, 2016).

It may also be important to be specific about certain details of requirements and the means of tailoring management to different conditions where this is possible. While it is necessary and desirable to adapt certain land management practices to local conditions, there will also be limits to allowing too much flexibility for several reasons. One is that some level of continuity maybe necessary to achieve the desired environmental outcome and maintain the commitment of farmers. Another is that there are some general environmental rules that apply widely with little or no exception, for example about the effects of ploughing permanent pasture, applying fertiliser to species rich meadows or storing slurry in inappropriate ways. Variations on some well-founded approaches must be based on a full understanding of the consequences, which is not always easy to achieve at a local scale, desirable though that is. Helpful general rules have been established for organic farming and for the protection of a number of individual species on farmland for example, although their effectiveness too will depend to some degree on the way in which they are applied and adapted to context.

There is no simple formula here. Appropriate and responsibly utilised flexibility is essential but some rules need to be stipulated more precisely than others at the EU level within realistic accountability structures. Too much flexibility of certain kinds for Member States and for farmers can be unhelpful in achieving environmental results This is illustrated by the case of the Greening of direct payments in Pillar I where the tendency has been for many of the measures selected by Member States to impose only small departures from the status quo by farmers at the price of lowering their environmental potential.

The long menu of loosely defined measures that Member States are permitted to adopt under the present Pillar I Greening rules and the accompanying lack of specific objectives has been identified as one of the main reasons for the potentially limited environmental results (Hart *et al.,* 2016). For example, the Greening options that are open to Member States to offer to farmers to comply with their commitments on Ecological Focus Areas (EFAs) include the planting of an area of nitrogen-fixing crops and also catch and cover crops within arable rotations. Most Member States have adopted these as available options and they are popular with farmers for economic reasons, resulting in a relatively large take up.

These management prescriptions can help to reduce inorganic fertiliser use and reduce the area of bare soil on arable farms. However, expectations that this is a good approach to promote biodiversity, one of the principal aims of the EFAs, are questionable. Recent work has suggested that highly specific conditions are required in the management of these crops to secure the potential biodiversity benefit (Underwood and Tucker, 2016). These conditions generally are not required by the Member States so there is the danger that loosely defined measures secure insufficient environmental benefit in return for the costs they incur and leave some key environmental problems unresolved. From an environmental perspective the EFA options of creating field margins and hedges or leaving land fallow have the potential "under typical management to provide much greater, more diverse, and more reliable biodiversity benefits" (ibid).

A critical question is how incentives should be set to engage farmers in providing public goods, particularly if this is to become a much larger exercise and central to the CAP. At present the formula laid down in Article 12 of Annex 2 of the WTO Agreement on Agriculture is the foundation for agri-environment payments in the CAP, although not for the recently introduced Greening payments. This dictates that payments under environmental programmes "shall be limited to the extra costs or loss of income involved in complying with the government programme". While this is designed to control subsidies introduced under an environmental rubric it frames the transaction with farmers in a restrictive way, such that it is a compensation for a loss and inconvenience instead of an offer from society to purchase a benefit for a reasonable sum. In such transactions the price might be expected to fall somewhere between the lowest that the farmer is willing to accept and the highest that society is willing to pay. The lack of a positive incentive can make the principle of a public goods based contract unappealing to farmers and landowners, with political consequences for this model of the CAP.

In practice, the actual level of payments for agri-environment schemes varies greatly in Europe and it is quite impractical to tailor individual contracts to the precise and changing marginal costs of compliance on farms. Approximations have to be made and there can be expected to be winners and losers amongst farms in a scheme.

One way forward would be to challenge the formula in Article 12 and seek a new global consensus around payment models for large-scale environmental public good focussed policies that are displacing other forms of sup-

port for agriculture. However, given the lack of momentum in multilateral trade negotiations, including those applying to agriculture, results in any reasonable timeframe do not seem particularly likely. A better approach might be to take a broader view of the legitimate opportunity and transaction costs that farmers have to meet in entering these schemes, including a level of risk concerning the willingness to pay of future governments and to set incentives accordingly. Substantially larger sums would be needed to attract some farmers into new schemes, including intensive dairy producers for example. It is far from simple to arrive at the right payments, avoiding deadweight as well as other hazards but it would be a helpful start if there was a clear signal that there is a genuine willingness to purchase public goods at sums that are remunerative to the supplier. Of course the context is that such payments are a replacement for, not addition to, the current rather untargeted Pillar 1 direct payments.

A number of responses to this set of challenges in policy formation and delivery within the CAP can be envisaged. These include:

1. Adopting policies that reward farmers directly or partly in relation to environmental results where this is possible. For example in one model payments can be attached to the number of species or size of population of a particular species present in one or more farms in a territory over a reasonable period of time, accepting that other factors will influence the outcome and it is unlikely to be more than one strand of a payment scheme. In another model payments are based on following specified prescriptions but concrete results achieved after a period of time are rewarded with a bonus, either for individual farmers or a collective and this may be more practical in many situations (Thoyer,S. pers com). Hybrid agri-environment schemes, involving an element of reward for results and a simultaneous fixed payment for following a stipulated farming practice, so creating less risk for the farmer, have considerable potential (Russi *et al.*, 2014).

2. Interpreting the profit foregone principle in a way that takes full account of the wider spectrum of opportunity costs.

3. Specifying preferred land management practices in more considered and precise ways, accompanying this with an appropriate delivery and support framework. The goals must be clear to the farmers involved as well as the rules, so the focus in their management decisions is primarily on the objectives rather than being driven by purely a compliance logic. Where flexibility and departure from the rules is required, which can occur for a number of legitimate reasons, such as variations in weather then, rather than starting with excessively flexible CAP rules, it is preferable to have discretion available to the farmer to take the appropriate action where this can be justified against the ultimate purpose of the measure. This then has to be backed up with discretion for the inspection and auditing staff to take account of the conditions on the ground rather than being obliged to blindly follow a rule book and ultimately imposing penalties for trivial or even desirable departures from the rules. The approach could be characterised as creating an administrative culture allowing reasonable discretion to tailor aspects of management to the required outcome but within clear and focussed contractual terms rather than introducing too much general flexibility in schemes and the risk of lower effectiveness as well as misuse of funds. In practical terms this means a considerable change in process, including a willingness to gather and utilise different forms of evidence of compliance and to accept expert judgement which in turn needs to be well founded. Annual trends could be measured and rewarded, particularly given the stochasticity of sampling and weather (Benton, T pers com).

4. Allied to this, it is important that the CAP framework does not inhibit Member States from introducing more innovative and creative schemes, as it can do now. This arises because national authorities face a risk of very sizeable penalties in the form of disallowance of their CAP funds if there are minor failings emerging on farms that are subject to controls or there is a more substantive infraction that may arise as part of a pilot scheme or calculated risk. Innovative schemes may well be associated with unexpected outcomes and failings but nonetheless can be worthwhile. Under the current system, innovative and pilot schemes are often difficult for national authorities to justify within their own governments as well as the Commission and the tendency is to select options where the controls are most manageable and risks of disallowance low. Minimising the risk of disallowance becomes a critical driver in policy design at the cost of effectiveness and efficiency in a broader sense. This risk averse approach was clearly an influence on Member States in selecting Greening Options for Pillar 1 after 2013 and is reflected in the lack of environmental ambition of many of the measures introduced.

5. Reductions in transaction costs and greater effectiveness may be attainable by adopting new institutional models for scheme operation and delivery. The use of group rather than individual farmer agri-environmental schemes utilising the established framework of local cooperatives in the Netherlands is one model with several interesting aspects. These include the transfer of considerable responsibilities and administrative tasks to the cooperatives in return for a multi-year contract with the agricultural ministry focussed on specified environmental results (ref). Other approaches are likely to be relevant in different conditions and more experimentation is likely to be required.

6. A greater focus on advice, support, facilitation and information alongside the payments made may be needed in many environmental land management schemes rather than relying on paper systems and remote transactions. The costs of this need to be acknowledged but the efficiency of incentive schemes can be increased greatly with the right level of support and back up.

7. More investment in the data, the analysis and the tools for upgrading the suite of interventions required for

sharper policies for agricultural land management. This could include quite practical initiatives, such as a continuously updated handbook of the impacts of different farm practices on the environment.

4. Policies for transition and longer term support

Whilst it is unrealistic to imagine starting entirely afresh with the choice of policy instruments for land management in Europe, it is equally important to avoid the assumption that change is always incremental. This creates the danger of path dependency and a failure to be innovative or radical where justified. Given the goals outlined above and the objective of supporting a transition to greater environmental sustainability in EU agriculture, the initial question is what is the role of policy in guiding and supporting this process? Following this, which combination of policies might be effective, efficient and best suited to meeting these goals, while at the same time building the stronger engagement of stakeholders, especially famers? Whilst it may take a period of time to build wider support for a transition to more sustainable land management amongst stakeholders this remains a critical step. It requires both a reformed and re-invigorated CAP and other policies alongside it.

As the transition progresses, the costs of running a sustainable farming system in Europe should be met primarily by the beneficiaries, including consumers, water suppliers, leisure companies, farmers themselves and others- with public funds being devoted to public goods that are too difficult to attain by market routes, even if the latter are much more developed in future. Mechanisms in the CAP should support the enhanced role of private actors, within an evolving food system, accepting that there is some way to go in achieving this change and experience in catalysing action will need to be built up.

This requires a "system transformation" (Benton, 2016) whereby the food chain as a whole adjusts to meeting the full environmental and relevant social costs of production, with externalities priced in appropriately. The CAP then ceases to have a role in supporting unsustainable agriculture *per se*, following a period of transition clearly signposted in advance. Farmers have an enhanced income from the market, requiring the more active commitment of processors and retailers than at present. In effect the agenda set out in the recent report of the Agricultural Markets Task Force (the "Veerman report") needs to be expanded to cover the rationale and mechanisms for a re-distribution of the costs of managing land and other resources required in food production so that these fall very much less on farmers and taxpayers.

In parallel to this fundamental adjustment, a series of structural and evolutionary changes can be expected and planned for at the farm level over a period of perhaps ten to twenty years. One dimension of this change will be socio-economic, with the retirement of an older generation of farmers, a wave of new entrants, growing farm size and increased co-operation of different kinds alongside structural adjustment and the continued adaptation of agriculture in CEE countries to conditions in the wider EU.

However, the second dimension of adjustment required is to sustainable farmland management. This can be characterised in different ways and has certain parallels to the transformation in the power supply industry, moving from a fossil fuel base to renewables, with accompanying system and institutional changes. In the renewable energy case too most of the costs are being passed to consumers in the form of higher tariffs, but with a substantial role for public sector support to encourage the transition process.

In the case of agriculture the pattern of transformation will be more diverse than the adoption of renewable energy, given the heterogeneity of production systems, practices and conditions in Europe. Some farms, including organic producers, have already made more progress than others. Three elements can be emphasised:

- The adoption of an approach to land management based firmly on resource efficiency and conservation. This applies clearly to soil and water management, where the need to adapt to climate change, especially in parts of southern Europe, will provide an added incentive to adopt new approaches. It also applies to the conservation of farmland biodiversity, to the utilisation of wastes and to pest and disease management, with the adoption of IPM, organic and other techniques, both novel and traditional. Both practical techniques and management goals must change in a systematic way, with space for considerable regional variations and different combinations of intensive and extensive systems rather than a single model. There are different ways of characterising this process, for example as a change from "chemical intensive farming to "enhancing–nature-for-farming" (Benson, personal communication).

- The accompanying transformation to a climate sensitive and much lower carbon land management and food supply system. This includes an enhanced role for different forms of carbon sequestration in soils, vegetation and woodland. In this domain policy drivers in the agriculture sector are still developing and carbon prices are low but they will grow in importance, potentially including sector targets in future, while the demands of processors and retailers also can be expected to sharpen. Adjustments to farm management need to be made almost everywhere and to be linked more tightly to developments in the food chain, in forestry and in the renewable energy sector. Changes in diet can also be expected to occur and these seem likely to make a significant contribution to mitigating the level of GHG emissions associated with food and agriculture in Europe.

- Better compliance with regulatory standards, which

are currently not met in large areas, for example in relation to water pollution from nutrients and pesticides. Investment will be required to meet incoming standards, such as the lower levels of ammonia emissions to be attained by 2030.

The costs of making the transition will vary between farms, as will the incentives to do so. Some farmers feel more regulatory pressure than others and the standards demanded by retailers are far from uniform. However, there is a case for aid to the sector as a whole over this transition, for a limited period and with the goal of higher standards being met in the EU by a given date, such as 2030. At the moment the transformation is occurring relatively slowly, many farmers are late in their careers to embrace change, there are difficulties in passing on true production costs, as rehearsed in the recent Veerman report, (which focussed relatively little on the environmental challenge). It is not surprising that many farmers shrink from planning the changes and investments required for enhancing their sustainability.

Transitional aid within the CAP would form a bridge to help farmers through this set of changes, occurring at the farm and system level, and accelerate the pace at which land management becomes more sustainable and a richer source of ecosystem services. It would remain distinct from the more permanent support for the provision of public goods above the level that the market will support in most circumstances. Habitat restoration measures fall in this category for example.

However, even with a progressive transfer of responsibility for meeting the costs of sustainable natural resource use in agriculture, there will be a continuing need for public expenditure for both maintaining and enhancing aspects of agricultural land management. In addition to the uncertainty about the scale of transfer in costs to the food chain that can be achieved, there are potential constraints in the form of competition from food products imported into the EU from less sustainable sources and limits on the speed with which adjustments to higher food prices can be absorbed in society, with a need to protect vulnerable groups from adverse impacts through mechanisms such as the minimum wage for example. Some land management requirements, including local and site-specific biodiversity requirements are likely to be much more difficult to internalise in production costs than others, such as the true price of water.

Consequently, incentivising sustainable land management will remain a role for the CAP on a more permanent basis and is likely to require expenditure on a considerable scale, although this is difficult to quantify. Some estimates point to expenditure levels that are of a similar scale to that of the present CAP (e.g. IEEP, 2013) and this does not seem improbable. To illustrate this, even an average payment of Euro 100 per hectare on all 175 million ha of agricultural land in the EU would account for about Euro 20 billion when associated costs were included. This is not a large sum compared with payment levels made on some farmland and tales no account of forestry. While this is not unreasonable in the sense that transfers to farmers are occurring on a larger scale already the trajectory should be for a reduced dependence on this scale of spending, respecting other demands on the limited EU budget.

In summary, the CAP to 2030 can be seen both as a fund to support agriculture through an era of relatively profound adjustment and also a source of support for certain types of longer term land management. No overall increase in CAP expenditure can be assumed at this stage and, for several reasons, more resources to increase the supply of Public Goods will need to be drawn from outside the public purse, including a greater role for the market and for a variety of private sources. A more active synchronization of public and private resource flows will be needed both within new sustainable supply chains and in more territorial initiatives at different levels. Rural development programmes could play a larger role in promoting such synergies, amongst other contributions they could make to an environmental transition in agriculture and land management. In point 3 of the 2016 Cork Declaration on rural Development it is suggested that "…efforts should be made to extend the reach, scope and leverage of funding by providing innovative financial instruments".

CAP measures should be carefully focussed in relation to regulations, other instruments and funding sources, including those that do not need to be applied at the EU level. Policy selection and coherence should not be constrained by the current division between two separate Pillars in the CAP. Often measures to promote sustainable land management require a commitment by farmers over a period of several years; for this and other reasons a programming approach to delivering support, as required in Pillar II, can be helpful. However, annual agreements can have a place as well, for example where there is a premium on the flexibility this provides.

The way in which EU funding for public goods within the CAP is now deployed and distributed within Europe should not be considered as a given either, especially as we look ahead. From a public goods perspective the current contrast between the provision of one hundred per cent EU funding for Pillar I measures and the co-funding required from Member States for those in Pillar II is difficult to justify. National budgetary contributions to public goods measures is a sensible principle. However, it should not be too large a contribution especially where the measures concerned deliver clear added value at the EU level. As these measures grow to represent a larger share of the overall CAP budget. In practice, the share of national funding required for new and more ambitious land management measures might be contained, assuming a declining role for direct payments and the current Pillar I model of support. If, as is likely, a re-distribution of flows between Member States and regions arises because of a stronger focus on public goods, this should not be treated as a fatal objection to the evolution of the CAP in a new direction. It would be a facet of the transition.

The future role of the CAP in the wider policy architecture proposed here is summarised in Figure 2.2 below. The

different elements are linked. The CAP is a key EU level instrument and accompanies EU objectives and regulations. However, it is not sufficient on its own. In the last two columns, covering research, advice and the interface between farmers and policy as well as a larger role for the private sector, many of the initiatives are developed at the national and more local levels. Nonetheless, they need to be operated in close co-ordination with the CAP.

Figure 2.2: ***Policies for delivering rural land management alongside the CAP***

5. The Role of Different Instruments

Under this model the role of regulations and accompanying targets would remain important but it would be more embedded in a mid to long-term strategy that signalled the expectations that European society has of land management. During the transition period public sector support for meeting rising mandatory standards, particularly in the form of investment aid and accompanying advice, would be available to some degree where circumstances warranted this, recognising the gap to be filled in lower income regions in particular and the limited resources available on some farms. However, this would become increasingly exceptional and beyond a certain date would cease unless agreed in advance as part of a new initiative.

Longer term support for agriculture under the CAP would be focussed on more targeted and tailored measures concerned with sustainable land management and the broader provision of public goods accompanied by measures to provide some protection against major oscillations in farm income. An expanded rural development strand would continue developed from the current Pillar II and including support for selected activities outside agriculture and forestry, including investment in innovation. The different policy strands that might be adopted are explored further in the next section.

However, as noted above, the CAP would not be the only source of incentives for promoting sustainable land management and there is no assurance that it will be sufficiently well funded to secure the level of effort required on farmland over the coming decades. Where private resources can be harnessed more effectively this reduces calls on the CAP budget as well as being more efficient in broader economic terms.

There are several mechanisms being deployed already for this purpose and others could be encouraged more actively; accelerated innovation and experimentation in this policy field would be valuable. At this stage the more promising policy options for harnessing more private resources seem to include:

1. *Labelling and certification schemes* for agricultural and

timber products. These cover a wide range, from purely local origin labels to widely recognised European ones, such as the official organic label, underpinned by a set of clearly specified rules and a well-developed inspection regime. Labelled products aim for an advantage in the market and often for a price premium. This is a mechanism that can be developed further to recoup the higher costs of more sustainable land management. Some of the existing labels have the potential to incorporate a new or developed environmental component, especially where they cover food quality or its origin in a particular locality or simply an assured apply chain.

However, many labels do not include an environmental dimension at all. Consequently there appears to be scope for making more use of existing certification systems (such as PDOs) to enhance sustainability without introducing new labels into the marketplace, although there is undoubtedly scope for this as well. Promoting sustainability much more actively in local origin labels could be an approach that would be worthwhile in many parts of Europe and could be assisted in a more systematic way through Rural Development Programmes, for example. With the growth of public concern about food quality, there is an opportunity to incorporate an environmental dimension into the understanding of quality and to build market acceptance of the costs involved.

2. At a more fundamental level, as discussed above, the costs of sustainable management of soil, water and other resources should be reflected over time in *the price of agricultural products*. The new challenge of building a lower carbon food chain puts an additional and urgent spotlight on this issue. If there is no willingness to absorb the costs of transition within the market, then it will fall on the public sector, including the CAP. This will slow progress given the budgetary constraints and other calls on the CAP. In the case of the renewable energy transition referred to earlier, a substantial element of the costs has been absorbed by consumers through mechanisms such as Feed In Tariffs (FITs) for renewable electricity. The public sector has invested as well both in the supply side and in some cases by subsidising energy conservation, technological change and other component of a transition strategy.

   A similar approach to sharing the costs seems appropriate for the food and agriculture sector as well, accepting that this is a process that will be spread over more than one decade and large scale adjustment requires planning and consensus building. Often it is a case of developing business models that can sell a smaller volume of lower impact products more profitably. Some actors in the food chain, including certain retailers and food manufacturers (such as Unilever) already are moving in this direction, including sustainable land management considerations in their contracts. There is scope for taking this very much further. For example in the dairy sector, contracts between retailers and farmers could build in the adjustment costs of more sustainable management of nutrients and pasture at farm level through a guaranteed price premium over a period of time. This would create a more secure framework for capital investment as well as allowing for any increases in management costs.

   While progress in this area relies primarily on the private sector, there is a role for the CAP in enabling the transition. This could occur in several ways. These might include:

   - The injection of an environmental dimension into the policy response to the report from the High Level Task Force on the food supply chain. One reason why the agricultural sector has a claim on a larger share of the value added in the food chain is that there has been under investment in farm level sustainability which has to be rectified in the coming decades. Negotiable means of addressing this market failure need to be considered alongside and as part of questions of contractualisation, transparency and Unfair Trading Practices (UTPs) that the Task Force has highlighted. Whilst the mechanisms for advancing this agenda may be challenging, signalling the full dimensions of the issue at the outset can only be helpful.
   - In framing the post 2020 CAP, it could be helpful to set out more clearly the roles envisaged for the public and private sectors in addressing the sustainability transition on farms. This could offer a vision in which the CAP provides certain incentives e.g. for first movers, pilot projects and a limited adjustment period but in the next decade the food chain could be expected to absorb the greatest share of adjustment costs. This would constitute the background and direction of travel both for mainstream agricultural support and for more targeted rural development projects funded by the CAP.

3. Positive promotion of well specified PES style (*Payments for Ecosystem Services)* schemes by actors outside the public sector e.g. for flood management and clean water supply, funded outside the CAP budget but potentially linked to rural development programmes, especially at a local level.

   A number of private and semi-private actors, such as water supply companies, have an interest in forms of land management supportive of their objectives. These include mineral water companies concerned with reducing the extent of nutrient and pesticide infiltration into groundwater that they are using as a source and commercial water suppliers that are seeking to avoid the cost of removing agricultural pollutants from their supplies. Public and private bodies responsible for reducing flood risks have an interest in shaping aspects of land use and drainage in a range of catchments under agricultural management to reduce the speed with which water moves into flood prone districts and mechanisms could be developed to develop appropriate payment systems to support this. Similarly, conservation NGOs and a variety of leisure interests are concerned to establish sustainable practices on agricultural land that they own or lease. At present the scale of such initiatives is probably rather small

but there is scope to expand it. One route for doing so would be to encourage more multi-stakeholder participation and joint planning in rural development programmes so that there is a growth in creative thinking and cooperation alongside the operation of different measures (see, for example, PEGASUS project website).

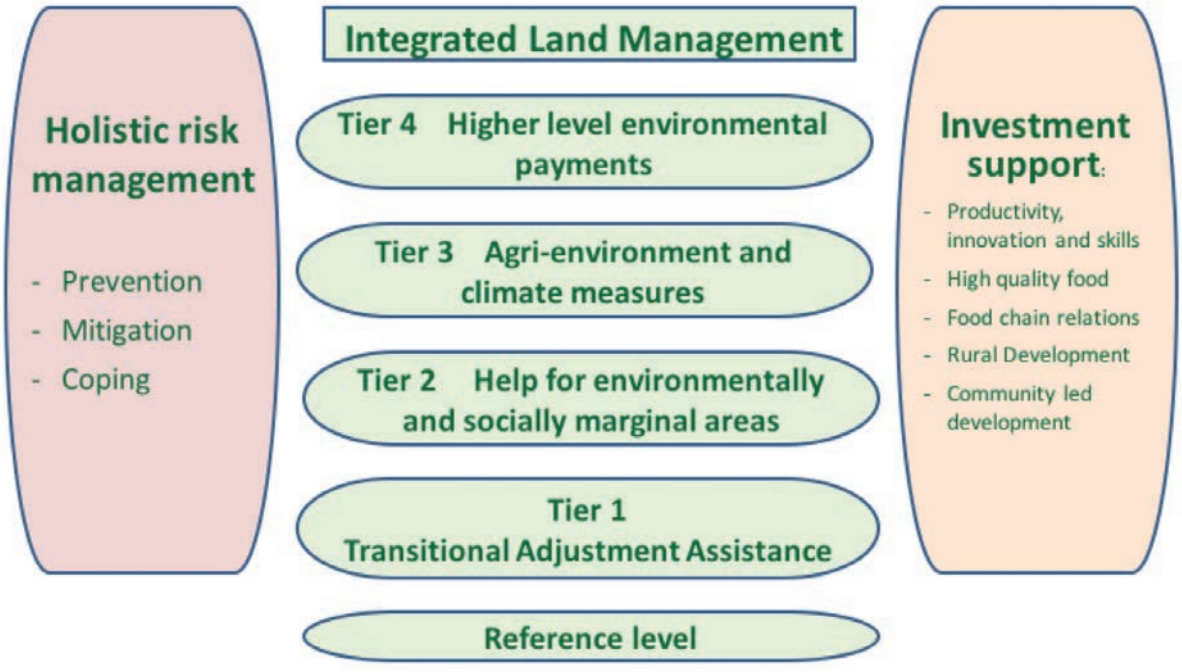
4. Offsetting schemes for biodiversity on farmland and forest that has been developed into more urban space so that developers meet more of the costs of compensation at alternative sites over the long term. There are various approaches to doing this through public or private channels and the design needs to be such that there are resources to maintain the management of the land in question over the long term. One of the most elaborated systems in Europe is the Eco-point system in Germany that has generated considerable experience and demonstrated some of the issues that need to be resolved successfully.
5. More novel financing schemes to bring outside capital into greener production chains and conservation initiatives. Several of these are under development and include projects wherebye small investors can acquire a stake in the development of an expanded organic business or a piece of woodland under conservation.

6. Implications for the CAP

There is now an opportunity to align the CAP and its measures to the approach suggested here. The acquisition of environmental public goods and sustainable land management would become increasingly the central strand of the policy, based on contracts with farmers, predominantly on a multi-annual basis. These contracts would replace the current system of payments based on entitlements, following a period of transition. A four tier model is suggested with farmers free to enter contracts on as many layers as they wish. The different tiers would be applied as a suite, to be implemented together in complementary ways, as well as separately, with a mix of administratively simple and some relatively highly targeted and more complex local measures attracting higher payments. The model would be developed at an EU level but taking account of the varying conditions in Europe and the need to consult stakeholders, especially farmers, to maximise buy in to a relatively fundamental and long term change. It would not be introduced overnight but rather through a series of progressive steps on an agreed timetable.

The key measures to be included in the four tiers are depicted in the Figure 2.3 below

Figure 2.3: Proposed structure for a modernised CAP



Source: This is an adaptation of the figure in Hart et al. (2016)

The Integrated Land Management component of the CAP is flanked by risk management tools on the one side and Investment supports on the other. The concepts and measures in the holistic risk management box on the left are summarised in Section 3.2 of the main report and more fully in Appendix 3 prepared by Mathijs. The investment supports are summarised in Section 3.1 of the main report.

The foundation for the four tiers in the integrated land management component is the "**reference level"** of required standards. Respecting these is the prerequisite for receiving any payments via this central strand of the CAP. It consists of binding requirements, some of which may change over time; for example the inclusion of measures to secure a lower carbon agricultural and land management system could be anticipated. Above this are four tiers:

- Tier 1, would comprise **Transitional Adjustment Assistance**. This would be an annual payment for which all farmers meeting current eligibility conditions and complying with the reference level would be able to apply. It would be fully funded from the CAP budget and subject to a ceiling per holding. All Member States would apply it, on a similar basis, maintaining a level playing field. It would be in place to help farmers adjust to the new policy framework and payments would taper off to zero over a period of, say, 10 to 15 years. Many of the current generation of older farmers will retire over this period and a new generation will emerge: time will be needed to develop new approaches to management where these are required and to adjust to new market conditions which may involve changing relationships and partnerships. During this period policy makers will need to support the process of developing improved market returns alongside rising standards for environmental management. This should involve closer contact between the food industry and agricultural policy makers than occurs now.

  During the transition period farmers would be supported in gaining skills, knowledge and contacts to take forward their activities in a changing environment and this would be a major focus of the support offered via rural development programmes which would be adapted to play a complementary role to the transition payments, with a more regional and local grounding. Rural development programmes wold seek to support the building of networks and co-operative structures alongside the extensive physical investments that will continue to be required. Tools such as nutrient and carbon management plans are likely to be more widely utilised and farmers will need support in using these in effective ways. Cross-compliance in a simplified form might remain in place initially but be phased out as the payments declined in value. This adjustment payment would be the successor to the current direct payments and the reduced budget it would require would allow payments in the three higher, long term, tiers to be adjusted upward over time as well as contributing to savings in the CAP budget as required.

- Tier 2 would comprise payments for **environmentally or socially important marginal areas of farmland**. These would be payable per eligible hectare and focus on areas where the long term continuation of agricultural land management is an environmental and social priority, clearly delineated and mapped. Most but not all of these would be in the current ANC areas, predominantly uplands, mountains and remote areas. However there are also likely to be areas in the lowlands, particularly those where traditional grazing systems are no longer economically viable even in potentially improved market conditions but where the maintenance of pastoral landscapes and associated socio-cultural life is a priority, agreed against certain criteria. (ANC criteria would be the obvious starting point). These land uses, farmed landscapes and lifestyles would not be frozen in time but adapting in the light of evolving social and economic conditions. Payments would be subject to simple environmental conditions, at a minimum requiring the maintenance of certain land uses and features but probably also referring to regional and territorial plans, or other frameworks providing guidance on priorities. Given the need to increase current levels of carbon sequestration on farmland in the coming decades there is likely to be a growth in woodland, agro-forestry and other diverse landscapes in these more marginal areas and this would be accommodated within the payment regime. This regime would be based on the principle of offsetting a proportion of the costs of maintaining the management of these priority areas, with payments either flat rate or in a few bands, depending on the diversity of conditions within the country concerned. It would be non-competitive for participants, like the current ANC payments and would be relatively simple for farmers and public administrations to apply once in place. Ceilings on payment rates and total expenditure on the measure would be agreed at EU level. Co-funding would apply and Member States would not have to operate this tier if they chose not to.

- Tier 3 would consist of **baseline agri-environment and climate measures**. It would be designed to be a targeted but relatively simple support regime for systems of farmland management that demonstrably delivered environmental outcomes at a certain level without too much stipulation of further rules or complex monitoring and compliance systems. Member States might be free to vary support levels within agreed bands but would need to report fully to the Commission and to programme payments within a clear set of objectives and timescales. Stipulations would be based on the objectives set for the broad farm management regimes in question and might include meeting targets for reducing water pollutant loads and GHG emissions for example. Payments would be annual and determined by 5 to 7 year contracts and would be backed by support in the form of information, advice, training and perhaps a review service. There would be simple linkages to investment aid and supply chain initiatives that probably would continue to be rooted in rural development pro-

grammes but not separated into another Pillar. Market linkages would be much more prominent than in the current Greening system for example. There would be eligibility rules that would exclude some producers reluctant to accept the environmental conditions but the aim would be to enrol the majority of farmers in each category. These categories would be Pan European to aid the transparency and simplicity of the system. They would relate to productive systems but also reflecting their potential contribution to environmental public goods. For example they might include organics, agro-forestry, integrated arable systems, dairy farms, permanent crop systems, conventional and well defined HNV livestock systems, fruit and horticulture farms. Member States would be obliged to offer the programmes in this tier, which would be co-funded.

- The top tier 4 would be **higher level environmental payments**. These are more highly targeted measures, mainly at a more localized and catchment based level and focused principally on results, or a mixture of results and good practice rather than routine management. The aim would be to reach outcomes beyond those required in Tier 3 and much more attuned to local conditions and priorities, including those at the individual farm level. Enhancement, restoration and step changes in management (for example in pest control) would be amongst the principal themes. Specific biodiversity objectives that are difficult to pursue in simpler schemes and are more difficult to incorporate in market based approaches would feature quite strongly in this tier. More generous payment levels would be possible in this tier and more varied delivery systems and institutions would be involved potentially including farmer collectives, national parks etc. Territorial initiatives would be facilitated and there would be close links to measures now in the rural development sphere of the CAP. Co-financing would apply and the share of the CAP budget devoted to this tier would rise sharply over time, potentially becoming the largest element.
- **Enhanced training and support** would apply at all levels and Member States would need to commit adequate resources for this to be a reality.

The intention here is not to specify a blueprint but to sketch out how an alternative model might look, the issues that could arise and the how a new model might relate to the present architecture of the CAP. Elements of gradual transition and more decisive change both arise and the importance of securing an agreed direction of travel and firm transition dates must be emphasised.

The model is constructed on measures rather than pillars and it does not suggest that the division of the CAP into two pillars would be helpful for pursuing sustainable land management and it has not been assumed that they will continue. The more extensive application of programming has been assumed, especially for the two upper tiers discussed here which would, in the long term, account for the greatest share of expenditure on the Public Goods side of the CAP. This is because of the need to work to clearer objectives over sustained periods, to tie payments more closely to results and to monitor appropriately and to ensure that payments of different kinds mesh together effectively. However some simple annual measures may not need to be included in programming. Precisely how far programming is extended and administration kept to the minimum required will need further examination.

7. Conclusions

The CAP could make a decisive contribution to strengthening the long term sustainability of agriculture in Europe. To do so it needs to be focussed more effectively on supporting land uses that produce a wide range of services that include food production, biodiversity conservation and carbon sequestration.

The energy and impetus for new approaches in agriculture and food systems come from several directions. There is growing evidence of stress on natural resources and the need to build a low carbon food supply chain that is also richer in biodiversity. Both the pathway for regulation and the attitudes of consumers are influenced by these fundamental drivers. They are already influencing the changing market for food. In parallel there has been a substantive policy response with the allocation of a sizeable share of the CAP budget to Greening. Learning from this, there is now the opportunity to launch a transition strategy for European agriculture based on clear strategic goals and a willingness to accept that public funding can and should play a different role in supporting the future development of agriculture and the natural resources on which it depends.

I am indebted to Tim Benton, Allan Buckwell and Sophie Troyer and a number of others for their invaluable comments on this chapter. All errors of fact and judgement are of course mine.

References

Allen, B., Hart, K., Radley, G., *et al.*, 2014. Biodiversity protection through results based remuneration of ecological achievement. Report Prepared for the European Commission, DG Environment, Contract No ENV.B.2/ETU/2013/0046, Institute for European Environmental Policy, London.

Baldock, D., 2015. *Twisted together: European agriculture, environment and the Common Agricultural Policy.* In: McMahon, J. A. and Cardwell, M. N. ed. *Research Handbook on EU Agriculture Law*. Edward Elgar, pp. 125-149.

Benton, T.G., and Thompson, C., 2016. Food System Resilience. Food Science and Technology, 30/08/2016 (http://www.fstjournal.org/features/30-3/food-system-resilience).

Benton, T., *et al.*, 2017. *Environmental tipping points and food system dynamics*: Main Report 2017. The Global Food Security programme, UK.

COM(2016)482 - ANNEXES to the Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 for a resilient Energy Union and to meet commitments under the Paris Agreement and amending Regulation No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change.

Ecorys, Wageningen Economic Research and IEEP (Forthcoming), *Mapping and analysis of the implementation of the CAP, Final Report for DG Agriculture and Rural Development*.

EPSC Strategic Notes, Issue 18, 20th July 2016. *Sustainability Now!*, European Commission, Brussels.

Erjavec, E., Lovec, M., and Erjavec, K., 2015. *From 'Greening' to 'Greenwash': the drivers and discourses of CAP2020 reform*, in Swinnen J (ed) (2015), *The Political Economy of the 2014-2020 Common Agricultural Policy, An Imperfect Storm*, Roman & Littlefield International Ltd, London and CEPS, Brussels.

European Commission, 2010. *The CAP towards 2020: meeting the food natural resource and territorial challenges of the future*. COM(2010)672 Final, Brussels.

European Commission, 2011a. *CAP towards 2020: Impact Assessment, Annex 2: Greening the CAP.* Commission Staff Working Document, Brussels.

European Commission, 2011b. *COM(2011)112 final - Communication from the Commission to the European Parliament, the council, the European Economic and Social Committee and the Committee of the Regions: A Roadmap for moving to a competitive low carbon economy in 2050.* COM(2011)112 final, Brussels.

European Commission, 2016. *Review of greening after one year.* Staff Working Document, SWD(2016) 218 final, 22/6/2016, European Commission, Brussels.

European Court of Auditors, 2011. *Is Agri-environment support well designed and managed?* Special Report No 7/2011. European Court of Auditors, Luxembourg.

Frank, S. *et al.*, 2015. The dynamic soil organic cabon mitigation potential of European cropland. Global Environmental Change, 2015; 35:269.

German, R. et al., 2016. *Relationships among multiple aspects of agriculture's environmental impact and productivity: a meta-analysis to guide sustainable agriculture.* Biological Reviews doi: 10.1111/brv.12251.

Hart, K., 2015. *Green direct payments: implementation choices of nine Member States and their environmental implications*, IEEP, London.

Hart K., Baldock D., Buckwell A., 2016. *Learning the lessons of the Greening of the CAP.* A report for the UK Land Use Policy Group in collaboration with the European Nature Conservation Agencies Network, Institute for European Environmental Policy, London.

IEEP, 2013. *Land as an Environmental Resource*. A report for the European Commission. IEEP. London.

Matthews, A., 2016. *Is agriculture off the hook in the EU's 2030 climate policy?*. http://www.CAPreform.eu.

OECD, 2007. *Effective Targetting of Agricultural Policies: Best Practices for Policy Design and Implementation*, OECD publishing, Paris.

OECD, 2016. *Land Use and Ecosystem Services in Agriculture*. Paper to the Joint Working Party on Agriculture and the Environment OECD, Paris.

Pe'er, G. et al., 2014. *EU agricultural reform fails on biodiversity*. Science 344: 1090-1092.

Russi, D., Margue, H., Oppermann, R., Keenleyside, C. 2016. *Result-based agri-environment measures: Market-based instruments,incentives or rewards? The case of Baden-Württemberg*. Land Use Policy 54, 69–77.

Šucha, V., 2016. *Impact of climate change mitigation on EU agriculture,* Presentation for The European Commission's science and knowledge service, JRC at the 2016 CAP Outlook Conference, Brussels

Underwood, E. and Tucker, G., 2016. *Ecological Focus Area choices and their potential impacts on biodiversity.* Report for Birdlife International and the European Environmental Bureau, IEEP, London.

UN, 2015. *Transforming our world: the 2030 Agenda for Sustainable Development,* Available online at: https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf

Wheeler, N., Francis, A. and George, A., 2016. *Smarter flood risk management in England: investing in resilient catchments*. Green Alliance, London.

APPENDIX 3

Managing volatility and risk in the CAP

Erik Mathijs

1. Introduction

The history of the EU's Common Agricultural Policy is one of gradual reforms. One of these reforms entails the gradual decline of income support with the intention, *inter alia*, to shift resources to risk management schemes (Cordier, 2014). The increased market orientation of European agriculture since the mid-1990s in general, and recently the dairy sector in particular, has exposed EU farmers to increased risk and hence increased demands for the CAP more overtly to tackle volatility and risk. An Agricultural Markets Task Force set up in 2016 to examine and improve the position of farmers in supply chains made several recommendations including: to increase market transparency, to make the risk management toolkit more attractive and coherent, using simplified loss calculations and reimbursement options and even to shift resources from untargeted direct payments to "an approach which channels CAP money into a genuine and predictable safety-net for farmers to apply in times of market imbalance" (Agricultural Markets Task Force, 2016, p. 51). More specifically,

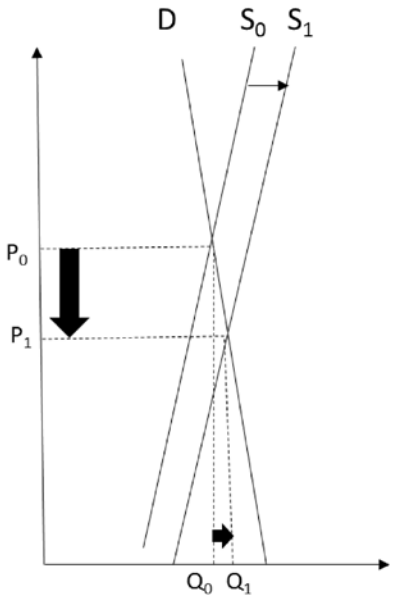
> "A resource shift should aim at introducing an integrated risk management policy at EU level that is complementary to existing Member States' strategies. We mean by this not only a loose toolbox but a structured and coherent framework of complementary private and public risk management measures. Such a framework could provide an adequate response to the variety of risks producers face. At the public level, simplified reimbursement options such as indexbased loss-thresholds, adapted as need be to regional circumstances, or other technically feasible mechanisms should make it possible to steer clear of large and bureaucratic control regimes." (Agricultural Markets Task Force, 2016, p. 51)

The aim of this paper is to take up this challenge and to suggest policy recommendations to manage volatility and risk in coherent and holistic way. The paper is structured as follows. In section 2, we discuss the nature of risk in agriculture. What types of risk exist in agriculture? What causes these risks? How are farmers affected by theses risks? Then we discuss how farmers and governments can manage the various types of risk in section 3. Section 4 summarises how the US and the EU currently deal with volatility and risk. Section 5 concludes by formulating the challenges and principles of a coherent agricultural Risk Management Policy for the EU.

2. The nature, causes and consequences of risks in agriculture

Agriculture is a particularly risky economic activity due to the biological nature of its prodution processes and its exposure to the weather. Two economic phenomena amplify this exposure. First, agriculture consists of many, relatively small firms that individually lack the capacity to deal with risk and other challenges. Second, agriculture is characterised by supply and demand functions that are highly price inelastic, such that relatively small changes in supply and/or demand generates large price effects, as demonstrated in Figure 3.1.

Figure 3.1: ***Price and volume effects resulting from a supply curve shift with high price inelasticity of both demand and supply curves***



Source: own elaboration

Both demand (D) for and supply (S) of agricultural commodities are highly price inelastic, which means that for a relatively small shift of the supply curve from S_0 to S_1, the resulting volume increase is relatively small (Q_1-Q_0), but the resulting price decrease is relatively large (from P_0 to P_1). Figure 3.1 also demonstrates that price and volume effects move in opposite direction, that is, prices are low when harvests are good and vice-versa—also called the good/bad paradox in agriculture.

The OECD classification of risk shown in Table 3.1 classifies risks in four categories that relate to production, market, finance and institutions and to three scales, micro, meso and macro.

The micro-scale is the farm. Risks that are farm-specific are idiosyncratic, which means that they are not correlated with risks on other farms and that in principle they can be insured. The meso-level applies to a group of farms that are jointly affected by the same risk, making risk covariant. At the macro-level, risks are systemic, as they influence whole sectors and regions, making them difficult or even impossible for commercial insurance to deal with.

Production risk is a result of the biological nature of agriculture and its dependence on the weather. These uncertainties may affect individual farmers, groups of farmers or even entire regions in the event of large-scale disasters. Examples of other production risks include machinery breakdown (asset risks), personal hazards and contagious diseases. Production risk can be translated into market risk in the form of large price oscillations due to the high price inelasticities of both demand and supply curves (see Figure 3.1). In addition, in an open economy, there is the risk of importing price volatility from world markets. Financial risks can be farm-specific, such as a change in non-farm income, or systemic, such as a change in interest rate on loans. Institutional and legal risks generally relate to changes in policies at different levels.

Table 3.1: ***Illustration of sources of risk in agriculture***

	Micro (idiosyncratic) risk affecting an individual or household	**Meso (covariant) risk affecting groups of households or communities**	**Macro (systemic) risks affecting regions or nations**
Production	Hail, frost, non-contagious diseases, personal hazards, asset risks	Rainfall, landslides, pollution	Floods, droughts, pests, contagious diseases, technology
Market		Changes in land prices, new requirements from food industry, health scares	Changes in input and/or output prices due to shocks (e.g., embargos), new markets, endogenous variability, exchange rates
Financial	Changes in income from non-farm sources		Changes in interest rates or value of financial assets, access to credit
Institutional/legal	Liability risk	Changes in local policy or regulations	Changes in regional or national policy and regulations, environmental law, agricultural payments

Source: Based on OECD (2009)

A particular form of volatility is the cyclical, endogenous price volatility known as the 'pork cycle'. The most popular explanation for its occurrence is based on Ezekiel's cobweb theorem (Ezekiel, 1938), which posits that farmers decide on how much to supply in the future based on current prices. The occurrence of such cycles has been studied for decades. A recent confirmation is offered by McCullough *et al.* (2012) and Nicholson and Stephenson (2015) for the US and by Bergmann *et al.* (2015) for the EU. Bergmann et al. (2015) also showed the convergence of these three-year cycles between the US and the EU after the 2003 CAP reform. McCullough *et al.* (2012) suggest that US pork and cattle cycles have been dampened due to improved technology, information exchange and vertical coordination. Recently, Mahé and Bureau (2016) have illustrated how over-optimism caused by high milk prices in 2013-14 led to increased investments by dairy farmers and have thus contributed, along with other factors, to higher milk supply and lower milk prices in 2015-16.

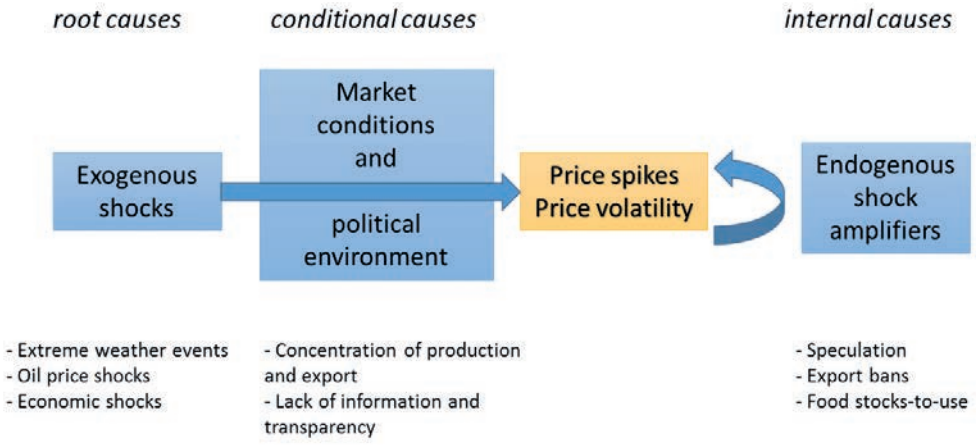
An alternative explanation for cycles can be found in the supply chain management literature and is known as the 'bullwhip' effect. Due to the misperception of customer demand, supply chain actors make decisions resulting in orders, production and inventories that are maladapted to demand and that result in price and quantity oscillations. These oscillations are larger, the farther away upstream from the final consumer, as the distortion of demand information increases upstream (Lee *et al.*, 1997). This provides an alternative explanation for why volatility is higher at the farmer level compared to the retail level, as usually reference is made to retailer market power resulting in asymmetric price transmission along the supply chain.

Tadesse *et al.* (2004) have developed a stylised framework of the causes of global food price volatility and spikes, in which they make the distinction between root causes, i.e., exogenous shocks such as extreme weather events, conditional causes related to market conditions (e.g., power concentration) and the political environment (e.g., lack of transparency) and endogenous shock amplifiers (e.g., speculation, discretionary trade policies, stock management) (see Figure 3.2).

To what extent does the exposure to all these risks—exogenous and endogenous—lead to adverse outcomes in general, taking into account differences between farm-level and sector-level effects, but also the tendency that different components of income (prices, yields, costs) may counteract each other and thus reduce exposure? Kimura and Le Thi (2011) have carried out a quantitative risk assessment based on individual farm data in Australia, Canada, Estonia, Germany, Italy, the Netherlands, New Zealand, Spain and the UK for a period of 5 to 12 years. OECD (2011) draws the following conclusions:

- In aggregate, market-based price variability is higher than weather-induced production variability (which confirms Figure 3.1). However, inidividual yield variability is larger than aggregate yield variability, while price variability is equal at individual and aggregate level.
- The majority of farms face negative price-yield correlations, which means that price changes and yield changes are correlated and mitigate overall risk.
- Price risk tends to be more systemic than yield risk, but sometimes yield variations can be highly systemic.
- Both output diversification and covariance between output and costs reduce farm income risk.

Figure 3.2: ***Stylised framework of the causes of global food price volatility and spikes***



Source: based on Tadasse et al., 2014

Conclusive evidence about the evolution of farm income volatility in the EU is lacking. Vrolijk *et al.* (2009) demonstrated that large differences in income volatility exist between countries, sectors and farm types. While many sectors have always operated in open markets, key commodity sectors (cereals, sugar, beef, dairy, wine, olives) have long been shielded from external influences through the mechanism of guaranteed minimum prices and in some cases production quotas. However, since 1992, subsequent CAP reforms have also exposed these protected sectors to the fluctuations of the market which has resulted in increased price volatility in these sectors.

3. Risk management approaches

In general, the short-run vulnerability of a farm to a hazard is mediated by the farm's exposure to the hazard, its sensitivity to the exposure and its strategies to cope with the impacts. In the long-run, also the farm's adaptive capacity must be taken into account, as farmers can take actions to change the sensitivity of their system. Hazards can be sudden shocks or enduring stresses, while exposure depends on the magnitude, duration and frequency of the hazard. This hazard-to-impact pathway is depicted in a stylised way in Figure 3.3. Risk management entails three aspects: the type of intervention, the institutional level at which the intervention is implemented and the size of risk involved, which determines at what institutional level the risk should be implemented.

A first aspect to risk management is the **type of intervention**. The best way to manage risk is to prevent being exposed to a hazard. However, once exposed to a hazard, farmers may then try to mitigate or decrease their sensitivity to that exposure either *ex ante* or *ex post*. For instance, a farmer may buy crop insurance *ex ante* or try to obtain a compensation from government *ex post*. When farmers endure the full exposure they will have to cope with the impact on their income. These three basic approaches (prevention, mitigating and coping – Holzmann and Jorgensen, 2000) are shown in the hazard-to-impact pathway in Figure 3.3.

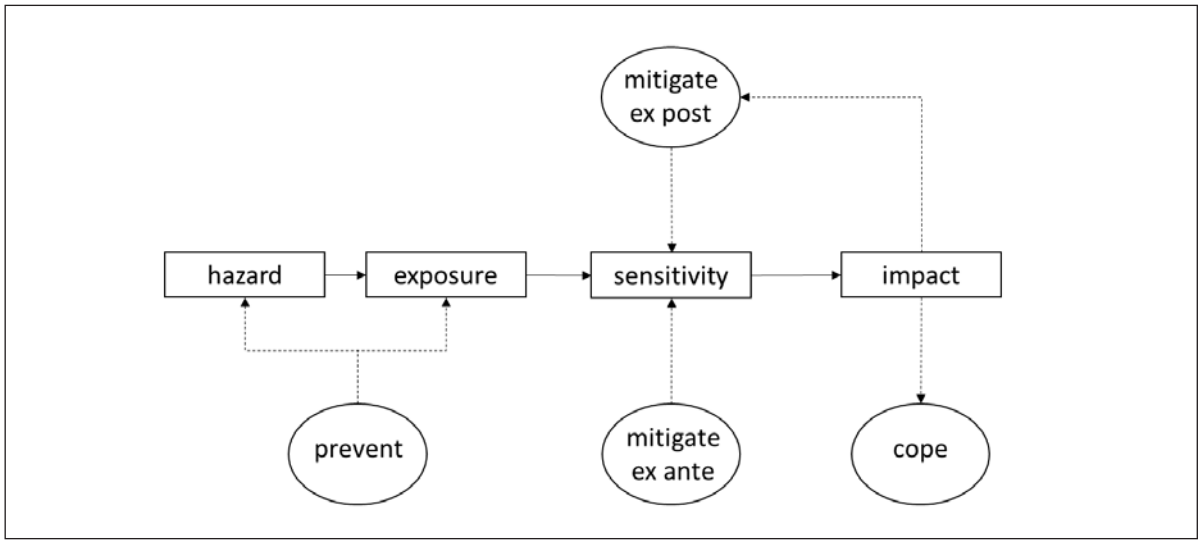
A second aspect to risk management is the **institutional level** at which the intervention is carried out. Table 3.2 provides a list of risk management instruments and strategies, clustered according to the three main approaches of prevention, mitigation and coping, and classified according to the institutional level at which these approaches are implemented: farm/household/community, market or government. Risk reduction at farm level can best be done by making appropriate technological choices. For example, to reduce yield loss risk due to drought, farmers may choose drought-resilient crop varieties or invest in irrigation (Tangermann, 2011).

A third aspect to risk management relates to the **size of risk** addressed. Typically, and following OECD (2011), a layered approach is taken that distringuishes between:

- Normal risks occur frequently, but with relatively little damage
- Marketable risks have intermediate levels of frequency and damage
- Catastrophic risks have low frequency but high damage

A layered approach to agricultural risk management involves addressing different levels of risk (layers) by different actors with different instruments (Bardaji *et al.*, 2016).

Figure 3.3: ***Risk management strategies in a hazard-to-impact pathway***



Source: own elaboration based on Brunori et al., 2016

Table 3.2: ***Selected risk management instruments and strategies***

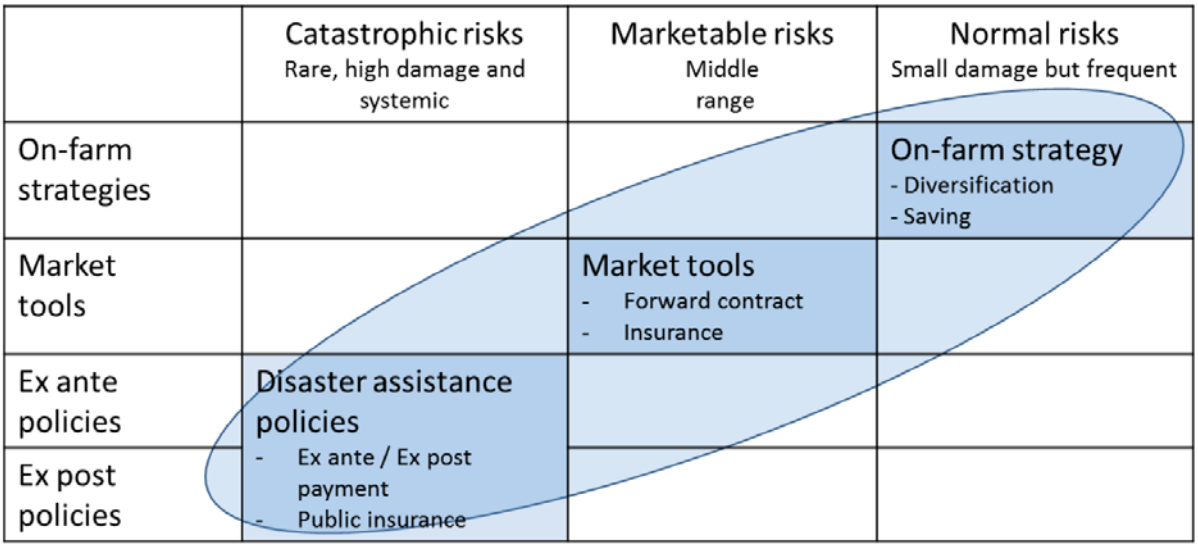
	Farm/household / community	Market	Government
Risk reduction	Technological choice	raining on risk management	Macroeconomic policies Disaster prevention Animal disease prevention
Risk mitigation	Output diversification Crop sharing	Futures, options Insurance Vertical coordination Spread sales Diversify investment Off-farm work	Tax system smoothing Counter-cyclical payments Border measures
Risk coping	Borrow from family or neighbours	Selling assets Borrow from banks Off-farm income	Disaster relief Social assistance Agricultural support

Source: OECD (2009)

Combining the size of risk with the institutional level at which risk should be addressed creates a canvas of risk management approaches as depicted in Figure 3.4. OECD (2011) defines a 'good governance diagonal' on this canvas as the most efficient set of responses: normal risks should be managed by farmers mainly using on-farm strategies, middle range risks should be addressed using market tools such as insurance or futures markets and catastrophic risks should be dealt with by government, as they cannot be dealt with by farmers or market responses.

The OECD approach especially on market level intervention emphasises the use of forward contracting (mainly through futures markets) and insurance mechanisms, while it gives less emphasis to horizontal and vertical co-ordination mechanisms. Horizontal mechanisms refer to actions taken by producer organisations, while vertical mechanisms refer to actions taken in collaboration with supply chain actors, such as food processing companies or retailers.

Figure 3.4: ***Optimal pattern of risk management strategies and policies***



Source: OECD, 2011

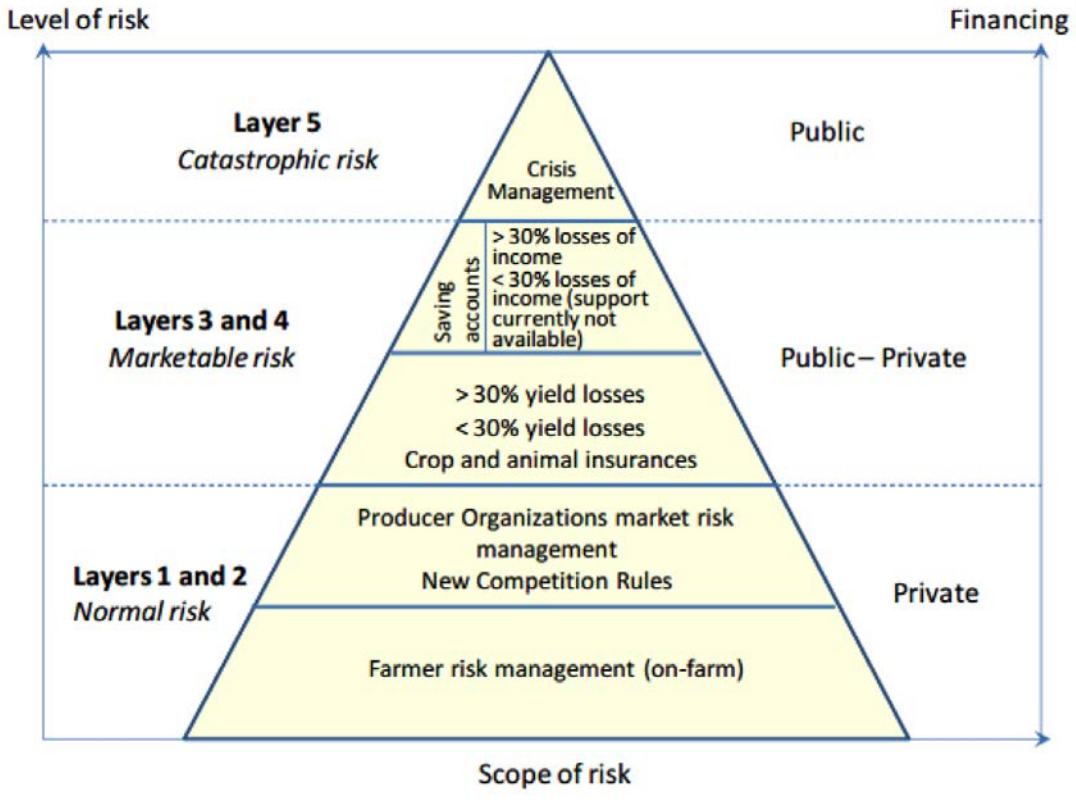
Bardaji *et al*. (2016) have refined and adapted the OECD approach by explicitly considering the role of producer organisations in addressing 'normal risk' (see Figure 3.5). They subdivide the first layer of normal risks into a part that should be addressed by on-farm strategies and a part that can better be addressed by collective action. But they also consider forward contracting—either by individual farmers through hedging or collectively through supply management—in the realm of normal risk rather than marketable risk. They further subdivide the marketable risk layer into a section addressing yield risk and one addressing income risk. They argue that both layers should be supported by government, contrary to the OECD good governance approach that suggests governments should refrain from intervening into the marketable risk space. A key question remains whether a situation of extreme income losses should be classified as catastrophic risk (OECD, 2011) or marketable risk (Bardaji *et al.*, 2016). Bardaji *et al*. (2016) note though that the frontiers between the layers should be considered in a dynamic and flexible way.

It is important to note that in these approaches on-farm strategies mainly refer to the diversification of income sources, that is, a diversified portfolio of farm enterprises and perhaps non-agricultural income activities too. In addition, farmers may store produce to wait for better prices or transform produce into more processed form, such as cheese and juice. However, where there are significant scale economies in such storage or marketing activities, they will tend to be more efficiently performed at a collective level. In several sectors, farmers have established cooperatives to forward integrate into processing and marketing (e.g., dairy, fruit & vegetables). Risk can thus be managed by diversifying into processed products. Moreover, price inelasticity of demand and supply tends to decrease with product differentiation. Such strategies are particularly important for highly specialised farmers (e.g., dairy farmers), as it is often less easy to diversify their product portfolio on farm.

A further key issue is setting the boundary between marketable and catastrophic risk. On the one hand, setting the boundary too low, will result in deadweight losses of supporting farmers beyond what is needed to deal with risk. On the other hand, *ex ante* measures in the form of insurance and mutual funds may reduce the need for crisis management *ex post*, so it may be efficient to stimulate insurance-based schemes.

It may be preferable to talk about manageable risk instead of marketable risk as the boundary between the normal and marketable risk layers is quite blurred. The use of market instruments involves transactions and thus

Figure 3.5: ***Layering approach to agricultural risk management***



Source: Bardaji et al., 2016

transaction costs, that is, the search, negotiation and monitoring costs related to each transaction. Such costs tend to be low for homogenous, storable commodities, but increase with perishable products and with differentiated products. In these cases, farmers may choose to opt for governance mechanisms other than the market, such as vertical integration ('hierarchy') or contracts ('hybrid'). These mechanisms can be carried out in a bottom-up way, for example through forward integration, or a top-down way through backward integration (Aseffa *et al.*, 2016; Bonjean and Mathijs, 2016).

4. Current risk management approaches in the us and the EU

4.1. Risk management in the US

The 2014 Farm Bill dedicates two of its twelve titles to risk management in the form of commodity programmes for a selected list of main crops and animals and crop insurance for a more comprehensive list of crops and animals.

Commodity programmes moved away from direct payments towards two main instruments: a revenue program called Agricultural Risk Coverage (ARC) and a fixed price program called Price Loss Coverage (PLC). ARC may be based on individual or county-based revenue coverage. Payments are provided when revenues fall below 86% of the benchmark revenue. PLC is a form of counter-cyclical programme that pays farmers when market prices fall below a fixed reference price (Cordier, 2014). Farmers with so-called 'base acres' had to choose in 2014 to enroll in ARC or PLC. Programmes are only paid on base acres and farmers have to comply with some conservation targets. 75% of base acres have been enrolled in ARC and 22% in PLC (Johansson, 2016). For dairy farmers, there is a Dairy Margin Protection Plan (DMPP) based on milk prices and feed prices.

Crop insurance programmes involve subsidies to the premiums farmers pay. Each year, farmers can choose the acres of which crop to cover, whether to insure yield (AYP) or revenue (ARP) and the amount of coverage. Reference yields and revenues are determined at county level. Also for these programmes farmers may have to comply to conservation targets. Most farmers have enrolled into revenue protection (70.3%) rather than yield protection (21.0%) (Johansson, 2016).

4.2. Risk management in the EU

In the EU's CAP 2014-2020, the overtly named risk management policy is located in the rural development pillar (Regulation 1305/2013). However, this interacts with the much larger direct payments and the market measures defined in the first pillar. It also sits alongside often considerable state aids granted by member states in times of disasters. Locating risk management tools in the rural development pillar means that they are co-financed by member states but also optional. Instruments include (1) crop, animal and plant insurance (article 37), (2) mutual funds for adverse climatic events, outbreaks of animal or plant disease or environmental incidents (article 38) and (3) an income stabilisation tool in the form of financial contribution to mutual funds (article 39) (Cordier, 2014). The Income Stabilisation Tool (IST) is triggered when farm income is 30% lower than a past three-year average. Payment is maximum 65% of eligible costs and limited to 70% of the income loss. Farm income is defined as revenues including subsidies minus input costs.

Member states are allowed to grant state aid on the basis of specific rules set out in the Treaty of the Function of the European Union and which are elaborated further in the Commission Guidelines for State aid in the agricultural and forestry sectors and in rural areas for the period 2014 to 2020. State aid payments correspond to payments made for catastrophic risks, but can also be used to subsidise insurance premia. During the period 2007-2013, a total of 13.5 billion euro of state aid expenditures were granted for crisis management, including natural disasters (2.3 billion euro), adverse weather events (3.2 billion euro), animal and plant diseases (4.3 billion euro) and insurance premiums (3.8 billion euro). Most of these payments are compensations for *ex post* crisis management (9.7 billion euro), while 3.8 billion euro was used for funding *ex ante* insurance funds. In 2014, a total of 1.2 billion euro was spend on state aid, which means a continuation of member states to use this instrument, but decreasingly so (Bardaji *et al.*, 2016).

Crisis prevention and management (CPM) measures can also be granted to producer organisations under the CAP Common Market Organisation in the fruit and vegetables and wine sector. During the 2007-2013 period, CPM measures included market withdrawals, green harvesting or non-harvesting of fruit and vegetables, promotion and communication, training measures, harvest insurance and support for administrative costs of setting up mutual funds. Total expenditure in this period was very low, about 36 million euro for fruit and vegetables and 137 million euro for wine.

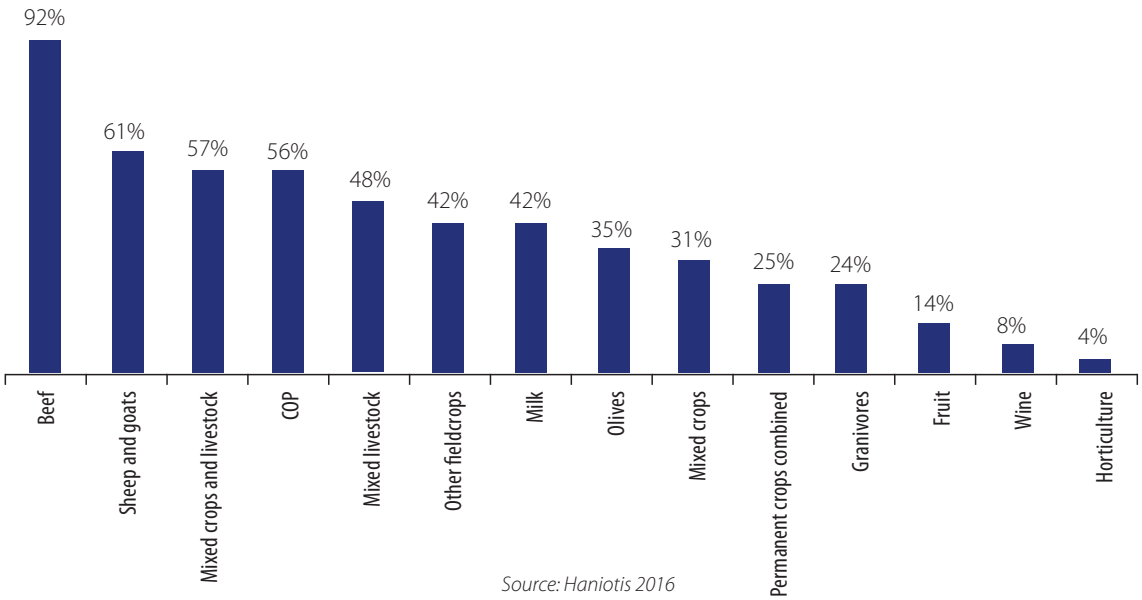
Table 3.3 lists the programmed expenditure for the 2014-2020 period on the risk management instruments. Twelve Member States have programmed at least one such instrument, 10 Member States focus on insurance premiums, 3 on mutual funds and 3 on the IST. Most of the budget is allocated to insurance premiums. Participation in these schemes greatly depends on availability of alternatives, such as direct payments and contracts with suppliers. To illustrate this, Figure 3.6 (from Haniotis, 2016) gives an overview of the dependence of different sectors on direct payments.

Table 3.3: ***Programmed expenditure on risk management measures in the EU, 2014-2020***

	Insurance premiums	Mutual funds	IST	EU contribution (%)
Belgium: Flanders	5.1	0	0	63
Spain				
Castilla y Leon	0	0	14	53
France	540.7	60	0	97.85
Croatia	57	0	0	85
Italy	1396.8	97	97	45
Latvia	10	0	0	68
Lithuania	17	0	0	85
Hungary	76.3	0	19	82
Malta	2.5	0	0	75
The Netherlands	54	0	0	27
Portugal	53.2	0	0	82
Romania	0	200	0	85
TOTAL	2212.6	357	130	63

Source: Bardaji et al. 2016

Figure 3.6: ***Share of farm income based on subsidies (excluding on investments)***



Source: Haniotis 2016

Even from this brief survey it can be seen that US and EU policies on risk management are very different. This is summarised in Table 3.4. US policy draws mainly on insurance and in a second instance on safety nets through counter-cyclical payments, while EU policy is still largely based on so-called income support in the form of direct payments. Risk management tools make up only 1% of the CAP budget. Both policies treats different sectors differently, as a result of their path dependence with eligibility for payments being based on historical claims, but the effect is stronger in the EU, due to the high importance of income support.

Table 3.4: ***Comparison between US Farm Bill and the EU CAP***

	US Farm Bill	EU CAP
Estimated budget weight of instruments:		
Income support	0 %	72 %
Insurance	47 %	1 %
Safety nets	23 %	5 %
Targeted sectors	All	Instrument dependent
Participation	Historical claims (base acres)	Historical claims for income support, initially
Conservation compliance	Yes	Yes for income support No for other instruments

Source: Own elaboration and Cordier (2014). Budget weight as % of farmer programmes in the US Farm Bill and % of CAP budget respectively.

5. Recommendations for a more coherent risk management policy

5.1. Challenges and principles

The main aim of an EU Risk Management Policy (RMP) is to enable farmers to deal with risk in order to stabilise their income. However, the design of such a policy faces problems of measurability, incentives, the need to cope with increasing or decreasing trends and the interaction with existing subsidies (Meuwissen *et al*., 2011, Tangermann, 2011) or market organisation schemes. Hence, based on these problems, we have identified five challenges that an RMP needs to address.

Challenge 1. An RMP has to take into account the **heterogeneity** of EU farmers in terms of size, cost structure and strategies. Figure 3.7 has highlighted the difference in how sectors depend on subsidies, with beef sector at the one extreme (92% of farm income from subsidies) and horticulture on the other (4% of farm income from subsidies). There is also large variety across sectors and regions in the use of contracts and other market arrangements. This heterogeneity will make it difficult to design schemes at the EU level only and will require a sector-specific and a territorial approach, as risks and strategies to deal with risk vary between sectors, but also between regions. At the same time, moving RM tools from EU-level to Member State level may undermine the single market (Mahé and Bureau, 2016).

Challenge 2. An RMP has to take into account the problem of **asymmetric information** between the insurer (government) and the insured (farmers) on the true amount of risk the insured is facing. This may lead insured farmers to change their behaviour by taking more risk (moral hazard) or it may lead to a situation in which those entering an insurance programme have a higher risk profile than those who are not. Hence, insurance schemes should only address clearly measurable risks and measurable losses (Meuwissen *et al*., 2011; Mahé and Bureau, 2016). Mahé and Bureau (2016) suggest that farmers tend to overinvest during price booms, leading to amplified price busts due to overcapacity. They illustrate this by the peak amount of investment made by specialised dairy farmers in 2012 preceding the 2015 dairy market crisis.

Challenge 3. An RMP should not **crowd out** private risk management strategies based on management measures or market-based instruments. In other words, RMP measures should be complementary to existing instruments (Tangermann, 2011). A particular issue relates to the implementation of *ex-post* safety nets, that reduce the incentive to take a pro-active approach *ex ante*. This can be tackled by limiting *ex-post* safety nets to truly exceptional incidents (Meuwissen *et al*., 2011).

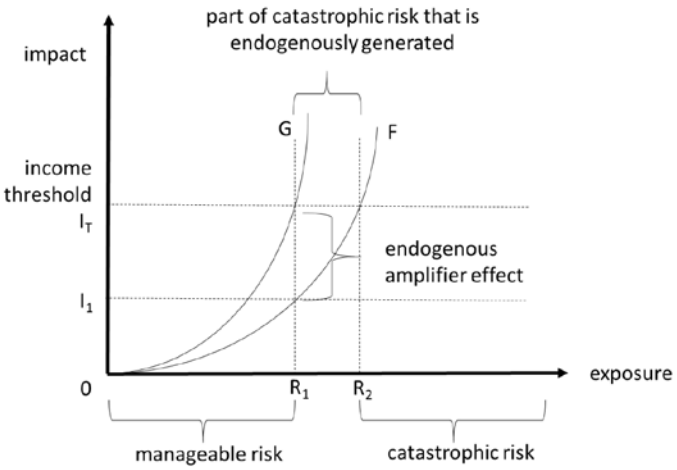
Challenge 4. An RMP should take into account the **interaction with existing policies.** Also agricultural support policies may crowd out farmers' strategies, but this depends on the type of policy and the type of risk (OECD, 2011). In the context of the EU, RMP measures are likely to be crowded out by the single farm payment scheme and the CMO measures in Pillar I of the CAP. The existence of such schemes may explain the current low take-up of

RMP measures, and it may also lead to over-insurance.

Challenge 5. Both the challenges of farm heterogeneity and asymmetric information require government to deploy detailed data when compensating for catastrophic risk, and this increases the **transaction costs** of an RMP. In addition, farm accounts, even when they are available, may not be appropriate information sources for income losses, as accounts may be optimised for fiscal reasons (Meuwissen *et al.,* 2011).

Some of these challenges are illustrated in Figure 3.7. This offers a stylised representation of the relationship between exposure to risks and its impact on farmer's income. F represents a normal relationship between exposure and impact. We define catastrophic risk as the exposure R_2 that generates a minimal impact I_T. Impacts beyond I_T cannot be managed by farmers or through the market, so this is the level at which the income stabilisation tool is triggered. Both F and I_T can be hazard-specific.

Figure 3.7: ***Relationship between exposure and impact***



Source: own elaboration

In the case that actions taken by farmers amplify risk, the impact-response function shifts upward to G. The difference between the functions F and G is the difference in impact with and without amplification effect. So, for a given level of risk R_1, the impact with amplification is I_T, while the impact without amplification is I_1. In other words, with amplification the impact threshold is triggered at a lower level of risk, R_1, than without amplification (trigger at R_2). Challenge 3 that relates to crowding out translates into the need to identify boundaries to be set between manageable and catastrophic risk (R_1) in order to determine the trigger for government assistance. Next, policies should be designed in such a way that they avoid endogenous amplifier effects *ex ante*, which corresponds to Challenge 2. For this, endogenous amplifier effects should be determined in order to identify an incentive-compatible compensation (I_1 instead of I_T) *ex post*. In other words, the total impact due to a hazard should be decomposed into an exogenous component that is beyond the control of farmers and an endogenous component.

These challenges are also reflected in and coherent with the following principles that should underpin an RMP according to Tangermann (2011):

1. Public policy should leave as much space as possible for private activity and market solutions.
2. Risk management, and public policy relating to it, should be based on a holistic approach.
3. A clear distinction should be made between dealing with risk on the one hand and providing support on the other hand.
4. Policy measures aimed at risk management should aim at minimizing distortions to markets and trade.
5. There should be clearly defined procedures and criteria for determining, and responding to, catastrophic crises that go beyond the capacity of farmers to cope and hence call for government action.

5.2. Recommendations for a holistic EU Risk Management Policy

Based on the above challenges and principles, we recommend a market and risk management policy based on building adaptive capacity making farms more resilient in undistorted markets. Therefore, we recommend restricting public support on market measures, only to be offered for temporary support to the costs of producer organisations under the CMO or the set-up of private insurance markets where these are underdeveloped. The main focus of the CMO should be the collection and dissemination of market information in order for prices to be undistorted and thus play their signaling role.

As a result, the core of our proposed EU Risk Management Policy should built on three axes: risk prevention, risk mitigation and risk coping. The RMP should evolve towards a policy in which most private and public resources mobilised are spent on risk prevention and the least on coping with risk. However, the share of government spending should be smallest in prevention (in order not to crowd out private action) and highest in risk coping. Further, risk mitigation should correspond with manageable risks, while risk coping corresponds with catastrophic risks.

A holistic RMP would also recognise and enable the full set of potential risk mitigation measures. Table 3.5 lists maps several risk mitigation measures according to the risk management mechanism and the cooperation or

market mechanism. Risk can be managed by transferring it to another party, either by vertically integrating into the next or even the final level of the supply chain (e.g., Tesco guarantees prices to cover costs of UK dairy farmers, in Community Supported Agriculture, risk is transferred to the consumer by prepaying the farmer at the beginning of the season) or by hedging. Risk can be buffered by setting up mutual funds, horizontally or vertically, or by borrowing or fiscal smoothing. Risk can be pooled and shared either horizontally (insurance) or vertically (contracts). And risks can be spread also by diversifying horizontally (enterprise diversification) or vertically (diversification through adding value and processing). Of course, not all these measures exist for all sectors and regions. Their occurrence depends on many factors such as the existence of futures markets, social capital in the farming community, legal barriers (such as competition law) and the enforcement of fair trading practices.

Table 3.5: ***Canvas of potential private risk mitigation measures***

	Horizontal coordination	Vertical coordination	Other
Transfer risk		Vertical integration	Hedging
Buffer risk	Cooperative mutual funds	Chain-based mutual funds	Borrowing Fiscal smoothing
Share risk	Insurance	Contracts	
Spread risk	Output diversification	Diversification by adding value	

Source: Own elaboration

Box 3.1 summarises the building blocks of a holistic EU risk management policy. The financing of the risk mitigation and coping parts of the RMP should be done through the EU budget to avoid differences in competitiveness between Member States and the breakdown of the single market. Risk prevention relates to different kinds of measures, such as investment support and payments for ecosystem services.

Box 3.1: ***Foundations of a holistic EU risk management policy***

Axis 1: Risk prevention

Risk prevention is based on appropriate technology use (e.g. genetics, irrigation, precision farming techniques), appropriate land management (e.g. providing ecosystem services), information management and training. Government support should stimulate farmers to use appropriate technologies and land management strategies, which can be granted in the form of investment support for infrastructure, subsidies for ecosystem services and support for training.

Axis 2: Risk mitigation

Risk mitigation is based on private risk management measures that are complemented by an income stabilisation scheme (see axis 3). A comprehensive and coherent legal framework should be provided to enable the development and use of a wide set of private risk management instruments that spread, buffer, share and transfer risk, both horizontally (cooperatives, producer organisations) and vertically (supply chains). For this, competition legislation may have to be further adapted to strenghten farmers' bargaining power in the supply chain. Government support should be limited to the temporary support of underdeveloped private risk management schemes, such as crop insurance.

Axis 3: Risk coping

Residual risk not mitigated by private risk management measures can be covered by a sector-specific income stabilisation tool as a form of *ex post* risk coping strategy. Farmers pay a premium that is proportional to the income they want to insure. Farmers who can demonstrate that they participate in private risk management schemes receive a discount on the premium. The income stabilisation scheme is activated when a reference income index is reduced by more than 20%. The reference income index is composed of price, yield and cost indices, that are defined at appropriate levels (EU, member state, region, sector or even farm). Government support is financed by the Crisis Reserve. Exceptional risks not covered by the IST, but that are locally systemic, can still be covered by state aid schemes.

5.3. Discussion

The rationale for the choices suggested in the RMP and some of the implementation details are as follows.

1. *Why should government support an Income Stabilisation Scheme (IST) and not mitigation tools*? The main reason is that government should only intervene in the case of catastrophic risk. Supporting mitigation tools will crowd out private mitigation measures and thus shift too much risk to the taxpayer.

2. *Why stabilise income and not prices or yields*? Stabilising income is key to a holistic approach. Price, cost and yield changes may evolve in different directions, thus cancelling out some of the risk. In addition, price stabilisation measures may distort markets and hence decrease the signaling function of prices in markets. Also, subsidising crop insurance too much or providing counter-cyclical payments will crowd out private schemes and strategies, based on savings and diversification.

3. *What income definition should be used?* We propose to define income as gross farm income (output + net subsidies – intermediate consumption), as factor costs greatly depend on non-market considerations. In some cases, where yield is relatively stable, margins defined as output price over variable input price may be used (as in the US dairy margin protection programme).

4. *Why use a trigger-mechanism based on indices?* Ideally, schemes should be based on individual income but this requires farmers to keep standardised accounts. In addition, the administration costs do deal with each farmer individually will be very large. Therefore, index based schemes are probably the only practical option.

5. *Why should farmers pay a premium to participate*? The IST scheme should be designed in such a way that farmers are incentivised to use private mitigation tools and only insure residual, catastrophic risk using the IST tool. This can only be done by making participation in the IST scheme dependent on income and on participation in private schemes. This will reduce moral hazard and adverse selection problems.

6. *What are the budgetary implications of the RMP?* While the risk prevention part of the RMP coincides with other parts of the CAP, the budgetary implications of the IST scheme are difficult to predict. In the long run, with proper risk prevention and private risk mitigation measures in place, the burden on the budget should be limited. In the short run, as a rough indication we can compare the total CAP budget for the 2014-2020 period that amounts to 408.3 billion euro, with the 13.5 billion euro that have been paid through state aids in the 2007-2013 period, and which represents less than 5% of the total CAP budget. The European Commission has estimated the cost of an IST scheme in the EU-25, assuming 20% of all farmers would receive compensation each year at 4-7 billion euro (European Commission, 2011).

6. Concluding remarks

A Risk Management Policy should address the variability of farmers' income and not the level of income. The best ways to manage risk is to prevent risk from happening and to make farmers more resilient. We therefore argue that prevailing risk management approaches are far too piecemeal, as they attach too little attention on building long-term resilience, while paying too much attention on addressing short-term volatility. Building resilience involves reducing exposure to risk by dissuading farmers taking actions that actually increase volatility and maximising strategies that reduce the sensitivity of farmers to risk exposure. The former should be done by building incentive-compatible measures, while the latter involves making the right choices with respect to farm technology and land management. An important principle underlying a successful RMP is that farmers make their own choices about the instruments they use and the coverage they desire.

REFERENCES

Agricultural Markets Task Force, 2016. *Improving market outcomes – Enhancing the position of farmers in the supply chain*, Brussels.

Assefa, T.T., Meuwissen, M.P.M., Oude Lansink, A.G.J.M., 2016. *Price volatility perceptions, management strategies, and policy options in EU food supply chains*. In Garrido et al. (eds.), p. 178-192.

Bardaji, I., Garrido, A., Blanco, I., *et al*., 2016. *State of play of risk management tools implemented by members states during the period 2014-2020: national and European frameworks*. European Parliament Study IP/B/AGRI/IC/2015-75.

Bergmann, D., O'Connor, D., Thümmel, A., 2015. *Seasonal and cyclical behaviour of farm gate milk prices*. British Food Journal 117(12), 2899-2913.

Bonjean, I., Mathijs, E., 2016. *How transaction costs shape market power: conceptualization and policy*. H2020 SUFISA project. Paper presented at the 12th IFSA Symposium, Harper Adams University, 12-15 July 2016.

Brunori, G., Bartolini, F., Avermaete, T., *et al*., 2015. Conceptual model. Deliverable D2.1, FP7 TRANSMANGO project.

Cordier, J., 2014. *Comparative analysis of risk management tools supprted by the 2014 Farm Bill and the CAP 2014-2020*. European Parliament Study IP/B/AGRI/IC/2014-044.

Ezekiel, M., 1938. *The cobweb theorem*. Quarterly Journal of Economics 52(2), 255-280.

European Commission, 2011. *Common Agricultural Policy towards 2020 Impact Assessment, Annex 6 Risk Management*. Commission Staff Working Paper, SEC(2011)1153/2. Brussels: European Commission.

European Commission, 2015. *Price developments and links to food security - price level and volatility*.

Garrido, A., Brümmer, B., M'Barek, R., *et al*., C. (eds.), 2016. *Agricultural Markets Instability – Revisiting the recent food crises*. London and New York: Routledge.

Haniotis, T., 2016. *Agricultural insurance: what role for the CAP? EAAE Seminar on Prospects for Agricultural Insurance in Europe*, Wageningen, 3 October 2016.

Holzmann, R., Jorgensen, S., 2000. *Social Risk Management: A New Conceptual Framework for Social Protection and Beyond*. World Bank.

Johansson, R., 2016. *Risk management. Lessons from the US Farm Bill*. Presentation at the 2016 EU Agricultural Outlook Conference, Brussels.

Kimura, S., Le Thi, C., 2011. F*arm Level Analysis of Risk and Risk Management Strategies and Policies:* Technical Note. OECD Food, Agriculture and Fisheries Papers, No. 48, OECD Publishing, Paris.

Lee, H.L., Pradmanabhan, V., Whang S., 1997. *The bullwhip effect in supply chains*. MIT Sloan Management Review 38, 93-102.

Mahé, L.-P., Bureau, J.-C., 2016. *Research for AGRI Committee – The future of market measures and risk management schemes*. European Parliament Study IP/B/AGRI/IC/2015-194.

McCullough, M.P., Huffaker, R., Marsh T.L., 2012. *Endogenously determined cycles: Empirical evidence from livestock industries*. Nonlinear Dynamics, Psychology and Life Sciences 16, 205–231.

Meuwissen, M.P.M., Van Asseldonk, M., Pietola, K., *et al.*, 2011. *Income insurance as a risk management tool after 2013 CAP reforms?* Paper prepared for presentation at the EAAE 2011 Congress, Zürich, 30 August-2 September 2011.

Nicholson, C.F., Stephenson., M.W., 2015. *Milk price cycles in the U.S. dairy supply chain and their management implications*. Agribusiness 31(4), 507-520.

OECD, 2009. *Managing risk in agriculture: A holistic approach*. OECD Publishing, Paris.

OECD, 2011. *Managing risk in agriculture: Policy assessment and design*. OECD Publishing, Paris.

Tadesse, G., Algieri, B., Kalkuhl, M., *et al*., 2014. *Drivers and triggers of international food price spikes and volatility*. Food Policy 47, 117-128.

Tangermann, S., 2011. *Risk Management in Agriculture and the Future of the EU's Common Agricultural Policy.* ICTSD Programme on Agricultural Trade and Sustainable Development; Issue Paper No. 34; ICTSD International Centre for Trade and Sustainable Development, Geneva, Switzerland. www.ictsd.org.

Vrolijk, H., de Bont, C., van der Veen, H., et al., 2009. *Volatility of Farm Incomes, Prices and Yields in the European Union*. Report 2009-005. The Hague: LEI Wageningen UR.

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