

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 Diversi-

ty, 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.

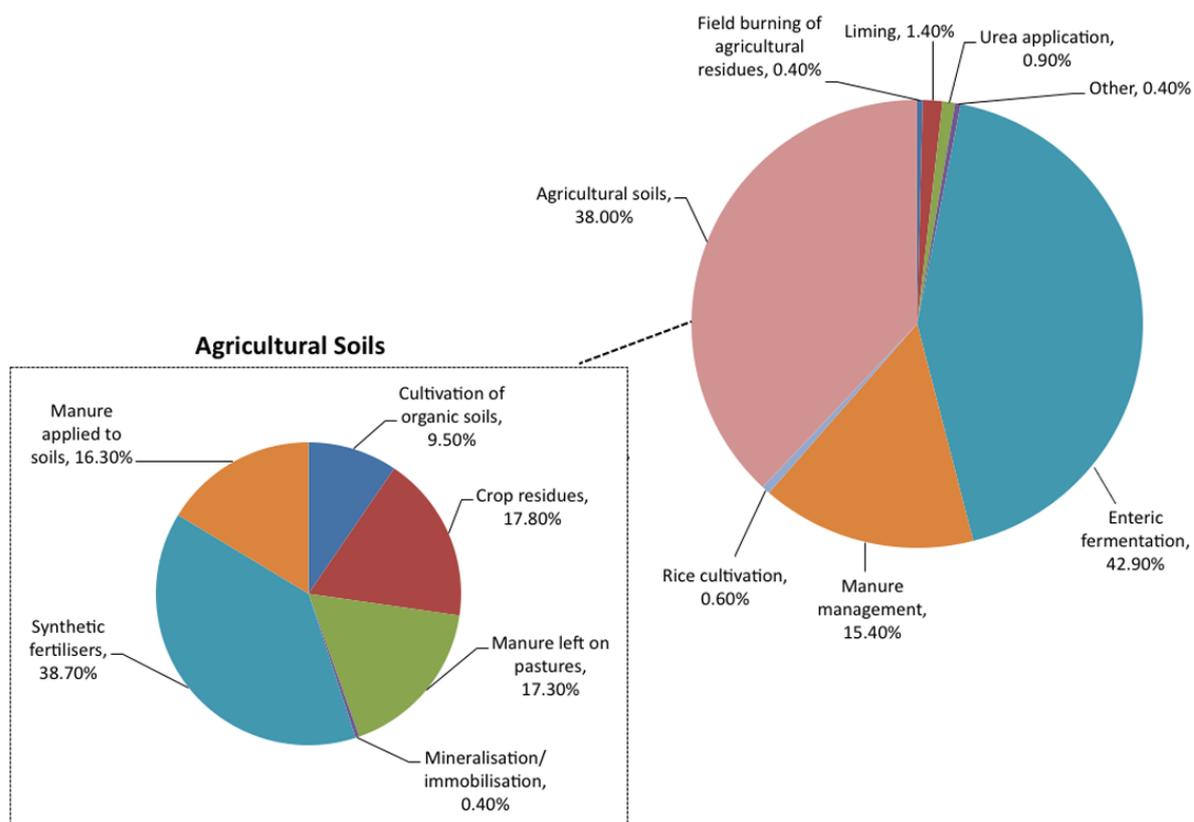
Several environmental requirements and goals of particular relevance to agriculture are specified already in EU environmental legislation. These include the need to establish “favourable conservation status “for habitats and species of European interest and to halt the decline of biodiversity by 2020 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 thor-

oughly. 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 Sucha, 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 dec-

ades. 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-CO₂ 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 trade-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 farmers? 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 genera-

tion 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 takes 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

Strategic Agricultural and Land Management Goals and Targets <i>Delivered Through...</i>			
Regulations <i>With roles including:</i>	CAP <i>Supports:</i>	Advice, Training and Research <i>Supports:</i>	Enhanced Role for the Private Sector <i>Via:</i>
<ul style="list-style-type: none"> • Setting targets and means of meeting them • Setting and complying with standards • Preserving resources and heritage • Frameworks for certification schemes, etc. • Data, monitoring and reporting 	<ul style="list-style-type: none"> • Transition to sustainability and attaining regulatory compliance (time limited) • The provision of additional environmental public goods of European interest on farmland/ forests • Integrated rural development approaches • Aims to secure balance of effort at the EU scale and appropriate distribution of funding. 	<ul style="list-style-type: none"> • Farmers adjusting to new environmental conditions and regulations • Effective use of CAP and Member State measures and funds • Cultural adjustment and innovation • Technological advance and new approaches 	<ul style="list-style-type: none"> • Labelling and certification schemes and supply chain initiatives • Enhanced use of environmental conditions in food supply contracts with associated price adjustments for farmers • Greater use of private and semi-private management contracts for ecological services like clean water, flood control and carbon sequestration • Compensatory schemes

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 supply 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).

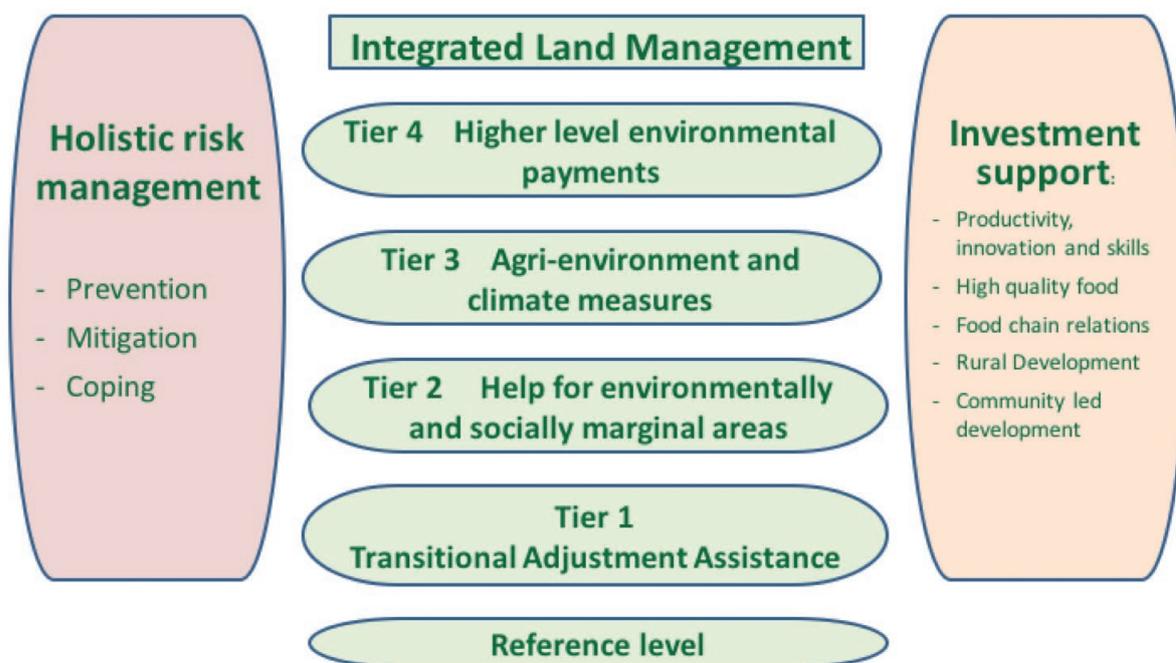
4. Offsetting schemes for biodiversity on farmland and forest that has been developed into more urban space so that developers meet more of the costs of compensation at alternative sites over the long term. There are various approaches to doing this through public or private channels and the design needs 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 whereby 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.
- 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 programmes but not separated into another Pillar. Market

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 would 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.

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 carbon 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.