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The UK statutory conservation, countryside and environment agencies

Alternative Allocation Keys for EU CAP Funding

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LUPG Foreword

LUPG, a grouping of the UK statutory nature conservation, countryside and environmental agencies provides evidence and analysis to, but is independent of, Government.

A key consideration for the future Common Agricultural Policy (CAP) will be identifying the basis for the allocation of budgets between Member States. Current allocations largely reflect historic spending rather than an objective assessment of need. The primary purpose of this research is, therefore, to:

- identify possible indicators capable of being applied at the EU level as an objective, applied, basis for future allocations of CAP (Pillar 1 and Pillar 2) funding between Member States.
- to explore the potential implications for individual Member States of adopting each indicator as the basis for financial allocations, by comparison with the current budgetary pattern.

This analysis is intended as an objective contribution to ongoing discussions on the ways in which CAP funding might be allocated in future. A decision was made not to suggest or model specific selective combinations of individual indicators that could be used as new future allocation keys, because of the potential complexity involved in such an approach. Instead, the focus has been on understanding the strengths, weaknesses and budgetary implications of the individual indicators themselves. The selection of the indicators assessed in this research is based on five important criteria, specifically:

- <u>Data availability and robustness</u> – data for each indicator must be readily available for the whole of the EU, robust and collected according to common agreed standards; not easily manipulated to skew allocations.
- <u>Policy priority</u> – indicators should, as far as possible, have a clear link to the delivery of publicly stated EU policy objective(s).
- <u>Allocative effectiveness</u> – funding should be allocated where the return will be most cost-effective.
- <u>Dynamic incentive</u> – indicators should reward positive change from the current baseline, rather than simply rewarding those with the largest baseline position.
- <u>Fairness</u> – whilst this is strongly related to the other criteria, Member States who have a poor record of public goods stewardship should not be rewarded and conversely Member States with a good track record should not be penalised.

There are, however, inherent conflicts between some of the issues above and so the selection of indicators is based on those with the best fit against these criteria. The analysis also identifies some indicators that could prove useful to inform the distribution of CAP funding in the future subject to improvements in data availability/robustness.

We trust that this report will make a useful contribution to an open debate about the basis for future allocations of CAP funding as well as providing further thoughts on a number of ideas for additional indicators that may be suitable for consideration in the future.

Rob Cooke, Chair of the LUPG

Alternative Allocation Keys for EU CAP Funding

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Abbreviations

AES	Agri-environment scheme
CAP	Common Agricultural Policy
CLC	Corine Land Cover
CM	Compulsory Modulation
EAFRD	European Agricultural Fund for Rural Development
EEA	European Environment Agency
EU	European Union
EU12	The 12 New Member States of the EU. Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia
EU15	The 15 older Member States of the EU. Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom
EUETS	European Union Emissions Trading Scheme
FSS	Farm Structure Survey
GHG	Green House Gas
GDP	Gross Domestic Product
GMO	Genetically Modified Organism
GNB	Gross Nutrient Balance
GNI	Gross National Income
HNVF	High Nature Value Farmland
LFA	Less Favoured Area
LU	Livestock Units
MS	Member States
N2K	Natura 2000
NMS	New Member States
NVZ	Nitrate Vulnerable Zone
OFA	Organic Farmland Area
RDP	Rural Development Programme
RDR	Rural Development Regulation
SFD	Soil Framework Directive
SPS	Single Payment Scheme
UAA	Utilisable Agricultural Area
UNFCCC	United Nations Framework Convention on Climate Change
VM	Voluntary Modulation
WFD	Water Framework Directive
WTO	World Trade Organisation

Executive Summary

Background

The current distribution of EU funds under the CAP largely reflects a mix of historical expenditure patterns and partial, ad hoc adjustments to EU enlargement and policy reforms. As such, it is generally accepted that EU budget allocations across Member States and between Pillars I and II do not match policy objectives as well as they might. Actual funding levels are complicated further by domestic discretion over variable co-financing contributions and (in the UK and Portugal) voluntary modulation[1]. Consequently there is a need to consider alternative budget allocation mechanisms.

In principle, budget resources should reflect the effort required under the most efficient form of intervention for achieving a stated, discrete policy objective. In practice, policy objectives are often inter-linked, policy effectiveness is uncertain and, moreover, the choice and funding of policy instruments is constrained politically. Hence the CAP simultaneously pursues economic, social and environmental objectives primarily through payments to land managers which are influenced strongly by a legacy of past expenditure patterns rather than consideration of alternative support arrangements *per se*.

There is widespread interest in moving away from the current system which is based on historic spend towards a distribution that has a more justifiable basis[2,3,4]. Precedents for this exist in the way that compulsory modulation receipts have been redistributed and in the use of multiple criteria for the allocation of cohesion funding. However, identifying and deploying alternative allocation keys is task that needs to be guided not just by a consideration of the desirable characteristics of these keys (in turn made up of individual indicators) but also the impact on budgetary distributions. Few indicators are likely to satisfy all of the necessary criteria and hence the choices made will inevitably reflect a compromise. Yet the use of a new allocation key may still shift budget allocations towards a more justifiable distribution and it is quite possibly the direction of travel rather than achievement of an optimal distribution *per se,* which is the underlying purpose of the exercise at European level.

Identifying Suitable Indicators

Amongst many possible indicators, eight were selected as part of this study for simulation modelling of alternative budget allocations – expressed in terms of shares of Pillar I and Pillar II budgets. Selection was based on several criteria, including data availability, static and dynamic effectiveness, fairness and likelihood of adoption. The eight chosen indicators were: Utilisable Agricultural Area (UAA); Farm Woodland; Permanent Grassland; Natura2000 (N2K); Organic Farmland Area (OFA); Less Favoured Area (LFA); Agricultural Labour; and Extensive Agriculture. Per capita GDP (Gross Domestic Product) was also adopted, but as a scaling factor rather than an indicator per se. Various other indicators were considered but

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[1] In March 2007, the UK (together with Portugal) secured agreement to continue to levy an additional (voluntary) national rate of modulation, over and above the compulsory EU rate. Voluntary modulation has been permitted by European rules since 1999, up to a rate of 20%.
[2] Paris declaration for a Common Agricultural and Food Policy (2009) calls for a fair distribution of CAP funds to farmers across the EU and recalls that to respect the diversity of farming in the EU, objective criteria must be found in order to define a fair system of distribution.
[3] Warsaw declaration of NMS (2010) concludes that the success of future CAP requires to link financial support with future objectives, which makes necessary to depart from historical and currently unjustified allocation criteria
[4] As reported in the Summary Report of Public debate of the Common Agricultural Policy after 2013 (EU Commission, July 2010), a considerable number of stakeholders would like to see a more balanced distribution of support money among farmers, both within and between member states. The think tanks, research institutes and others also pointed out that there is a need to redirect CAP spending to target those areas, systems and practices which provide public goods, which requires changes to the allocation criteria for the distribution of the budget between member states, and in the eligibility criteria for support payments, resulting in a fundamental redistribution of support.

rejected, including some that could be used in future if data availability issues could be overcome. These included high nature value (HNV) farmland, 'at risk' soils and greenhouse gas emissions.

Matching the selected indicators to policy objectives and the current dual Pillar structure of the CAP reveals variation in the degree of fit with particular objectives and policy instruments, reinforcing the points about compromise and direction of travel. In principle, a better fit could be achieved by more refined indicators that aligned more closely with individual policy objectives and accounted for spatial and temporal heterogeneity in biophysical and socio-economic conditions. However, such refinements would add further complexity to the process of building a new allocation key as well as dramatically increasing data requirements.

Similarly, in principle, the process of adjusting budget allocations could be phased through the use of transitional indicators. However, in practice it may be simpler to base any phasing on making incremental changes over time – such as allowing Member States three or five years to disengage from current expenditure commitments and/or programme any necessary increases in commitment.

Modelling process

For each indicator, a Member State's share of the EU27 total value for that indicator was used to determine its share of the EU budget – the higher the indicator share, the higher the budget share. This was calculated separately for Pillar I and Pillar II, and then as a combined CAP total. To allow like-for-like comparisons across the EU27, the baseline budget shares ignored domestic discretion over co-financing and voluntary modulation such that only funding determined directly by the EU (i.e. core EAFRD[5] and compulsory modulation) was considered. Baseline values relate to 2013, on the basis that this marks the end of the current programming period and all Member States apart from Bulgaria and Romania[6] will have completed the accessionary process by then. Co-financing and voluntary modulation were considered separately as part of a more detailed exploration of UK results; these also included a break-down for each of the four constituent UK countries. It should be noted that baseline co-financing elements are approximate values given fluctuations in exchange rates and actual co-financing rates applied in-year.

In addition to the "raw" budget allocations generated by using any particular indicator, the initial allocations were also scaled to reflect differences in relative prosperity between Member States. This scaling was based on the formula previously used within the EU15 for redistribution of compulsory modulation receipts, but this process can operate in two ways. Firstly, as a means of increasing transfers to poorer Member States to reflect cohesion-type objectives and, secondly, as a means of raising richer Member States' shares in acknowledgment of the higher resource costs (wages and other inputs) affecting land management in such economies. These scaling adjustments have different rationales and different outcomes; if both were deployed together, the effects of the two forms of scaling do not necessarily cancel each other out.

Finally, to reflect the likelihood that any of the candidate indicators considered would, in reality, be used in combination rather than individually, a brief analysis of the wide range of

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[5] European Agricultural Fund for Rural Development (EAFRD) is one of the two instruments financing the Common Agricultural Policy (CAP) which provides funding for actions in the field of rural development in the Member States in line with the rural development plans submitted by each country.
[6] Bulgaria and Romania are fully-funded from 2016, which means that modelling them alongside other Member States introduces inconsistencies. However, the impact on overall results is minimal and the figures reported are sufficient to illustrate the pattern of impacts.

possible gains and possible losses for Member States is presented to show the extremes yielded by any of the individual indicators; these represent the maximum and minimum (?) boundary changes as a result of using any linear additive combination of indicators. An attempt to model a variety of policy scenarios (as originally required by the study brief) proved unhelpful, illustrating only that budgetary outcomes are sensitive to the choice and weighting of in the indicators when they are grouped together. Given the highly politicised nature of the CAP reform process, this study has therefore focused on the 'direction of travel' that would be produced by individual indicators rather than trying to "second-guess" what an actual allocation key would look like following prolonged negotiation.

EU27 results

Unsurprisingly, the distribution of EU-level funding under any of the selected indicators differs from the current baseline. The degree of difference varies across individual Member States and between Pillar I and Pillar II. Such variation reflects interaction between the different starting positions of Member States in terms of budget shares with the underlying heterogeneity of biophysical and socio-economic conditions represented by the various indicators. Hence, for example, a Member State with a low baseline budget share but a high share based on a particular indicator will experience significant gains whilst the reverse is true for a Member State with a high baseline share and low score for the same indicator. Such variations will inevitably influence Member States' negotiating positions on preferred mechanisms for redistribution.

Perhaps more surprisingly, the direction and magnitude of change for a given Member State also varies significantly when looking at different indicators. The consequence of this is that, in most cases, a Member State may gain Pillar I and/or Pillar II share under one indicator but lose shares under another. Moreover, the magnitude of the swings between the gains and losses can also be significant. For example, in the absence of prosperity scaling, Austria gains Pillar I share under seven indicators (but loses under two indicators) whilst gaining Pillar II share under two indicators (but loses under seven indicators). In addition, swings between the possible extremities of the gains and the losses exceed the size of the baseline shares.

In a few cases, Member States lose under all indicators whilst others gain under all indicators. For example, Denmark, France, Germany, Greece and the Netherlands all lose Pillar I share whilst Estonia, Latvia and Portugal all gain Pillar I share regardless of which indicator is being used. Spain gains significantly under seven indicators. In addition, some Member States inevitably lose 100% of their baseline shares where they lack the presence of a particular indicator, for example, Permanent Grassland in Cyprus and Malta or extensive agriculture in a number of countries including Ireland, Netherlands, Belgium, and Bulgaria.

The application of prosperity scaling alters these patterns slightly in that scaling in favour of poorer Member States generally mitigates their losses whilst boosting their gains at the expense of richer Member States. The reverse generally occurs under scaling in favour of richer Member States. For example, scaling in favour of poorer States worsens the minimum losses to Denmark et al. (see full list above) whilst boosting the minimum gains to Estonia et al. Conversely, scaling to richer States reduces (but does not avoid) the minimum loses to Denmark et al. whilst reducing the minimum gains to Estonia et al. Prosperity scaling plainly has no mitigating effect on any 100% losses since the absence of any indicator is an absolute constraint.

When seeking to combine indicators, any linear additive combination will produce results lying between the extremes yielded by any of the individual indicators. That is, the maximum and minimum shares are set by assigning a relative weight of 100% to the most and least favourable indicators respectively. Diluting this weight by adding other indicators to the equation simply leads to less extreme results.

Aggregate UK results

As with most other Member States, the UK gains budget share under some indicators but loses under others. Reflecting the current low level of the baseline allocation to Pillar II (3.00%) and the relatively high level for P1 (8.74%), gains under Pillar II are more common than for under Pillar I although still not inevitable. Specifically, in the absence of prosperity scaling, the UK loses share for both Pillars under farm woodland (2.04%) and agricultural labour (2.42%); loses with Pillar I but gains Pillar II share under Natura 2000 (3.08%), LFA (6.26%) and extensive agriculture (6.62%, and gains for both Pillars under UAA (9.35%), OFA (9.78%) and Permanent Grassland (17.75%). Assuming the budget stays the same at EU-level, this implies maximum annual losses of around €2.8bn and €0.14bn under Pillars I and II respectively. Maximum annual gains under the two Pillars are around €3.8bn and €2.1bn respectively, suggesting possible overall losses of around €2.94bn contrasted with overall gains of €5.9bn.

The application of prosperity scaling alters the precise percentages and € values yielded under different indicators, the overall pattern of change remains similar. That is, scaling to poorer Member States lowers the UK share in most cases, thereby reducing gains and increasing losses. Natura 2000 and extensive agriculture switch from Pillar II gains to Pillar II losses; whilst agricultural labour switches to a Pillar II gain. Conversely, scaling to richer Member States increases the UK share in most cases, thereby increasing gains and reducing losses although farm woodland share remains as a loss under both Pillars.

Although the above results relate to a baseline that excludes voluntary modulation transfers between the Pillars, a similar pattern emerges if such transfers are considered in the baseline. That is, whilst the precise percentage and € values differ, the direction of change generally remains the same. For example, in the absence of prosperity scaling and assuming a constant budget at EU level, the deployment Permanent Grassland as an allocation key in its own right would increase the UK Pillar I and Pillar II budgets by around €4.1n and €1.8bn respectively; conversely using a farm woodland indicator would reduce budgets by around €2.5bn and €0.45bn.

Disaggregated UK results

Differences across the UK means that the aggregate UK results are not repeated in each of the four constituent countries. This not only applies to the relative size of changes but also to the direction of change. Indeed, with the exception of the Permanent Grassland indicator (under which all countries gain) and agricultural labour (under which they all lose), most indicators simultaneously yield gains in some parts of the UK but losses elsewhere. For example, Northern Ireland loses under UAA whilst England, Scotland and Wales all gain; Scotland and Wales gain under LFA whilst England and Northern Ireland lose. Rather unexpectedly, Scotland alone gains under extensive agriculture; this reflects the level at which data is aggregated (NUTS 3) and relatively high livestock unit coefficients used.

These relative patterns of changes to budget shares merely reflect the underlying relative abundance/scarcity of indicators in each of the four constituent countries. In particular, across all of the indicators with the exception of agricultural labour, Scotland enjoys higher relative gains and suffers lower relative losses than the other three countries essentially because it is has a relatively large (and predominantly Less Favoured) land mass characterised by relatively low-intensity Permanent Grassland farming systems plus relatively more farm woodland and a high proportion of the UK's N2K designations. By contrast, Northern Ireland loses under almost all indicators.

As with variations that exist across the EU27, the variation between England, Scotland, Wales and Northern Ireland in terms of how budget shares are affected by different indicators makes it possible that different positions will be adopted at the domestic level regarding the desirability of different indicators and their combination into allocation keys.

For example, Scotland and Wales may be more disposed towards using UAA or LFA than England and Northern Ireland. Permanent Grassland is the only indicator that is universally beneficial across the UK.

Co-financing

The use of co-financing is perhaps something of a side-issue in that it does not affect the sharing out of the EU CAP budget or the absolute level of EU funds per se. Rather co-financing is of interest in terms of how expenditure is shared between EU and domestic sources, particularly with respect to additional calls on (limited) domestic exchequers who would either need to make-up the shortfalls resulting from lower EU budget shares and/or match the increased EU funding resulting from higher budget shares.

Indicators favouring the UK in terms of Pillar II budget share (e.g. UAA, Permanent Grassland, OFA and LFA) could possibly leverage additional domestic funding over and above current levels. For example, assuming that the EU budget remains constant and the ratio of UK: EU funds is set at 50:50, then between €102m (if using the LFA indicator) and €1,765m (Permanent Grassland) of additional domestic funding could be leveraged. Higher rates of domestic support would yield even higher increases. By contrast, allocation keys yielding a smaller Pillar II share (e.g. Farm Woodland, Agricultural Labour) would lead to lower co-financing requirements and a gearing effect on overall budget reductions. For example, €509m of domestic funding would be lost under the Farm Woodland indicator. Co-financing ratios would have to increase significantly (i.e. beyond 70:30) to leverage net additional domestic funds in the face of such budget share reductions.

With respect to Pillar I, the absence of baseline co-financing means that any domestic funding would represent a net increase. For example, 50:50 co-financing of the current allocation could (depending on voluntary modulation) add approximately €3.3bn to €3.6bn to the UK Pillar I budget. Assuming a constant EU-level budget, 50:50 co-financing and the absence of any modulation transfers, the effect of Pillar I co-financing is to double the absolute size of Pillar I for any given share – assuming that the EU contribution remains constant and is not diverted to Pillar II or other policy areas. When using indicators that favour the UK in terms of share of Pillar 1, the introduction of co-financing increases the need for domestic contributions and suggests an even higher absolute budgetary gain. For allocation keys yielding a smaller share, domestic contributions are generally insufficient to offset the lower EU funding for Pillar I unless higher rates of co-financing are considered. However, exchequer pressures both within the UK and across the EU mean that it is by no means certain that higher domestic contributions would be forthcoming.

Further work

The use of indicators as allocation tools, whether individually or in combination, represents a compromise between a number of competing requirements. Hence, whilst none of the indicators considered are perfect, viewed more pragmatically they may represent sufficiently robust and politically acceptable metrics for guiding budget reallocations. Nevertheless, it would be prudent to seek continued refinement of any chosen indicators such that they reflect rather better the underlying resource costs of meeting overall policy objectives. For this reason, high nature value farmland and forestry, soils at risk and water quality should continue to be developed as possible future indicators.

Separately, whilst numerical exploration of the impact of certain indicators may be helpful in identifying possible limits to Member State budgetary shares and how these may alter, such exercises should not be viewed in isolation from the political economy of the CAP (and EU) budget negotiations. It would be helpful to canvass opinions from other Member States on the perceived acceptability of different indicators and the various allocation keys that might be derived from these.

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1.   Introduction and approach

This study is concerned with the distribution of budget resources under the Common Agricultural Policy (CAP) and how different allocation keys could alter the pattern of funding across the EU. There has been some previous work in this area, notably the paper prepared for LUPG by Francesco Mantino (Mantino, 2003), the IDEMA project (IDEMA, 2006) and a study commissioned by DG Agriculture examining financing needs for rural development (University of Gloucestershire, 2008). More recent analysis (Zahrnt, 2009) has explored potential gainers and losers from CAP reform. However, given ongoing policy debates and challenges to the current position (e.g. HM Treasury, 2008) there is a need for further analysis, including an assessment of how UK shares of EU funds affect domestic expenditure aspirations and funding requirements across England, Scotland, Wales and Northern Ireland.

Historically, the distribution of CAP payments across member states was determined indirectly; subsidies were employed to raise prices above market levels, and those member states that produced the greatest quantities of the most heavily supported products benefited most. Since 1992, an ever increasing share of the CAP payments has been allocated directly to the member states. This includes 90% of the first-pillar direct payments – largely used for income support – and all the second-pillar payments for rural development. The 2009 'Health Check' reform has further curtailed market interventions to the benefit of direct payments through national allocations. However, the current distribution of payments does not reflect current policy objectives and a more rational framework is required[7].

The repartition of these national allocations is heavily contested, and many considerations suggest that it will be fundamentally overhauled in the post-2013 CAP reform. First, current national allocations are largely determined by past payment patterns.[8] As the reference periods date further and further back, they become ever harder to justify. Second, the current distribution reflects the progressive nature of the EU enlargement process, with Bulgaria and Romania only fully-funded from 2016. After 2013, a genuinely European approach that removes the old/new member state divide is due. Third, the overall direction of the next CAP reform is likely to increase the emphasis on targeting subsidies at the provision of public goods. This may accelerate the transition to a new paradigm of agricultural policy as a transparent contract between farmers and society. This will be reflected not only in a change in CAP objectives and policy instruments, but also by the use of more rational criteria to allocate funds to member states. Fourth, member states that feel disadvantaged by current arrangements increasingly seek a more equitable distribution,[9] and the European Commission has expressed understanding for these calls.

Despite these high stakes and the extraordinary political attention paid to the issue, little analytical work has been conducted so far to establish which criteria are suitable to guide the future distribution of CAP funds to the member states. It is of great

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[7] As stated in the Declaration on the future of Common Agricultural Policy beyond 2013 (Warsaw, Feb. 3 2010) by New MS: the success of future CAP requires to link financial support with future objectives (to support and stabilise agricultural income as well as to provide the society with public goods), which makes necessary to depart from historical and currently unjustified allocation criteria.

[8] This applies most notably to Pillar I allocations driven by past coupled support arrangements but also to Pillar II in that the legacy effect of previous expenditure patterns and of Objective 1 (Structural Fund) status is still felt to some extent.

[9] The Presidency compromise of the Health Check states that, 'the Council and the Commission are committed to thoroughly examine the possibilities for development of the direct payment system in the Community and addressing the differing level of the direct payments between Member States.'

importance to intensify this analytical work. One reason for this is that it will take time to arrive at a common understanding of which criteria most appropriately reflect the chosen policy objectives. An early discussion will help to obtain a more rational distribution of CAP payments driven by policy objectives. Another reason is that such a discussion will reveal weaknesses in the definition of potential criteria, especially in terms of data consistency and availability. It will be crucial to agree on clear-cut definitions early on, so that reliable data can be collected in time. Finally, it appears advisable to address distributional issues at an early stage of the negotiations and in a systematic, scientifically sound manner rather than leaving it entirely to the tug-of-war of the endgame. This may help to improve the quality of decisions concerning all aspects of CAP reform.

1.1   Research requirements

The aim of this research is to identify indicators that could be used as the basis for future allocation of the EU CAP budget between Member States. There are six specific objectives, detailed at Appendix 2 and summarised as follows:

(i)   Review indicators that could be used as the basis for allocation of Pillar I and Pillar II CAP funding in the future and identify any additional indicators that would also meet the necessary availability and robustness criteria

(ii)   Identify indicators that do not meet the current availability criteria but that would be desirable as the basis of allocation keys for programmes in the future for the environmental objectives

(iii)   Development of scenarios and application of available indicators to existing allocations, identifying winners and losers EU level

(iv)   Quantify the impact of the co-financing scenarios for Pillar I and Pillar II and compare to the existing allocations for each Member States to identify potential gainers and losers

(v)   Assess the results from the scenarios developed in objectives 3 and 4 for the UK and individual UK countries

(vi)   Draw out key conclusions and highlight areas for further work

1.2   Approach

There have been three distinct stages to the project:

- identification of suitable indicators, linked to policy objectives and assessed against a set of allocative criteria to ensure robustness;

- subsequent modelling work to consider how the application of these indicators would impact on budgetary allocations, both at EU and UK country level;

- analysis of the extreme changes for Member States yielded by any of the individual indicators to illustrate the boundary of changes as a result of any linear additive combination of indicators.

Indicator selection

The work started with a review of available literature and data to identify the advantages and disadvantages of likely allocation criteria. This raised issues of data availability and robustness across the EU27 but also policy objectives, notably farm

income support vs. delivery of environmental public goods and finally effectiveness of indicators in promoting the desired outcomes.

This work is summarised in sections 2 – 4 below. A more detailed analysis of individual indicators is provided at Appendix 5.

Modelling

In sections 5 and 6, the selected indicators have been modelled individually to assess how different criteria might affect levels and patterns of budget allocations (details at Appendix 6). This was undertaken for both the allocation between Member States at EU level but also within the UK to consider differential impacts across the four UK countries.

Spreadsheets were constructed to provide percentage distribution of indicators and these were used as budget allocation factors. They have been applied to the 2013[10] budget allocation of Pillar I and Pillar II funding for the EU27, allowing for compulsory modulation of monies from Pillar I to 2 but excluding additional voluntary modulation, as currently applied in the UK.

We have expressed the distribution in terms of the change in percentage allocation to Member States but also in terms of the percentage change in absolute budget. This highlights the impact relative to current allocations.

Given current uncertainties over the size of the future EU budget and the ongoing process of CAP reform, no attempt has been made to anticipate or model the future scale of the CAP budget or shares between the pillars.

Scenarios

In line with the Terms of Reference, we considered three funding scenarios using combinations of indicators to reflect (a) a socio-economic purpose for Pillar I, (b) an environmental purpose for Pillar I and (c) an environmental purpose for Pillar II. However, the results were highly sensitive to the mix and weighting of indicators and have not been presented. Instead the modelling of individual indicators is used to draw out some high-level results on the possible direction and scale of changes in allocation, using indicators.

Conclusions

Finally, conclusions are drawn and recommendations are made for future work in section 8.

2. A framework for selecting allocation criteria

This discussion section sets out a proposed framework for criteria which might be used for allocation of CAP funding between member states post 2013.

2.1 Distribution keys for CAP payments

Currently, the CAP is separated into two pillars with different keys for the distribution of subsidies across member states and different instruments.

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[10] 2016 figures were used for Bulgaria and Romania, to allow for their transition into the EU to be completed.

When the Single Payment Scheme (SPS)[11] was introduced in 2003, the money that was freed up by removing subsidies that had hitherto been coupled to production was transferred to national SPS envelopes in accordance with member states' previous receipts of coupled subsidies.[12] Payments were reduced by 3% in 2005, 4% in 2006, and 5% in every year thereafter. The money generated through such modulation was transferred to the second pillar of the CAP. The way the money was to be allocated to countries was supposed to take account of agricultural area, agricultural employment, and GDP per capita. Member states' share in agricultural area and employment was given a weight of a 65% and 35%, respectively, and the resulting entitlements were then adjusted for GDP differences. However, at least 80% of the money should remain in the country where it has been generated. The 2009 'Health Check' reform maintained this approach.[13] The additional money freed up through reinforced modulation – gradually rising to 10% in 2012 for payments above EUR 5,000, plus an extra 4% for amounts exceeding EUR 300,000 – was again shifted to rural development and remained mostly within the member state where it had been freed up.

The distribution of the core EAFRD budget within the EU15 (before inclusion of compulsory modulation) is based on the 'historic distribution key' which can be traced back to 1999/659/EC[14] based on 'rural development' spending pre-2000 for the EU15[15]. In addition certain Member States negotiated specific allocations as part of the EU budget deal in 2005. The Member States allocations, including transfers from Compulsory Modulation (CM), are set out in Commission Decision 2006/636/EC[16] which was subsequently revised following the CAP Health Check in 2009. The allocation of funding to the New Member States (NMS) is made on the same basis as the allocation of funds for pre-accession countries (based on share of Utilisable Agricultural Area (UAA), share of agricultural employment, adjusted for relative gross domestic product (GDP) per capita).

2.2   Lessons from structural and cohesion policies

A useful reference for allocation keys relating to social objectives is the Structural and Cohesion Funds, which comprise €308 billion for the 2007-2013 spending period.[17] This money is assigned to several instruments, serving three objectives (convergence, regional competitiveness and employment, and territorial operation) and obtaining money from three funds (Cohesion Fund, European Regional Development Fund, European Social Fund). Entitlements under each of the instruments follow from different allocation keys and cannot be transferred across instruments (with one minor exception).

This formula uses the following criteria: surface area, population (national, regional and in border regions), national and regional prosperity (GNI and GDP per capita),

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[11] EC Council Regulation 1782/2003 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:270:0001:0069:EN:PDF

[12] See Council of the European Union (2003) and European Commission (2004).

[13] See Council of the European Union (2009).

[14] Commission Decision of 8 September 1999 fixing an indicative allocation by Member State of the allocations under the European Agricultural Guidance and Guarantee Fund Guarantee Section for rural development measures for the period 2000 to 2006. (1999/659/EC).

[15] Commission Decision of 12 April 2006 amending Decision 1999/659/EC fixing an indicative allocation by Member State of the allocations under the European Agricultural Guidance and Guarantee Fund – Guarantee section for rural development measures for the period 2000 to 2006.

[16] Commission Decision of 12th September 2006 fixing the annual breakdown by Member State of the amount for Community support to rural development for the period from 1 January 2007 to 31 December 2013. (2006/636/EC).

[17] See Council of the European Union (2006) and especially Annex II on the allocation keys.

number of unemployed people in regions with an unemployment rate above the group average, number of jobs needed to reach an employment rate of 70 %, number of employed people with a low educational level, low population density, Member States' share in 2006 funding under different instruments, and status as a New Member State.[18]

Several observations can be made:

- five very different allocation keys co-exist within the structural and cohesion funds

- complex formula with many criteria are politically acceptable and manageable

- the formula reveals strong distributional bargaining with (especially non-continuous) elements that appear to exist for distributional reasons and with many exceptions for individual regions and countries

- only socio-economic criteria are used; there are no environmental criteria that could provide guidance for the CAP

- the criteria are based on stocks/absolute levels, not on changes in stocks over time (e.g. increasing unemployment)

- data availability for these socio-economic criteria is less problematic than for environmental aspects of the CAP

- 2005 Commission estimates are used for individual national growth rates of GDP for 2007-2013; at least partial adjustment is stipulated to be undertaken in 2010 for significant divergence from 2007-2009 GDP estimates. It is thus politically acceptable to base payments on estimates and to adapt later on.[19]

2.3   Desirable characteristics of allocation criteria

(i) Data availability and robustness

There may be problems of definition and data availability or robustness, leading to inextricable negotiations and resulting in a distorted allocation, if there is abuse. The past experience of an EU average of 57% of agricultural area declared as Less Favoured Area should serve as a warning. In addition, variables should not change too quickly over time (depends on the length of the period for which payments are fixed). Attempts to compile baseline data for this project revealed potential issues with a number of indicators (see sections 5 and 8).

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[18] Barca (2009), page 62, suggests that the weights of the three variables "correcting" the population under the convergence objective of the European Regional Development Fund (which absorb 57.5% of the total funds) are approximately as follows: 85% regional GDP, 12% GNI and 3% to unemployment.
[19] Annex II Art. 9 and 10 of Council of the European Union (2006)

(ii) Policy priority

As the overall number of indicators must be limited, potential indicators can be assessed in terms of their direct links to the delivery of important policy objectives. Furthermore, agricultural subsidies should be a preferred tool to attain these policy objectives. It is not reasonable to allocate CAP funds for high-level policy objectives that are best achieved through other instruments such as, for example, taxes or regulation.

In practice, policy objectives are always broadly defined and leave much space for disagreement. For instance, one may agree that water quality should be a key objective, but disagree about which water resources (seas, lakes, watercourses, groundwater; within national frontiers or frontier-crossing) should be protected as a priority against which threats (nitrates, phosphates, pesticides) and through which instruments (nutrient management plans, buffer strips, organic farming). All these aspects influence the choice of suitable indicators to represent water quality.

(iii) Allocative effectiveness

EU payments should be allocated where their marginal return is highest, that is, where the marginal supply response in terms of additional units of a public good for each € of subsidies and the marginal valuation of an additional unit of a public good are largest. This perspective assumes that member states indeed spend (a significant share of) the funds received due to a given indicator in ways associated to that indicator.

Significant work has been conducted to assess the effectiveness of payments on farming practices (depending on farm level properties and public implementation efficiency), effects of changed farming practices on the material status of public goods and the valuation of these public goods.[20] Unfortunately, such estimates of economic value are (and will remain for the foreseeable future) insufficiently reliable to significantly guide payment allocation.

It is therefore necessary to develop criteria that provide a proxy for the provision and valuation of public goods. A good criterion is one for which the benefits and costs are relatively homogenous across member states but this is rarely the case. For example, the benefits and costs of Natura 2000 areas, a well established indicator, vary widely across member states – because farming restrictions differ or the income forgone differs for identical farming restrictions.[21]

(iv) Dynamic incentives

Allocative effectiveness takes the legal baseline (e.g. regulation on fertilizer and pesticide use, designation of Natura 2000 areas) and land cover types (i.e. arable land, forest area, peatland) as given. It only considers how subsidies can change farming practices/land use practices within these parameters. 'Dynamic incentives' considers whether indicators encourage or discourage member states to use subsidies and other policy instruments to change farming practices/land use practices in order to increase their entitlements.

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[20] Jacobs (2008)
[21] In this example, more fine-grained indicators related to the actual biodiversity outcomes and costs incurred may be preferable.

In rewarding environmental improvement, allocation criteria must not be responsive to the severity of the environmental challenges in the different member states in a way that would reward poor stewardship of environmental goods. In the best case, successful environmental protection is recompensed.

The difficulty in this is to avoid windfall gains. These would arise, for example, if member states were awarded subsidies for improvements in water quality when water quality may also improve because of shifting agricultural production patterns or lesser non-agricultural pollution rather than more sustainable farming practices driven by the subsidies per se.

(v) Fairness

Fairness relates to rewarding member states whose past record of public goods stewardship is good. Generally, fairness is closely connected to the other desirable characteristics: an indicator with robust and stable data, high allocative effectiveness and positive dynamic incentives is likely to be perceived as just. However, in certain cases fairness may also conflict with other aspects (see below).

2.4   Conflicts between allocation criteria

These characteristics may be in conflict, for example:

i.   Allocative effectiveness vs. dynamic incentives (high vs. low-performers):

From the allocative perspective, it would be for example best to spend money where water is the most polluted. If the cause of this pollution is poor agricultural practices, the marginal abatement costs will generally be lowest in these member states. Furthermore, improvements in the quality of water will be valued most highly there. But this would establish perverse incentives and conflict with the polluter pays principle.

ii.   Allocative effectiveness vs. dynamic incentives (targeting levels or changes):

One question is whether levels of the provision or under provision of public goods should be rewarded and/or changes therein. The cause of the conflict is a tension between allocative effectiveness and dynamic incentives. While basing distribution criteria on levels can be compatible with dynamic effectiveness (take the case of Natura 2000 areas mentioned above), the most effective incentives would be created by rewarding performance improvements.

iii.   Effectiveness vs. fairness:

Allocative effectiveness and dynamic incentives would suggest allocating most funding to member states where the marginal gains are highest. This tends to benefit member states where the current provision of public goods is lowest (e.g. water quality is worst) or where the strongest improvements have been obtained. But this would run against the principle of fairness by giving more money to member states that tend to have relatively poor regulation to protect and promote their public goods (and that keep this low level or start improving). If low performance is rewarded (e.g. water quality via NVZ), payments should at least be earmarked for measures that address the underlying problem – otherwise they are less acceptable from a fairness perspective and create more serious incentive-problems.

iv. **Effectiveness vs. fairness (targeting or equality):**

Allocative effectiveness and incentives can produce a highly concentrated distribution that contradicts the idea that farmers (as recipients of money) and citizens (as beneficiaries of public goods) are entitled to reasonably equal support from the CAP. How this conflict is likely to be handled will depend on the strength of cross-border spillovers of the public good concerned. To the extent that public goods are supported through the CAP beyond their European value, it can be considered fair to spread them relatively evenly across the EU, whereas it will likely be more acceptable that genuinely European public goods, notably a stable climate, are promoted wherever this can be done at lowest cost.

v. **Allocative effectiveness and dynamic incentives vs. technical robustness**

Allocative effectiveness and dynamic incentives can be improved by increasing the number of criteria, by using more complex criteria that are constituted by several sub-criteria, and by using criteria specifically created for, and tailored to, the task of allocating CAP funds. This complicates data issues compared to reliance on a few existing definitions and data (e.g. Natura 2000, organic farming).

3. Using allocation criteria to select indicators

A discussion of potential indicators is set out in this chapter and a common analysis of these using the allocation criteria is shown at appendix 5 However, it is important to note that few indicators will satisfy all criteria and that the choice of indicators inevitably represents a compromise.

Ideally, CAP budget allocations would reflect the resource costs of meeting policy objectives. For example, achieving a given environmental standard or level of farm income. However, estimation of such costs (of budgetary "needs") is hindered by a number of factors. These include variation and uncertainty in the effectiveness of different policy instruments and the conflation of different objectives within a single policy. For example, effectiveness can be contingent on spatially and temporally heterogeneous local circumstances and/or states of nature whilst pursuit of a given objective may be compromised by accommodation of other objectives.

In such circumstances, the use of allocation keys – or indicators – serves as a proxy mechanism for determining the distribution of budgetary resources, accepting that the distribution will only at best approximate the true "need". The better that an indicator reflects policy conditions, the closer the approximation. Given that both the requirements for intervention and the potential for intervention to generate desired outcomes can vary between and within Member States, indictors able to reflect such heterogeneity are more likely to yield a better approximation, for example, by distinguishing between different types of land or labour. However, such sub-division and disaggregation increase data requirements and add complexity through the need for indicator combinations/layering. More typically, indicators rely upon average values and presence/absence data rather than some more revealing information on variation in the policy problem and/or scope for policy intervention across different locations. For example, farms and farmland exhibit significant biophysical and socio-economic heterogeneity in terms of both current and potential conditions and thus amenability to policy effort. The greater the variation around the average, the less likely it is that allocations will reflect "need" accurately.

Nevertheless, pragmatically, the use of average indicators in this way reflects the lack of more detailed information and the need for simple allocation keys. Moreover, given the current absence of any robust allocation keys the considered use of such indicators does still mark an improvement and an opportunity to shift budget allocations towards a more coherent basis. The latter is an important point since the history and highly politicised nature of the CAP mean that any allocation exercise is unlikely to adopt a zero-based budgeting approach but rather will be conditioned strongly by existing allocations and thus the "direction of travel" is perhaps more important than striving for an unidentifiable optimal allocation in terms of marginal policy effort.

While the remit of this study is to scope and select potential indicators by funding pillar, there is substantial cross-over of socio-economic and environmental objectives between pillars. This is emphasised by the EU Commission's belief that a revamped rural development policy can contribute more effectively to the Europe 2020 strategy[22] by promoting farming that uses and manages resources in a sustainable manner. This

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[22] Europe 2020 is the EU's follow-up strategy to the Lisbon agenda for growth and jobs, and focuses on smart, sustainable and inclusive growth.
http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf

might for instance focus on a low-carbon rural economy and investments in renewable energy, highlighting the significance of climate change in the wider policy agenda[23].

Given this, we have opted to scope and analyse potential indicators by objective, namely i) socio-economic and ii) environmental and landscape objectives, rather than by pillar. The study does not evaluate objectives but confines itself to assessing the appropriateness of different criteria in the light of the commonly proposed objectives. A discussion of policy objectives that have not been considered in the study can be found in Appendix 4.

3.1 Environmental and landscape objectives[24]

The scope of environmental public goods relevant to CAP is considered in a recent study on the provision of public goods through agriculture in the EU (IEEP, 2009). While this is largely consistent with the policy objectives set out in a recent LUPG study (ADAS and SAC, 2009), there are some additions, notably air quality and resilience to fire, while public access is not included.

The IEEP list is as follows:

1. Agricultural landscapes (to include farmland historic environment)
2. Farmland biodiversity
3. Water quality
4. Water availability
5. Soil functionality
6. Climate change stability – carbon storage
7. Climate change stability – greenhouse gas emissions
8. Air quality
9. Resilience to flooding
10. Resilience to fire

For the purpose of this study we have been as comprehensive as possible, using the IEEP list with some additions and omissions[25].

What follows is a short overview of potential criteria with regard to commonly proposed environmental and landscape policy objectives and measures which draws on the desirable characteristics set out in section 3. It is difficult to organise these criteria into groups because most relate to several objectives and instruments. Four groups (useful but not stringent delineation) are identified and discussed in this section and are assessed in Appendix 5.

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[23] Some commentators have considered that climate change may represent a new axis for Pillar II support but this comes at a time when others are questioning the inflexibility of having axes at all.

[24] Swales (2007) reviews the role of Pillar II in delivering environmental outcomes, including axis 3 measures such as support for 'green' businesses, support for eco-tourism activities, sustainable energy and capacity building.

[25] In addition to environmental public goods, the IEEP considered that farm animal welfare and animal health were also important public goods from agriculture. We have considered the relevance of farm animal welfare as an allocation key for CAP funding between MS and concluded that it is not appropriate as animal welfare standards depend on national legal baselines. While these are underpinned by common regulation at EU level, performance above the baseline should primarily be driven by consumer demand (willingness to pay). There are also many issues of cultural difference in defining welfare.

(i)   Criteria based on land cover classes

This group relates to a need to respond to funding needs associated with certain land cover classes and to incentivise creation of certain land cover classes to support policy objectives.

- Agricultural area

- Farm woodland[26]

- Permanent Grassland area

- Other land-use stocks and changes

(ii)   Criteria based on farming practices and restrictions

This group relates to provision of environmental and landscape objectives through specific management approaches. In some cases the potential indicator is specific and policy-led (e.g. Natura 2000) while others may reflect natural limitations (e.g. extensive grazing) or commercial drivers (e.g. reduced/no tillage).

- Natura 2000 area

- Organic farming area

- Low input farming

- Extensive agriculture

- Landscape (designated area)

- Reduced/no tillage

(iii)   Criteria targeted at specific public goods

A third group of indicators is more closely linked to specific public goods than the preceding indicators whose links to policy objectives are more diverse. Some of these criteria are based on areas that are especially valuable (e.g. HNV farming area) or threatened (e.g. areas at risk of soil erosion); others are not directly linked to land area (e.g. GHG emissions).

A general problem for this type of indicator is allocative effectiveness. Thus where the quantity of public good is high, there is a high cost to protect and where the good is undersupplied, there is a need to support new provision. Who will define the optimum level of supply and thus the funding needed to protect or create more public good? Another difficulty arises over the fact that agriculture is only one factor that influences environmental outcomes, and the specific contribution of agriculture may be difficult to determine. Environmental performance may thus be only weakly linked to spending needs in favour of more environmentally friendly agriculture.

The indicators are:

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[26] Farm Woodland is a reasonable proxy to cover woodland aspects but management of the wider woodland area is an important environmental land objective within Pillar II – see Table 18.

- Biodiversity
  - Wildlife populations
  - High Nature Value farmland and forestry (HNVF)[27]
- Landscape elements
- Soil
- Land abandonment
- Flood management
- Water scarcity
- Water quality
- Public access
- Climate change related indicators
  - Emissions
  - Sequestration
  - Energy crops
- Livestock numbers

(iv)　Economic criteria

The cost of delivering environmental and landscape objectives is in part dependent on the cost of goods and services, including agricultural labour at Member States level. As this varies significantly across the EU, it is appropriate to consider some economic indicators, notably:

- GDP per capita

3.2　Socio-economic objectives

Historically a core function of the CAP has been to support farm incomes and maintain farmers on the land. The initial objectives set out in Article 39 of the Treaty of Rome were focused on increasing productivity by promoting technical progress, ensuring a 'fair' standard of living for the agricultural community and stabilising food markets for the benefit of suppliers and consumers but these objectives are not well defined (for example, what is a fair income and at what level is it measured?). While recent reforms have reduced the market intervention role, income support remains an important element of Pillar I through the decoupled Single Farm Payment.

A related socio-economic objective is rural vitality. This is defined by IEEP as a composite of social, cultural and economic dimensions with an emphasis on viability of rural communities. In some areas, active agriculture is central to the latter in terms of maintaining a critical social mass to sustain services and infrastructure but this is often not the case. However, they argue that even where the contribution of agriculture to the economy and employment is small, cultural traditions and links make the wider case for rural vitality as a public good.

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[27] Whilst Member States and/or regions have been required to produce a baseline estimate of the extent of HNV farming for submission in their rural development programmes, a baseline estimate of the extent of HNV forestry does not yet exist in many Member States http://ec.europa.eu/agriculture/rurdev/eval/hnv/guidance_en.pdf

The RDP supports rural vitality indirectly through all first- and second-pillar funding targeted at agriculture but it also supports the wider rural economy and service provision directly through Pillar II, axis 3 measures such as support for business creation and development, encouragement of tourism activities, and village renewal and development. This study focuses on allocation criteria related to agriculture and land use.[28] Allocation criteria for rural vitality expenditures unrelated to agriculture and land use require a separate discussion.[29]

While supporting farm income is a broad policy objective of the CAP, it is not currently used as a funding key. Resources associated with production such as land and labour may also be relevant indicators. Funding needs for some measures (farm modernisation, restoring agricultural production potential, meeting standards based on Community legislation, information and promotion activities, and producer groups) are linked to the value of agricultural production.

- Agricultural area
- Agricultural labour
- Farm income
- Gross or Net Value Added of agricultural production
- Agricultural labour productivity
- Less Favoured Areas
- Age structure in agriculture
- Number of farms
- Semi-subsistence farming
- GDP per capita

3.3 Analysis of indicators as funding keys

The complete list of indicators listed in section 3 has been assessed against the selection framework at appendix 5 and the results are summarised in Table 1. The analysis gives a list of eight indicators available for modelling as funding keys at this point and highlights a further six future indicators, subject to improved definition or availability of data (see 4.2). The indicators to model are as follows:

1. Utilisable Agricultural area (UAA)
2. Forest area (Farm woodland)
3. Permanent grassland area
4. Natura 2000 (N2K)
5. Organic Farming area (OFA)
6. Extensive Agriculture
7. Agricultural labour
8. Less Favoured Area (Mountainous LFA+ Intermediate LFA)[30]

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[28] This excludes Pillar II support under axis 3 with the exception of measure 311 'diversification into non-agricultural activities' which is only eligible for farmers.
[29] See Barca (2009) on new policies to help lagging regions.
[30] For the purpose of this study, a proxy for the new Less Favoured Area (LFA) area is required; we have used the combined Mountainous Area plus Intermediate LFA as the dataset, leaving out Areas Affected by Specific Handicaps. See definitions at http://ec.europa.eu/agriculture/rurdev/lfa/index_en.htm

The detailed definitions and data sources for the eight indicators are presented in appendix 6.

Table 1: Summary table against evaluation criteria for indicators included

G=Good; M=Moderate; P=Poor	Data availability	Data robustness	Policy relevance	Allocative effectiveness	Dynamic incentives	Fairness	Recommendation
Agricultural area	G	G	M	M	M	M	Include
Farm woodland area	G	G	G	G	P	M	Include
Permanent grassland area	G	G	G	M	P	M	Include
Other land use stocks/change	G	G	G	P	M	M	Include (F)
Natura 2000	G	G	M	G	G	G	Include
Organic farming area	G	G	M	M	M	M	Include
Low input farming	M	M	M	P	P	P	Exclude
Extensive agriculture	G	M	M	P	P	P	Include
Reduced/no tillage	P	P	M	P	P	P	Exclude
Biodiversity (wildlife populations)	M	P	G	P	P	P	Exclude
Biodiversity (HNVF)	P	P	G	G	G	G	Include (F)
Landscape (designated area)	M	P	M	P	P	P	Include (F)
Soil (at risk)	G	P	G	M	M	M	Include (F)
Land abandonment	P	P	M	P	P	P	Exclude
Flood management	M	P	G	P	M	M	Include (F)
Water scarcity	G	M	M	P	P	P	Exclude
Water quality	G	G	M	M	P	M	Include (F)
Public access	P	P	M	P	P	P	Exclude
Climate change (GHG emissions)	M	P	G	M	P	P	Include (F)
Climate change (sequestration)	M	P	M	M	P	P	Exclude
Climate change (energy crops)	M	M	M	P	P	P	Exclude
Livestock numbers	G	G	G	P	P	P	Exclude
Agricultural labour	G	G	M	M	P	P	Include
Farm income	G	G	M	P	P	P	Exclude
Agricultural GVA	G	G	M	P	P	P	Exclude
Agricultural labour productivity	G	G	M	P	P	P	Exclude
Less Favoured Area	G	M	M	P	P	P	Include
Age structure in agriculture	G	M	P	P	P	P	Exclude
Number of farms	G	G	P	P	P	P	Exclude
Semi-subsistence farming	G	G	P	P	P	P	Exclude
GDP per capita[31]	G	G	M	M	M	M	Prosperity scaling

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[31] GDP per capita is not used as a basis for allocation per se but instead to be used to temper or dampen the raw allocation to allow for relative prosperity.

3.4 Prosperity scaling

GDP, or rather per capita GDP, is qualitatively different to the other candidate indicators considered here. Whereas the other indicators are used such that a Member State's share of the aggregate EU27 total for the indicator drives the budget share directly, per capita GDP is used to scale the allocations generated by the other indicators. This happens in one of two ways depending on the purpose of the scaling.

i. If the CAP budget is viewed as a means of addressing inequalities in standards of living across the EU, then differences in per capita GDP between Member States could be adjusted to transfer funding from (relatively) richer to (relatively) poorer Member States. Arguably, this could be done more directly and effectively through cohesion and structural policy funds or through differential co-financing rates. Nevertheless, as already happens with some modulation receipts, per capita GDP can be used to increase the allocation to poorer Member States and decrease that to richer ones.

ii. In recognition of variation in local resource management costs across Member States (e.g. land values, average incomes), the raw budget allocation generated by other indicators is scaled upwards for richer Member States and downwards for poorer ones. That is, for example, even if parcels of land in the UK and in Poland might generate equal policy outcomes, since the resource costs per unit of outcome are higher in the UK than in Poland, the allocation to a UK hectare needs to be higher. Hence whereas other indicators generate a budget share proportionate to the Member State's (inferred) need for policy intervention, the GDP indicator is used to also reflect per unit outcome costs of intervention.

In both cases the scaling is proportionate to the difference between an individual Members State's per capita income and the EU27 average and is based on the formula used in relation to redistribution of compulsory modulation receipts.

In the first case (favouring poorer Member States) the scaled allocation is calculated as:

Raw Allocation * (1+ (1/3*((EU27 average per capita GDP – MS per capita GDP)/ (EU27 average per capita GDP)))

In the second case (favouring richer Member States) the scaled allocation is calculated as:

(Raw Allocation) *(1+ (1/3*((MS per capita GDP - EU27 average per capita GDP)/ (EU27 average per capita GDP)))[32]

The 1/3 is a dampening factor that could be higher or lower. As with the current compulsory modulation redistribution formula, to avoid extreme swings, at least 80% of the raw allocation has to remain with the Member State. For symmetry, a cap on gains was also set at 20%. Hence scaling can not alter an allocation by more than +/- 20%. Appendix 7 reports the scaling values used. For both forms of scaling, GDP figures used were a three year average (2005 – 2007). For scaling in favour of poorer

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[32] For example, a richer MS with a raw allocation of 10 and a per capita index of 130 relative to an EU27 average of 100 would have its allocation scaled down to (10)*(1+(1/3*((100-130)/100)))=10*0.9=9 under the first case or scaled up (10)*(1+(1/3*((130-100)/100)))=10*1.1=11 under the second case. In the first case, GDP should be expressed in purchasing power parity terms; in the second case it should not be. Scaling is applied to the underlying raw data to ensure that adjusted shares sum to 100%.

Member States, Purchasing Power Standard (PPS) GDP figures were used. For scaling in favour of richer Member States, unadjusted GDP figures were used.

The two forms of prosperity scaling have different rationales and operate in different directions. As such, deploying them both together would be odd – although the two would not necessarily cancel each other out. However, previous instances of ad hoc adjustments for individual Member States under structural and cohesion fund allocations suggest that differential scaling could be deployed – although is not explored here beyond the reporting of results for each Member State.[33]

3.5   Future indicators

In addition, we have identified 7 indicators for future use, subject to resolution of data availability and/or robustness issues. These are:

1. Land use change
2. Biodiversity (HNVF)
3. Landscape (designated area)
4. Soil (at risk)
5. Flood management
6. Water quality
7. Climate change (GHG emissions)

All reflect high priority environmental objectives and offer potentially superior targeting of policy resource costs ("need") but are currently hampered by data issues relating to definitions and coverage – although existing efforts to develop them across the EU should be encouraged. The recommendation is to include for modelling where the criteria are met and data availability/robustness is good; where the criteria are met but there are currently data issues which might be resolved, we have recommended as future indicators. Where the criteria are not met, the indicator has been excluded and not taken forward for modelling.

The selected indicators are considered below in Table 2 under the three categories of existing funding stream to ensure reasonable coverage and highlight gaps.

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[33] Speculative modelling of differential scaling would require recalculation across all Member States since the adjustments need to sum to 100%.

Table 2: Shortlist of indicator keys by funding stream

Indicator	Pillar I		Pillar II
	Socio-economic	Environmental	Environmental
Agricultural area	✓	✓	✓
Farm woodland area		✓	✓
Permanent grassland area		✓	✓
Land use change		✓	✓
Natura 2000 area		✓	✓
Organic farming area			✓
Extensive agriculture			✓
Landscape (designated area)			✓
HNV Farming			✓
Soil protection		✓	✓
Flood management			✓
Water quality improvement		✓	✓
GHG emissions from agriculture			✓
Less Favoured Area	✓	✓	✓
Agricultural Labour	✓		
GDP per capita[34]	✓	✓	✓

Key:

High level generic indicators allowing for the multiple socio-economic and environmental impacts of agriculture
High level indicators reflecting delivery of environmental public goods from 'high value' areas, across a number of policy objectives.
Indicators linked to land management practices are key to avoiding soil degradation and/or reducing GHG emissions and preventing flood risk and/or improving water quality
Socio-economic indicators which could be used proportionately or inversely to reflect on one hand the higher opportunity cost of land management for public goods in the EU15 or to reflect economic development needs in NMS

The indicators have been further mapped against the list of environmental policy objectives to highlight overlaps and gaps in coverage (Table 3).

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[34] GDP per capita is not used as a basis for allocation per se but instead it is used to dampen the raw allocation in the scenarios to allow for relative prosperity.

Table 3: Alignment of provisional indicators and policy objectives

	Biodiversity	Landscape	Soil (AT RISK)	Land abandonment	Flood management	Water scarcity	Water quality	Public access	Climate change
Agricultural area	M	M	M	M	W	W	M	W	M
Farm Woodland	W	W	W	W	W	-	W	W	S
Permanent grassland area	W	W	M	W	W	-	M	W	M
Land use change	S – W depending on change								
Natura 2000	S	W	W	W	W	-	-	W	W
Organic Farming area	W	W	M	-	-	-	M	W	W
Extensive agriculture	M	M	M	W	-	-	S	W	W
Landscape (designated areas)	M	S	W	W	-	-	W	M	W
HNV Farming	S	M	W	W	-	-	W	W	W
Soil protection	W	W	S	W	M	-	M	-	M
Flood management	W	W	-	-	S	-	W	-	W
Water quality improvement	W	-	W	-	-	-	S	-	W
Climate change (emissions)	W	W	M	-	W	W	W	-	S
Less Favoured Area	M	M	M	M	W	-	W	W	W
Agricultural Labour	W	W	W	M	W	W	W	W	W
GDP per capita[35]	-	-	-	-	-	-	-	-	-

Key:

W = Weak

M = Medium

S = Strong

The analysis suggests that coverage of some policy objectives is quite weak (water scarcity and public access); this coincides with objectives which are not well represented in RDP measures. More generally, it highlights the broad coverage across a number of indicators and as such the issue of overlap.

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[35] GDP per capita is not used as a basis for allocation per se but instead it is used as a prosperity scaling factor.

3.6 Transitional allocation indicators

The move from a largely historic system of funding allocation to one based on a robust rationale, linked to policy objectives and public goods will involve a shift in funding between Member States.

As Pillar I and II budgets change to reflect the use of different allocation keys and/or reductions in the overall EU-level budget for the CAP, individual Member States will need to reassess and reprogram their expenditure profiles. For those enjoying increased budgets, this will be relatively painless; for those suffering cuts, it will involve hard decisions about relative priorities.

This process of adjustment could be eased by allowing Member States a transitional period during which budget changes were phased-in rather than implemented in one step. Such an approach would allow those facing budget cuts to (if necessary) unwind more gradually from on-going commitments and those facing increases to refrain from committing significant new expenditures on new interventions until they had some experience of planning and establishing them.

The manner of any transition and the period over which it applied would be subject to negotiation. In principle, this could be achieved through the use of transitional indicators. However, in practice it may be simpler to base any phasing on simpler incremental change over time – such as allowing Member States three or five years to unwind from current expenditure commitments or programme increased commitments.

Crudely, the longer the transition period, the more gradual the adjustment process and the greater the potential flexibility and ability to avoid short-term disruption. However, given the length of EU financial perspectives and previous RDR programming periods, it may be reasonable to assume that a three transition year period would be permitted. Within this, it is simplest to assume a staggered implementation of budget changes, perhaps either 1/3 (cumulatively) in each year or 20%, 50%, 100% in successive years. This approach is shown in the UK context later.

4. Modelling of indicators

The eight selected indicators have been modelled using the most recent datasets available to illustrate the distribution of funding across member states. The distribution by country according to the single indicator relative to the allocation of budget in 2013 (Pillar I and 2 separately) is shown in Appendix 8, which gives an indication of fit between the indicator and the status quo.

In modelling distributions, it became apparent that the use of some datasets needs to be accompanied by caveats. In particular, although taken from official sources, the indicator data may be of variable quality due to ambiguities and variation in how Member States have reported figures to the European Commission or how indicators have been calculated from survey data. For example, relatively high coefficients for converting sheep numbers to Livestock Units (LU) has resulted in Wales or Northern Ireland having a zero count for extensive agriculture (at NUTS 3 level). Similarly, there are anomalies in terms of whether indicators are restricted to farmland area or represent a wider dataset. Thus the N2k data is not restricted to farmland while Farm Woodland excludes some woodland area which might attract Pillar II funding. Such caveats do not invalidate the general patterns revealed by the modelling results, but do reinforce their nature as illustrative rather than definitive.

In this section we have presented the distribution by indicator on a percentage basis for each member of the EU 27 (section 5.1 and section 5.2) and separately within the four UK countries (section 5.3). This is compared to existing Pillar I and Pillar II budgets to highlight winners and losers. In all cases, to allow like-for-like comparisons across Member States, both the baseline and modelled budget figures exclude co-financing and (for the UK) ignore voluntary modulation transfers from Pillar I to Pillar II.   This is on the basis that the central focus here is on how the core, centrally-determined EAFRD budget is allocated rather than the degree to which Member States use domestic discretion to add to it (although both points are addressed subsequently in the more detailed UK-level analysis). Equally, whilst the baseline Pillar I and Pillar II budgets are net of, respectively, compulsory modulation deductions and injections, it is assumed that the adoption of formal allocation keys will remove the need for such ad hoc secondary transfer mechanisms in future and thus modulation was not modelled.

The analysis is presented in two sets of charts (figures 1-8) for each indicator at EU level:

(i)   For Pillar I: distribution of winners and losers expressed both in changes in percentage share as a proportion of EU total 2013 (blue bars) and in percentage change in absolute budget at Member States level (yellow pins); and

(ii) For Pillar II: distribution of winners and losers expressed both in changes in percentage share as a proportion of EU total 2013 (red bars) and in percentage change in absolute budget at Member States level (green pins).

For an individual indicator, the share of a given budget is driven solely and directly by the Member State's share of that indicators EU-wide total value. For example, if a Member State has 10% of the EU27's total permanent grassland area, it would get 10% of the EU27 budget. In reporting changes to budget shares, a distinction is drawn between the change in percentage points as a proportion of the EU total and how this manifests itself as a proportionate change at the Member State level. For example, a gain of one percentage point of the EU27 total is proportionately more

significant relative to an initial share of two percentage points (i.e. a 50% gain) than a share of 20 percentage points (i.e. a 5% gain).

The distributional analysis for GDP per capita is not presented because we do not propose to use the indicator as a basis for allocation *per se* but instead to use it to temper or dampen the raw allocation to allow for relative prosperity. Specifically, "raw" allocations based on the proposed indicators could be adjusted to reflect differences in relative prosperity across the EU27. For example, relatively poorer Member States could receive an increased allocation to reflect pursuit of cohesion objectives. Conversely, richer Member States with higher land management costs could receive an increased allocation in recognition of higher land management costs. However, it should be noted that the changes as a result of prosperity have been capped at+/-20%, as with the modulation receipt formula; and that the scaling is applied to the underlying raw data rather than the percentage shares such that the adjusted shares sum to 100%. The effects of prosperity scaling are presented in Section 5.2.

4.1   Modelling results by indicator for EU-27

In this section, the modelling results are presented for each indicator at the EU level, followed by a matrix analysis of winner and loser position for each Member States for Pillar I and Pillar II budget. In all cases, changes in shares are shown for both the percentage point share of the EU-level budget (scaled to the left-hand axis) and the associated percentage change in the Member State's budget (scaled to the right-hand axis). The latter is more volatile than the former for smaller Member States (e.g. Latvia), with the reverse holding true for larger Member States (e.g. France).

Share of UAA		PILLAR I BUDGET	
		Winners	Losers
PILLAR II BUDGET	Winners	ES, **UK**,SE, LV	FR, DE, IE, DK, NL, BE,
	Losers	PL, RO, CZ, PT, AT, BG, LT, FI, SK, EE	IT, HU, EL, SI, CY, LU, MT

Spain, **UK**, Sweden and Latvia will gain for both pillars if UAA is used as the basis for funding allocation; whereas Italy, Hungary, Greece, Slovenia, Cyprus, Luxembourg and Malta will lose in both pillars. Other MEMBER STATES will lose in one pillar but will gain in the other. Generally, EU-15 countries will lose in the Pillar I budget allocation but will gain in Pillar II while EU-12 countries will gain in Pillar I but lose in Pillar II.

In terms of changes in absolute budget, Romania, Lithuania, Latvia and Estonia will have relatively big changes in Pillar I funding (more than 100% change relative to current budget); whereas France, UK, Demark and Malta will see big changes in Pillar II budget.

Figure 1: Distribution of funding based on Utilisable Agricultural Area (UAA)

Winner and loser positions for Pillar I budget based on UAA as an indicator

Change in % Pillar I budget share   % Change in absolute Pillar I budget

Winner and loser positions for Pillar II budget based on UAA as an indicator

Figure 2: Distribution of funding based on Farmland Woodland Area

Winner and loser postions of Pillar II budget based on farm woodland area as an indicator

Winner and loser positions of Pillar I budget based on farm woodland area as an indicator

Legend: Change in % Pillar I share | % Change in absolute Pillar I budget

Share of	PILLAR I BUDGET		
Farm Woodland Area		Winners	Losers
PILLAR II BUDGET	Winners	ES, IT, SE, FI, AU, CZ, HU, SK, LV, SI	-
	Losers	RO, PT, EE	DE, PL, FR, **UK**, DK, LT, IE, EL, NL, BG, LU, CY, MT

Spain, IT, Sweden, Finland, Austria, Czech Republic, Hungary, Slovakia, Latvia and Slovenia will gain in both pillars if farm woodland area is used for funding allocation; whereas Germany, Portland, France, **UK**, Demark, Lithuania, Ireland, Greece, Netherlands, Bulgaria, Luxembourg, Cyprus and Malta will lose in both pillars. Other MEMBER STATES (Romania, Portugal and Estonia) will gain in Pillar I but lose in Pillar II.

In terms of changes in absolute budget, Sweden, Finland, Austria, Czech Republic, Slovakia, Latvia, Bulgaria and Estonia will see big gains in Pillar I budget (more than 100% changes relative to current budget); Sweden, Finland, Austria, Latvia will have big gains in Pillar I budget as well; whereas Cyprus and Malta will have biggest losses in terms of percentage changes relative to current Pillar II budget.

Figure 3: Distribution of funding based on Permanent Grassland Area

Winner and loser postions of Pillar II budget based on grassland area as an indicator

Winner and loser positions of Pillar I budget based on grassland area as an indicator

Share of		PILLAR I BUDGET	
Permanent Grassland Area		Winners	Losers
PILLAR II BUDGET	Winners	**UK,** ES, IE, LV, LU	FR, NL, BE
	Losers	RO, PT, AT, LT, SI, EE, SK	DE, IT, PL, CZ, EL, HU, SE, BG, DK, FI, CY, MT

UK, Spain, Ireland, Finland, Latvia and Luxembourg will gain in both pillars if permanent grassland area is used as the basis for funding allocation; whereas Germany, Italy, Poland, Czech Republic, Greece, Hungary, Sweden, Bulgaria, Demark, Finland, Cyprus and Malta will lose in both pillars. Other MEMBER STATES will lose in one pillar but will gain in the other (France, Netherlands and Belgium will lose in Pillar I budget allocation but will gain in Pillar II while Romania, Portugal, Austria, Slovenia, Estonia and Slovakia will gain in Pillar I but lose in Pillar II).

In terms of changes in absolute budget, Romania, Latvia and Estonia will experience relatively big gains in terms of percentage changes relative to current Pillar I budget whereas Cyprus and Malta will lose most in terms of percentage changes in absolute Pillar I budgets due to their small share of EU budget in the first place. For Pillar II, UK, Ireland and Netherland will gain most in terms of percentage changes whereas Finland and Bulgaria will see big losses. This is to say that permanent grassland area as a CAP allocation key would favour UK both in terms of the share points in EU budget and in terms of percentage changes in absolute budget, especially for Pillar II.

Figure 4: Distribution of funding based on Natura 2000 Area

Winner and loser postions of Pillar II budget based on Nature 2000 area as an indicator

Winner and loser positions of Pillar I budget based on Natura 2000 area as an indicator

Share of		PILLAR I BUDGET	
Natura 2000		Winners	Losers
PILLAR II BUDGET	Winners	ES, SE, FI, BG, EE, LV, SI	**UK**, NL, BE
	Losers	PL, RO, PT, AT, SK, LT	FR, IT, DE, EL, HU, CZ, IE, DK, CY, LU, MT

Spain, Sweden, Finland, Bulgaria, Estonia, Latvia and Slovenia will gain in both pillars if Natura 2000 area is used as the basis for funding allocation; whereas France, Italy, Germany, Greece, Hungary, Czech Republic, Ireland, Demark, Cyprus, Luxembourg and Malta will lose in both pillars. Other MEMBER STATES will lose in one pillar but will gain in the other (**UK**, Netherlands and Belgium will lose in Pillar I budget allocation but will gain in Pillar II while Poland, Romania, Portugal, Austria, Slovakia and Lithuania will gain in Pillar I but lose in Pillar II).

In terms of changes in absolute budget, Sweden, Finland, Bulgaria, Estonia, Latvia and Slovakia will see big changes in Pillar I. For Pillar II, Spain, Sweden, Finland and Bulgaria will gain most whereas Malta will see big losses in terms of percentage change in absolute Pillar II budget due to Malta's small share of the EU total.

Figure 5: Distribution of funding based on Organic Farming Area

Winner and loser positions of Pillar I budget based on organic farming area as an indicator

■ Change in % pillar I share   ● % change in absolute Pillar I budget

Winner and loser postions of Pillar II budget based on organic farming area as an indicator

Share of		PILLAR I BUDGET	
Organic Farming		Winners	Losers
PILLAR II BUDGET	Winners	ES, IT, **UK,** AT, CZ, SE, LV, FI, EE	DE, DK
	Losers	PT, SI, LT, SK	FR, EL, PL, RO, HU, IE, NL, BG, BE, LU, CY, MT

Spain, Italy, **UK**, Austria, Czech Republic, Sweden, Latvia, Finland and Estonia will gain in both pillars if Organic Farming area is used as the basis for funding allocations; whereas France, Greece Poland, Romania, Hungary, Ireland, Bulgaria, Belgium, Luxembourg, Cyprus and Malta will lose in both pillars. Other MEMBER STATES will lose in one pillar but will gain in the other (Germany and Demark will lose in Pillar I budget allocation but will gain in Pillar II while Portugal, Slovenia, Lithuania and Slovakia will gain in Pillar I but lose in Pillar II).

In terms of changes in absolute budget, Austria, Sweden, Czech Republic, Portugal, Latvia and Estonia will have relative big gains in Pillar I budget in terms of percentage change. For Pillar II, UK, Sweden, Demark will gain most whereas Malta, Cyprus, Ireland, Hungary, Bulgaria, Romania and Poland seem to lose most in terms of percentage change in their Pillar II budgets.

Figure 6: Distribution of funding based on Extensive Agriculture

Winner and loser postions of Pillar II budget based on extensive agriculture as an indicator

Share of		PILLAR I BUDGET	
Extensive Agriculture		Winners	Losers
PILLAR II BUDGET	Winners	ES, RO, LT, SE, LV, PT, EE	**UK**
	Losers	PL, AU, SK	FR, DE, EL, BE, IT, DK, BG, HU, IE, NL, LU, CY, CZ, MT, SI, FI

Spain, Romania, Lithuania, Sweden, Latvia, Portugal and Estonia will gain in both pillars if extensive agriculture area is used as the basis for funding allocations; whereas France, Germany, Greece, Belgium, Italy, Demark, Bulgaria, Hungary, Ireland, Netherlands, Luxembourg, Cyprus, Czech Republic, Malta, Slovenia and Finland will lose in both pillars. Other MEMBER STATES will lose in one pillar but will gain in the other (**UK** will lose in Pillar I budget allocation but will gain in Pillar II while Portugal, Austria and Slovakia will gain in Pillar I but lose in Pillar II).

In terms of percentage changes in absolute budget, Spain, Romania, Portugal, Lithuania, Latvia and Estonia will have big positive changes in their Pillar I budgets. For Pillar II, Spain, Romania, UK, Lithuania, Latvia and Estonia will have big gains. Quite a number of countries will see big losses in their budgets. Therefore, if extensive agriculture is adopted as the CAP funding allocation key, it is expected that big changes relative to current positions will occur across EU-27.

Figure 7: Distribution of funding based on Agricultural Labour (AWU)

Winner and loser postions of Pillar II budget based on agricultural labour as an indicator

Winner and loser positions of Pillar I budget based on agricultural labour as an indicator

Share of		PILLAR I BUDGET	
Agricultural labour		Winners	Losers
PILLAR II BUDGET	Winners	PL,RO, IT , BG, CY	EL, NL, MT
	Losers	HU, PT, LT, SI, LV	ES, FR, DE, **UK,** AT, IE, CZ, SK, FI, BE, SE, DK, EE, LU

Poland, Romania, Italy, Cyprus and Bulgaria will gain in both pillars if agricultural labour is used as the basis for funding allocation; whereas most of the EU-15 countries including Spain, France, Germany, **UK,** Austria, Ireland, Finland, Belgium, Sweden, Luxembourg and Demark and some EU-12 countries including Czech Republic, Slovakia and Estonia will lose in both pillars. Other MEMBER STATES will lose in one pillar but will gain in the other (Malta, Netherlands and Greece will lose in Pillar I budget allocations but will gain in Pillar II while Hungary, Portugal, Latvia, Slovenia and Lithuania will gain in Pillar I but lose in Pillar II).

In terms of percentage change in absolute budget, the EU-12 countries appear to be the main winners whereas EU-15 countries generally lose, apart from Netherlands in Pillar II budget.

Figure 8: Distribution of funding based on Less Favoured Area

Winner and loser positions of Pillar I budget based on LFA as an indicator

Winner and loser postions of Pillar II budget based on LFA as an indicator

Share of	PILLAR I BUDGET		
LFA		Winners	Losers
PILLAR II BUDGET	Winners	FI, CZ, SE, EE, CY, MT, SK, IE, LV, LU, LT	**UK**
	Losers	PT, SI	ES, IT, FR, EL, AT, RO, BG, DE, PL, HU, BE, DK, NL

Finland, Czech Republic, Sweden, Estonia, Cyprus, Malta, Slovakia, Ireland, Latvia, Luxembourg and Lithuania will gain in both pillars if mountain and intermediate LFA area (current mountain LFA plus intermediate LFA) is used as the basis for funding allocations; whereas Spain, Italy, France, Greece, Romania, Bulgaria, Germany, Poland, Hungary, Denmark and Netherlands will lose in both pillars. The **UK** will gain shares in Pillar II but lose shares in Pillar I. Portugal and Slovenia will gain in Pillar I funding but lose in Pillar II.

In terms of percentage change in absolute budget, Luxembourg, Cyprus will gain most in both pillars, which is largely due to their current small shares of EU budget.

Summary of EU-27 results:

The above graphs (Figure 1 to Figure 8) display results for each Member State across the EU27 for each of the selected indicators. This allows like-for-like comparisons in terms of Member States' shares of the centrally-determined funds for Pillars I and II before the application of any domestic discretion.

There is considerable variation across Member States in terms of gain or losses of budget share, amplified further by differences between Pillar I and Pillar II. For example, UAA unambiguously benefits Romania, Spain and the UK and unambiguously penalizes Italy, Hungary and Ireland but has a more mixed effect on France, the Netherlands and Poland with one Pillar gaining but the other losing. Similarly, countries such as Sweden, Finland, Austria and Spain all gain under farm woodland, as do Italy and the Czech Republic to a lesser extent, but most other countries lose budget shares.

Although the magnitudes of changes vary, almost all Member States lose budget shares under at least one indicator, but equally gain under at least one indicator. Denmark, France, Germany, Greece and the Netherlands stand to lost Pillar I share under all indicators, with Luxembourg losing Pillar II share under all indicators. Conversely, Estonia, Latvia and Portugal gain Pillar I share under all indicators.

In some cases, such as Cyprus under permanent grassland, LFA in the Netherlands and extensive agriculture in Belgium, a Member State has none of an indicator and thus would lose 100% of its current budget share. In other cases, extreme gains can be made due to the combination of a small baseline budget share and relatively large indicator share. For example, LFA in Cyprus, Estonia and Latvia.

Depending on the direction of adjustment, prosperity scaling can either dampen or amplify the changes outlined above. For example, relative to the "raw" indicator allocations, favouring poorer Member States mitigates their losses and enhances their gains at the expense of richer Member States, whilst the opposite is true for scaling in favour of richer Member States. This is discussed in Section 5.2.

4.2 Modelling results adjusted by GDP per capita for EU-27

In this section, an overview of winner and loser position for EU 27 is presented as well as how this is compared to the distribution after prosperity scaling. The prosperity scaling is based on the scaling formula used previously within the EU15 for redistribution of compulsory modulation receipts, but in two ways rather than one direction. First, as a means of increasing transfers to poorer Member States to reflect cohesion-type objectives and, second, as a means of raising richer Member States' shares in acknowledgment of the higher resource costs (e.g. wages) of land management in such states. An overview of winner and loser positions is presented in Table 4 for Pillar I and Table 5 for Pillar II, where green cells represent winners and red cells represent losers.

Results in Table 4 suggest that Belgium, Cyprus, Hungary, Ireland, United Kingdom, Malta and Luxembourg will lose in Pillar I allocation on the majority of the indicators. Denmark, France, Germany, Greece and Netherlands will lose in Pillar I on all indicators. By contrast, Austria, Estonia, Latvia, Lithuania, Portugal, Romania, Slovenia, Slovakia, Spain and Sweden will win on most or all indicators for Pillar I funding.

Table 4: Winners and losers positions for Pillar I budget by Member States and by indicator (changes relative to current budget in million €), raw allocation (no scaling)

Member States	UAA	Farm woodland	Permanent grassland	Natura 2000	OFA	LFA	Extensive agriculture	Agricultural labour (AWU)
Austria	56	2,976	556	42	1,462	-370	184	-133
Belgium	-236	-560	-193	-339	-378	273	-569	-335
Bulgaria	240	781	-293	1,733	-419	-83	-499	1,254
Cyprus	-14	-46	-48	8	-35	1,656	-6	44
Czech Republic	26	1,145	-157	-145	893	20	-95	-336
Denmark	-319	-682	-816	-734	-156	-964	-947	-764
Estonia	130	220	111	454	376	1,672	497	25
Finland	16	3,736	-511	2,209	332	461	-85	-280
France	-1,194	-6,571	-1,887	-4,231	-4,586	-6,461	-5,489	-4,973
Germany	-1,272	-3,524	-1,814	-2,208	-307	-2,951	-4,184	-3,196
Greece	-1,154	-2,059	-1,538	-621	-503	-1,082	-2,023	-110
Hungary	-175	638	-828	-94	-574	-741	-715	242
Ireland	-253	-1,082	1,047	-871	-1,014	2,563	-1,255	-728
Italy	-1,031	1,024	-1,579	-742	2,616	-3,437	-972	534
Latvia	295	821	336	403	733	3,506	1,007	240
Lithuania	301	-120	262	133	365	2,437	1,374	303
Luxembourg	-3	-26	15	-13	-15	4,685	-35	-22
Malta	-2	-5	-5	-3	-5	-5	-5	10
Netherlands	-367	-820	-227	-481	-556	-831	-831	-241
Poland	959	-1,167	-382	184	-1,094	77	1,247	5,295
Portugal	275	407	743	474	801	2,299	1,141	641
Romania	2,243	359	2,252	179	-457	-340	6,078	6,789
Slovakia	116	1,064	52	370	337	627	166	-27
Slovenia	-14	377	80	311	40	102	-50	167
Spain	1,086	1,610	1,420	3,736	844	-2,724	6,585	-1,485
Sweden	37	4,301	-360	2,610	1,086	648	363	-484
UK	256	-2,797	3,763	-2,363	214	-1,037	-884	-2,431

Key to the table:

	Winners
	Losers

Results in Table 5 suggest that Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Poland, Slovenia, Romania, Slovakia and Portugal will lose in Pillar II allocations on most of the indicators. By contrast, Spain, Sweden and UK will gain on most of the indicators for Pillar II funding.

Table 5: Winners and losers positions for Pillar II budget by MEMBER STATES and by indicator (changes relative to current budget in million €), raw allocation (no scaling)

Member States	UAA	Farm woodland	Permanent grassland	Natura 2000	OFA	LFA	Extensive agriculture	Agricultural Labour (AWU)
Austria	-265	747	-92	-270	222	-413	-221	-331
Belgium	37	-75	52	2	-12	214	-78	3
Bulgaria	-140	48	-325	378	-368	-252	-396	212
Cyprus	-9	-20	-21	-1	-16	570	-6	11
Czech Republic	-129	259	-192	-188	172	-131	-171	-254
Denmark	117	-8	-55	-26	174	-106	-100	-37
Estonia	-37	-6	-43	76	48	498	91	-73
Finland	-97	1,193	-279	664	13	58	-132	-199
France	1,027	-837	787	-26	-149	-799	-462	-283
Germany	-9	-789	-197	-333	326	-591	-1,018	-676
Greece	-330	-644	-463	-145	-104	-305	-631	32
Hungary	-230	52	-456	-202	-368	-426	-417	-86
Ireland	-5	-292	446	-219	-269	971	-352	-169
Italy	-371	341	-561	-271	893	-1,205	-351	171
Latvia	-2	180	12	35	150	1,111	245	-21
Lithuania	-32	-178	-45	-90	-10	709	340	-31
Luxembourg	-2	-10	4	-6	-6	1,623	-13	-8
Malta	-10	-11	-11	-10	-11	-11	-11	-6
Netherlands	58	-99	106	18	-8	-103	-103	101
Poland	-552	-1,289	-1,017	-821	-1,264	-858	-452	951
Portugal	-299	-253	-136	-230	-116	403	2	-172
Romania	-202	-855	-199	-917	-1,138	-1,097	1,128	1,374
Slovakia	-157	171	-180	-70	-81	20	-140	-207
Slovenia	-72	64	-40	40	-54	-32	-84	-9
Spain	805	987	921	1,724	721	-515	2,711	-86
Sweden	-14	1,464	-152	878	349	198	99	-195
UK	919	-139	2,134	11	905	471	524	-12

Key to the table:

	Winners
	Losers

Table 6 shows the results for Pillar I funding after prosperity scaling favouring low income countries. The results are expressed in percentages relative to base case, where green cells represent same direction of change as in base case and green cells represent opposition direction to base case. Although the precise values change throughout, only a few countries will experience change of direction in terms of change in percentage EU budget share relative to the un-scaled, raw allocation.

Table 6: Allocation of Pillar I budget after adjustment for cohesion (favouring low income countries), % change relative to raw allocation

Member States	UAA	Farm woodland	Permanent grassland	Natura 2000	OFA	LFA	Extensive agriculture	Agricultural Labour (AWU)
Austria	-25%	90%	83%	-62%	89%	103%	41%	161%
Belgium	110%	100%	110%	104%	102%	96%	100%	108%
Bulgaria	156%	132%	86%	124%	96%	-25%	100%	117%
Cyprus	98%	100%	100%	106%	99%	107%	118%	90%
Czech Republic	265%	110%	71%	76%	114%	582%	87%	101%
Denmark	117%	103%	101%	103%	134%	100%	100%	103%
Estonia	115%	114%	119%	111%	113%	116%	106%	113%
Finland	-159%	93%	100%	91%	85%	96%	156%	111%
France	123%	101%	108%	103%	102%	100%	103%	105%
Germany	122%	103%	110%	109%	181%	101%	103%	108%
Greece	99%	100%	99%	98%	91%	93%	100%	185%
Hungary	38%	134%	94%	-27%	86%	89%	95%	128%
Ireland	169%	103%	65%	108%	104%	81%	100%	116%
Italy	108%	92%	101%	111%	99%	99%	118%	33%
Latvia	119%	116%	121%	117%	118%	120%	110%	111%
Lithuania	125%	76%	132%	143%	127%	121%	110%	113%
Luxembourg	665%	120%	-92%	195%	182%	43%	100%	138%
Malta	94%	100%	100%	95%	100%	100%	100%	101%
Netherlands	116%	100%	129%	109%	105%	100%	100%	142%
Poland	153%	80%	3%	323%	75%	849%	132%	111%
Portugal	117%	116%	113%	113%	113%	115%	103%	100%
Romania	126%	175%	129%	225%	73%	46%	116%	113%
Slovakia	136%	113%	184%	118%	123%	124%	117%	62%
Slovenia	82%	104%	110%	103%	118%	119%	102%	94%
Spain	82%	91%	93%	93%	91%	98%	89%	119%
Sweden	-100%	90%	108%	88%	87%	91%	62%	107%
UK	-9%	102%	89%	104%	5%	104%	132%	106%

Key to the table:

	Same direction as base case in terms of winner and loser positions
	Opposite direction to base case in terms of winner and loser positions

Table 7 shows the results for Pillar II funding after prosperity scaling favouring low income countries. The results are expressed in percentages relative to base case, where green cells represent same direction of change as in base case and green cells represent opposition direction to base case. More countries than in Pillar I allocations will experience change of direction in terms of change in percentage EU budget share, with Spain and UK mostly affected on majority of the indicators.

Table 7: Allocation of Pillar II budget after adjustment for cohesion (favouring low income countries), % change relative to raw allocation.

Member States	UAA	Farm woodland	Permanent Grassland	Natura 2000	OFA	LFA	Extensive agriculture	Agricultural Labour (AWU)
Austria	178%	61%	335%	176%	-7%	145%	200%	164%
Belgium	-1236%	757%	-851%	-28442%	4288%	-132%	729%	-15482%
Bulgaria	140%	64%	127%	110%	126%	127%	126%	85%
Cyprus	419%	240%	236%	2628%	271%	102%	570%	-166%
Czech Republic	401%	-39%	301%	307%	-109%	382%	333%	259%
Denmark	-647%	10389%	1674%	3377%	-403%	909%	957%	2454%
Estonia	20%	-487%	30%	152%	184%	123%	137%	67%
Finland	374%	71%	190%	52%	-1981%	-346%	302%	231%
France	-549%	887%	-741%	26006%	4537%	921%	1536%	2454%
Germany	45120%	604%	2137%	1305%	-1137%	769%	491%	697%
Greece	545%	328%	416%	1109%	1496%	574%	333%	-4583%
Hungary	351%	-941%	231%	383%	259%	238%	244%	790%
Ireland	20994%	413%	-131%	523%	441%	-10%	357%	657%
Italy	828%	-693%	578%	1097%	-201%	321%	880%	-1537%
Latvia	-1599%	135%	442%	218%	142%	124%	122%	-22%
Lithuania	288%	143%	227%	173%	631%	113%	89%	335%
Luxembourg	1513%	339%	-629%	580%	543%	42%	269%	397%
Malta	40%	45%	45%	41%	45%	45%	45%	-4%
Netherlands	-1197%	835%	-607%	-3924%	9810%	807%	807%	-652%
Poland	238%	166%	179%	197%	167%	186%	277%	24%
Portugal	86%	82%	58%	80%	48%	135%	2205%	86%
Romania	-133%	58%	-149%	62%	73%	70%	154%	142%
Slovakia	112%	110%	110%	114%	108%	197%	117%	114%
Slovenia	125%	79%	141%	62%	131%	139%	123%	340%
Spain	-363%	-276%	-301%	-117%	-411%	806%	-44%	4467%
Sweden	3366%	59%	398%	37%	-41%	-134%	-395%	333%
UK	-260%	2420%	-57%	-29211%	-263%	-586%	-532%	26467%

Key to the table:

	Same direction as base case in terms of winner and loser positions
	Opposite direction to base case in terms of winner and loser positions

Results after prosperity adjustment favouring high income countries are presented in Table 8 and Table 9 for Pillar I and Pillar II budget allocations.

Table 8: Allocation of Pillar I budget after adjustment to reflect management costs (favouring high income countries), % change relative to raw allocation

Member States	UAA	Farm woodland	Permanent Grassland	Natura 2000	OFA	LFA	Extensive agriculture	Agricultural Labour (AWU)
Austria	268%	114%	122%	327%	115%	88%	189%	7%
Belgium	85%	100%	84%	92%	96%	134%	100%	86%
Bulgaria	42%	68%	114%	76%	104%	193%	100%	83%
Cyprus	113%	100%	100%	69%	103%	95%	98%	106%
Czech Republic	-446%	70%	178%	177%	65%	-603%	192%	115%
Denmark	56%	91%	97%	93%	-1%	100%	100%	92%
Estonia	69%	73%	64%	78%	75%	81%	84%	45%
Finland	553%	114%	99%	117%	129%	129%	-3%	80%
France	53%	99%	81%	92%	95%	98%	94%	90%
Germany	74%	96%	89%	88%	2%	93%	96%	89%
Greece	105%	100%	103%	112%	123%	105%	100%	60%
Hungary	212%	43%	109%	322%	123%	112%	110%	24%
Ireland	13%	97%	142%	90%	95%	133%	100%	77%
Italy	89%	115%	98%	82%	105%	99%	70%	204%
Latvia	73%	77%	71%	75%	76%	81%	84%	81%
Lithuania	60%	136%	53%	34%	61%	79%	82%	74%
Luxembourg	-109%	93%	163%	64%	72%	122%	100%	80%
Malta	114%	100%	100%	112%	100%	100%	100%	89%
Netherlands	81%	100%	67%	89%	94%	100%	100%	41%
Poland	27%	127%	230%	-200%	132%	-587%	53%	81%
Portugal	68%	73%	78%	77%	79%	87%	91%	93%
Romania	72%	22%	69%	-32%	128%	141%	83%	86%
Slovakia	24%	74%	-60%	64%	58%	71%	55%	249%
Slovenia	186%	86%	68%	86%	49%	78%	108%	95%
Spain	98%	95%	88%	100%	84%	100%	109%	82%
Sweden	462%	120%	85%	123%	126%	138%	172%	87%
UK	307%	96%	122%	92%	305%	65%	38%	89%

Key to the table:
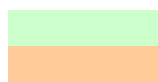
Same direction as base case in terms of winner and loser positions

Opposite direction to base case in terms of winner and loser positions

Table 9: Allocation of Pillar II budget after adjustment to reflect management costs (favouring high income countries), % change relative to raw allocation

Member States	UAA	Farm woodland	Permanent grassland	Natura 2000	OFA	LFA	Extensive agriculture	Agricultural Labour (AWU)
Austria	157%	95%	253%	156%	52%	141%	157%	142%
Belgium	-1181%	756%	-817%	-27625%	4211%	-115%	729%	-14688%
Bulgaria	208%	-298%	136%	35%	129%	152%	126%	16%
Cyprus	427%	240%	237%	2728%	274%	90%	563%	-145%
Czech Republic	450%	-100%	331%	334%	-197%	444%	353%	265%
Denmark	-589%	10060%	1649%	3285%	-361%	909%	954%	2370%
Estonia	75%	52%	79%	86%	81%	83%	94%	75%
Finland	333%	94%	189%	82%	-1593%	-254%	267%	215%
France	-520%	881%	-719%	25379%	4471%	917%	1497%	2362%
Germany	42769%	594%	2070%	1256%	-1078%	755%	482%	665%
Greece	551%	328%	421%	1131%	1550%	588%	333%	-4435%
Hungary	396%	-1328%	240%	440%	279%	251%	253%	892%
Ireland	18044%	405%	-68%	499%	430%	37%	357%	599%
Italy	810%	-670%	575%	1069%	-195%	321%	833%	-1351%
Latvia	615%	74%	-38%	50%	70%	80%	84%	95%
Lithuania	503%	157%	385%	229%	1502%	63%	50%	466%
Luxembourg	1072%	315%	-324%	470%	449%	121%	269%	346%
Malta	42%	45%	45%	42%	45%	45%	45%	3%
Netherlands	-1121%	834%	-561%	-3743%	9517%	807%	807%	-569%
Poland	314%	181%	209%	237%	184%	231%	352%	-35%
Portugal	102%	106%	124%	106%	130%	80%	-470%	95%
Romania	74%	80%	85%	80%	80%	80%	92%	95%
Slovakia	140%	25%	135%	214%	201%	-387%	142%	123%
Slovenia	132%	40%	170%	16%	149%	185%	124%	335%
Spain	-355%	-273%	-303%	-112%	-413%	810%	-27%	4247%
Sweden	2863%	90%	379%	73%	1%	-81%	-256%	315%
UK	-230%	2380%	-37%	-28372%	-239%	-556%	-478%	25287%

Key to the table:

(light green)	Same direction as base case in terms of winner and loser positions
(orange)	Opposite direction to base case in terms of winner and loser positions

Co-financing

The deployment of domestic funding alongside that from the EU has the obvious effect of increasing the absolute size of budgets available for programmes; the higher the rate of co-financing, the greater the increase. If co-financing rates were uniform, the effect on relative budget shares would be neutral. However, variation between Pillars I and II and the fact that Member States have some discretion over actual co-financing rates means that relative shares are likely to be affected.

As with prosperity scaling, the range of possible co-financing values to model is potentially vast. For this reason, it has not been modelled across the EU27 but is only considered at the UK-level below.

4.3   UK specific results

In this section, the impact of indicators on the distribution of the EU CAP funding to the UK (and the four UK countries) is considered. The allocation of funding based on individual indicators is presented alongside the current allocation to highlight relative changes (see Figures 9 and 10) shows the distribution by indicator, expressed as share of the total EU Pillar I budget. These shares and their composition by UK country are compared with current situations side by side. The results suggest that:

- The UK gains in terms of total Pillar I funding using UAA, permanent grassland and organic farming; within this, Scotland gains most compared to other UK countries;

- Scotland also gains in allocation using LFA and Extensive Agriculture where the overall UK share shrinks;

- The UK loses in terms of total Pillar I funding using Farm Woodland, Natura 2000, LFA, Extensive Agriculture and Agricultural Labour; England loses most compares to other countries. For LFA and extensive agriculture, Scotland will gain in shares despite the overall loss in share for the UK.

- The allocation of Pillar I funding to Wales varies across the indicators but Northern Ireland loses under all indicators apart from permanent grassland.

Figure 9: Changes in % UK Pillar I share by indicator and composition by UK country
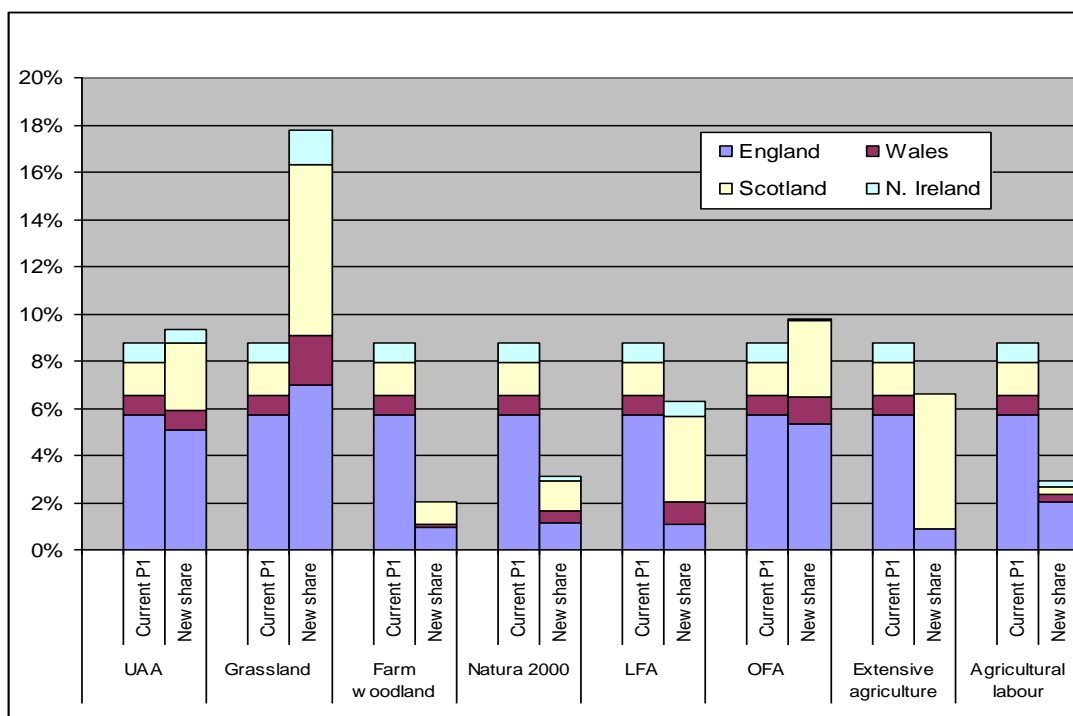
Figure 10 shows the distribution of Pillar II budget by indicator and by UK country expressed as share of the total EU Pillar II budget. The results suggest that:

- The UK gains in terms of total share Pillar II funding on indicators including UAA, Permanent Grassland, Natural 2000, LFA, Organic Farming and Extensive Agriculture; Scotland gains most compared to other UK countries especially in relation to starting position;

- The UK loses in terms of total share of Pillar II budget using the indicators Farm Woodland and Agricultural Labour; Scotland gains in farm woodland despite the overall loss in shares for the UK;

- England gains in terms of budget share using UAA, Permanent Grassland, OFA and Agricultural Labour; for agricultural labour, England gains despite the overall loss of budget share at the UK level;

- Again, Wales has a variable position across indicators and Northern Ireland loses out on most of the indicators apart from UAA, Permanent Grassland and LFA.

Figure 10: Changes in % Pillar II share by indicator and composition by UK country
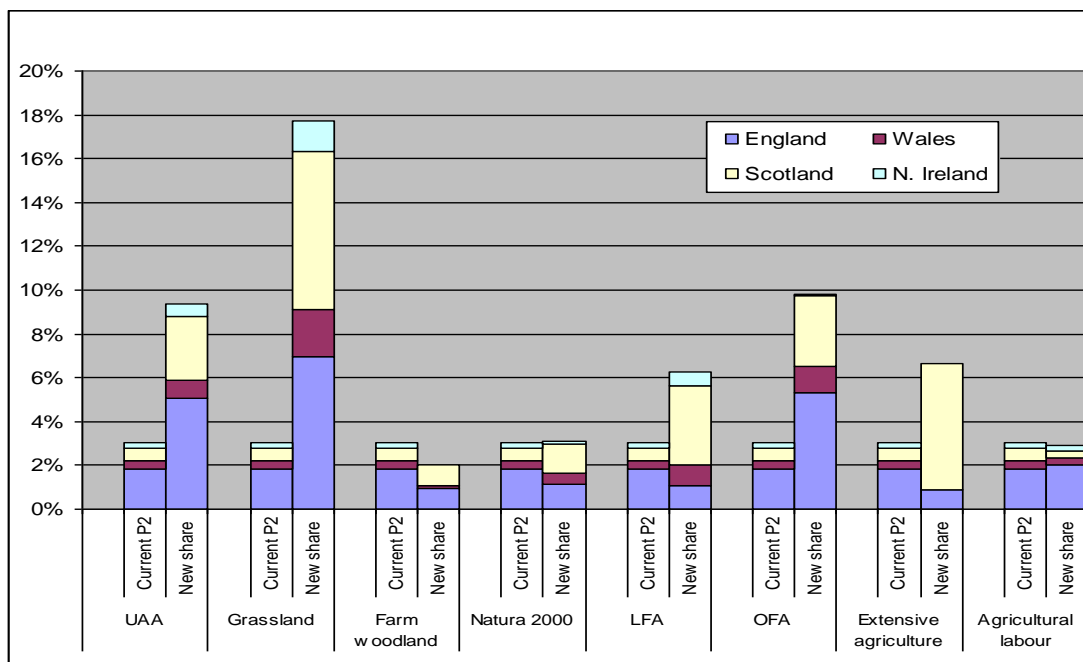
Further results on percentage changes relative to current share of budget (as a proportion of EU total) are shown in Table 10.

The figures suggests that Scotland gains in the majority of the indicators with some exceptions, including agricultural labour (AWU) for both Pillar I and Pillar II and small losses in farm woodland and Natura 2000 in Pillar I allocations. By contrast, England and Northern Ireland lose on most of the indicators and Wales has a mixed outcome in terms of winning and losing budget share. All UK countries gain on UAA for Pillar II allocations and all gain on permanent grassland for both Pillar I and Pillar II budget allocations.

Table 10: Winner and loser positions of UK countries for Pillar I and Pillar II, expressed in percentage changes relative to starting positions (shares of the budget as a proportion of EU total)

Indicator	Data	England	N. Ireland	Scotland	Wales
UAA	% change P1	-11%	-27%	101%	2%
	% change P2	178%	122%	428%	109%
Permanent grassland	% change P1	22%	80%	404%	174%
	% change P2	281%	449%	1220%	461%
Farm woodland	% change P1	-84%	-96%	-36%	-78%
	% change P2	-50%	-89%	68%	-55%
Natura 2000	% change P1	-81%	-83%	-9%	-32%
	% change P2	-39%	-49%	139%	38%
LFA	% change P1	-81%	-24%	153%	19%
	% change P2	-40%	133%	564%	145%
OFA	% change P1	-7%	-94%	126%	52%
	% change P2	190%	-82%	493%	211%
Extensive agriculture	% change P1	-84%	-100%	299%	-100%
	% change P2	-50%	-100%	945%	-100%
Agricultural labour	% change P1	-64%	-69%	-78%	-61%
	% change P2	12%	-4%	-42%	-20%

Key to the table:

	Winners
	Losers
Green text	More than 100% (inclusive) gain
Red text	More than -100% (inclusive) loss

Further to the results presented above, a detailed analysis is merited; this is presented in the following section, which includes consideration of possible transitional arrangements, the effect of minimum percentage spends per Pillar II Axis and modulation links between the two Pillars. However, the main focus is a comparison of the relative size of budget allocations under the baseline situation and different indicator allocations to identify possible funding shortfalls and what these might mean in terms of expenditure cuts and/or supplementary funding sources.

Whereas like-for-like comparisons across the EU27 required a focus solely on the centrally-determined budget (i.e. "core" EARDF funds plus compulsory modulation transfers), the UK-specific analysis also needs to account for discretionary domestic funding decisions involving voluntary modulation and the level of UK: EU co-financing deployed. Table11a below shows how these various allocation keys deliver relative to these different baseline positions, assuming a constant overall EU27 budget. Again, results are expressed first in relative terms of change in percentage share of the EU budget and percentage change in that share but then also second in absolute terms of €m change relative to baseline positions excluding and including voluntary modulation. As with the EU27 results, although modulation transfers are accounted for in the baseline position it is assumed that no modulation is applied to indicator allocations. Including voluntary modulation in the baseline has the effect of dampening apparent PII gains or worsening PII losses whilst amplifying PI gains or lessening PI losses) - but has no effect on overall results. Co-financing is considered separately below. Table 11b is a sensitivity analysis to show the changes when the overall budgets are 30% more and 30% less respectively.

Table 11a: Allocation key outcomes compared to UK and within-UK baselines

Allocation Key	Country	Change in % share points			% change of share			Relative to EU base (€m)			Relative to +VM base (€m)		
		CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
UAA	UK	2.09%	0.61%	6.35%	29%	7%	211%	1173	255	919	1173	569	605
	England	0.36%	-0.64%	3.26%	8%	-11%	178%	204	-268	472	204	-11	216
	Scotland	1.68%	1.45%	2.33%	140%	101%	428%	944	606	338	944	636	308
	Wales	0.12%	0.02%	0.42%	18%	2%	109%	67	7	60	67	16	52
	N. Ireland	-0.08%	-0.22%	0.32%	-12%	-27%	122%	-45	-91	46	-45	-72	28
F. woodland	UK	-5.22%	-6.70%	-0.96%	-72%	-77%	-32%	-2938	-2798	-140	-2938	-2484	-454
	England	-3.81%	-4.81%	-0.91%	-80%	-84%	-50%	-2140	-2009	-132	-2140	-1752	-388
	Scotland	-0.28%	-0.51%	0.37%	-24%	-36%	68%	-160	-214	54	-160	-184	24
	Wales	-0.50%	-0.61%	-0.21%	-75%	-78%	-55%	-284	-254	-30	-284	-245	-38
	N. Ireland	-0.63%	-0.77%	-0.23%	-96%	-96%	-89%	-357	-323	-34	-357	-304	-52
Permanent grassland	UK	10.49%	9.01%	14.75%	144%	103%	491%	5897	3763	2134	5897	4077	1820
	England	2.25%	1.24%	5.14%	48%	22%	281%	1263	519	745	1263	776	489
	Scotland	6.00%	5.78%	6.66%	499%	404%	1220%	3376	2412	964	3376	2442	934
	Wales	1.46%	1.35%	1.75%	215%	174%	461%	819	565	254	819	574	246
	N. Ireland	0.78%	0.64%	1.18%	117%	80%	449%	438	267	171	438	286	153
N2K	UK	-4.18%	-5.66%	0.08%	-58%	-65%	2%	-2353	-2364	11	-2353	-2050	-303
	England	-3.61%	-4.62%	-0.71%	-76%	-81%	-39%	-2031	-1927	-103	-2031	-1670	-359
	Scotland	0.10%	-0.13%	0.76%	9%	-9%	139%	58	-52	110	58	-22	80
	Wales	-0.15%	-0.25%	0.15%	-22%	-32%	38%	-84	-105	21	-84	-96	13
	N. Ireland	-0.53%	-0.67%	-0.13%	-80%	-83%	-49%	-298	-280	-19	-298	-261	-37
OFA	UK	2.52%	1.04%	6.78%	35%	12%	225%	1415	434	981	1415	748	667
	England	0.59%	-0.42%	3.48%	12%	-7%	190%	330	-175	504	330	82	248
	Scotland	2.04%	1.81%	2.69%	169%	126%	493%	1145	755	390	1145	785	360

Allocation Key	Country	Change in % share points			% change of share			Relative to EU base (€m)			Relative to +VM base (€m)		
		CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
	Wales	0.50%	0.40%	0.80%	75%	52%	211%	284	168	116	284	177	108
	N. Ireland	-0.62%	-0.76%	-0.22%	-93%	-94%	-82%	-347	-315	-31	-347	-296	-49
LFA	UK	-1.00%	-2.48%	3.26%	-14%	-28%	108%	-564	-1036	471	-564	-722	157
	England	-3.63%	-4.63%	-0.73%	-77%	-81%	-40%	-2042	-1936	-106	-2042	-1679	-362
	Scotland	2.42%	2.19%	3.08%	201%	153%	564%	1362	916	446	1362	946	416
	Wales	0.25%	0.15%	0.55%	38%	19%	145%	143	63	80	143	72	72
	N. Ireland	-0.05%	-0.19%	0.35%	-8%	-24%	133%	-30	-80	50	-30	-61	32
Ag' labour	UK	-4.34%	-5.82%	-0.08%	-60%	-67%	-3%	-2443	-2431	-12	-2443	-2117	-326
	England	-2.68%	-3.69%	0.21%	-57%	-64%	12%	-1510	-1541	31	-1510	-1284	-225
	Scotland	-0.88%	-1.11%	-0.23%	-73%	-78%	-42%	-497	-464	-33	-497	-434	-63
	Wales	-0.37%	-0.47%	-0.07%	-55%	-61%	-20%	-208	-197	-11	-208	-188	-19
	N. Ireland	-0.41%	-0.55%	-0.01%	-62%	-69%	-4%	-231	-230	-1	-231	-211	-19
Extensive	UK	-0.64%	-2.12%	3.62%	-9%	-24%	120%	-362	-885	523	-362	-571	209
	England	-3.81%	-4.82%	-0.92%	-81%	-84%	-50%	-2144	-2012	-133	-2144	-1755	-389
	Scotland	4.50%	4.28%	5.16%	375%	299%	945%	2533	1786	747	2533	1816	717
	Wales	-0.68%	-0.78%	-0.38%	-100%	-100%	-100%	-380	-325	-55	-380	-316	-63
	N. Ireland	-0.66%	-0.80%	-0.26%	-100%	-100%	-100%	-373	-335	-38	-373	-316	-56

Table 11b: UK and within-UK allocations relative to EU and VM baselines under +30% and -30% overall budgets (€m)

Allocation Key	Country	30% higher budget						30% lower budget					
		Relative to EU base (€m)			Relative to +VM base (€m)			Relative to EU base (€m)			Relative to +VM base (€m)		
		CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
UAA	UK	2751	1426	1325	2751	1740	1011	-404	-917	512	-404	-603	198
	England	1063	370	693	1063	627	437	-655	-906	251	-655	-649	-5
	Scotland	1429	966	463	1429	996	433	458	245	213	458	275	183
	Wales	202	107	95	202	116	87	-67	-92	26	-67	-83	18
	N. Ireland	54	-18	72	54	1	54	-143	-164	21	-143	-145	3
Farm woodland	UK	-2594	-2542	-51	-2594	-2228	-365	-3282	-3054	-228	-3282	-2740	-542
	England	-1985	-1893	-91	-1985	-1636	-347	-2296	-2124	-172	-2296	-1867	-428
	Scotland	-5	-99	94	-5	-69	64	-315	-329	14	-315	-299	-16
	Wales	-255	-232	-23	-255	-223	-31	-313	-275	-38	-313	-266	-46
	N. Ireland	-352	-319	-33	-352	-300	-51	-362	-327	-35	-362	-308	-53
Permanent grassland	UK	8892	5987	2905	8892	6301	2591	2903	1539	1364	2903	1853	1050
	England	2440	1392	1047	2440	1649	791	86	-355	442	86	-98	186
	Scotland	4591	3315	1277	4591	3345	1247	2160	1509	651	2160	1539	621
	Wales	1179	832	346	1179	841	338	459	298	161	459	307	153
	N. Ireland	681	448	233	681	467	215	194	86	108	194	105	90
N2K	UK	-1833	-1978	145	-1833	-1664	-169	-2872	-2750	-123	-2872	-2436	-437
	England	-1842	-1787	-55	-1842	-1530	-311	-2219	-2067	-152	-2219	-1810	-408
	Scotland	278	111	166	278	141	136	-163	-216	53	-163	-186	23
	Wales	4	-40	44	4	-31	36	-173	-171	-2	-173	-162	-10
	N. Ireland	-276	-263	-13	-276	-244	-31	-321	-296	-25	-321	-277	-43
OFA	UK	3065	1660	1405	3065	1974	1091	-235	-791	556	-235	-477	242

Allocation Key	Country	30% higher budget						30% lower budget					
		Relative to EU base (€m)			Relative to +VM base (€m)			Relative to EU base (€m)			Relative to +VM base (€m)		
		CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
	England	1226	491	735	1226	748	479	-567	-840	274	-567	-583	18
	Scotland	1691	1161	530	1691	1191	500	598	349	249	598	379	219
	Wales	483	316	167	483	325	159	85	20	65	85	29	57
	N. Ireland	-339	-310	-29	-339	-291	-47	-355	-321	-33	-355	-302	-51
LFA	UK	492	-251	743	492	63	429	-1621	-1820	199	-1621	-1506	-115
	England	-1857	-1798	-58	-1857	-1541	-314	-2227	-2073	-154	-2227	-1816	-410
	Scotland	1973	1370	603	1973	1400	573	750	462	288	750	492	258
	Wales	300	180	120	300	189	112	-14	-53	39	-14	-44	31
	N. Ireland	73	-4	77	73	15	59	-133	-157	24	-133	-138	6
Ag' labour	UK	-1950	-2065	115	-1950	-1751	-199	-2935	-2796	-139	-2935	-2482	-453
	England	-1165	-1285	120	-1165	-1028	-136	-1855	-1797	-58	-1855	-1540	-314
	Scotland	-443	-424	-19	-443	-394	-49	-550	-504	-47	-550	-474	-77
	Wales	-156	-159	3	-156	-150	-5	-260	-236	-24	-260	-227	-32
	N. Ireland	-189	-198	9	-189	-179	-9	-274	-261	-12	-274	-242	-30
Extensive agriculture	UK	755	-56	811	755	258	497	-1479	-1715	236	-1479	-1401	-78
	England	-1990	-1897	-93	-1990	-1640	-349	-2299	-2127	-172	-2299	-1870	-428
	Scotland	3495	2500	995	3495	2530	965	1570	1071	499	1570	1101	469
	Wales	-380	-325	-55	-380	-316	-63	-380	-325	-55	-380	-316	-63
	N. Ireland	-373	-335	-38	-373	-316	-56	-373	-335	-38	-373	-316	-56

Note: relative split between pillars is assumed to hold constant even under larger and smaller budgets.

As with other Member States, different candidate indicators generate different budget allocations for the UK. For example, at the aggregate level and relative to the baseline situation, the UK's share of EU funding for Pillars I and II would increase if permanent grassland, UAA and organic agriculture were used as allocation keys. However, heterogeneity of conditions within the UK means that the Member State level results are not mirrored across the four constituent countries (the same will apply to regions within other member States).[36] For example, whilst the UK gains under UAA, this actually translates into a significant gain for Scotland but losses to England, Wales and Northern Ireland.

In essence, what the UK gets at a national level will not necessarily translate into an increase or decrease in the allocation of the four countries as it will also depend on the share each country has in the relevant indictor

In fact Scotland gains under all of the chosen indicators apart from agricultural labour where the position is reversed - patterns which reflect the relative local abundance of extensive farming systems in terms of both spatial coverage and size of workforce. By contrast, the more varied but more often intensive farming systems in England mean that it is not favoured domestically by any of the indicators apart from labour (sub-regional analysis would reveal variation of results across England). The generally favourable Scottish outcomes reflect the relative abundance of the area indicators in a country dominated by extensive, permanent grassland-based livestock farming. By contrast, the absolutely smaller size of Wales and Northern Ireland limits their gains. In all cases, the scale of the gains increases and the scale of the losses decreases if prosperity scaling is applied to compensate for higher resource costs in richer Member States. Conversely, skewing allocations to poorer Member States shrinks the gains and increases the losses.

Co-financing

The deployment of co-financing alongside that from the EU has the obvious effect of increasing the absolute size of budgets: the higher the domestic component, the greater the increase. However, this assumes that the absolute level of EU contributions remains constant and that, for example, EU funding is not diverted to other policy areas (e.g. cohesion, energy). It also assumes that domestic contributions are forthcoming, which may not be the case given exchequer pressures in the UK and across the EU. If the absolute size of the EU budget is held constant, the effect of different allocation keys and co-financing rates can be simulated – as shown in Table 12 below.

Another issue which is worth noting is the interaction between the UK rebate and the share of CAP funding the UK would receive under different allocation keys. The rebate adjusts the UK's contribution to the EU budget by returning 2/3 of the UK's adjusted net contribution37. Although not addressed explicitly within the modelling, the rebate is relevant in that some allocation keys increase the UK share of the CAP budget and would, for a fixed or rising budget, increase funds flowing into the UK and thus reduce the rebate whilst others would lower the inflow but increase the rebate. The interaction between the rebate and the UK's share of CAP funding is worth keeping in mind insofar as it introduces another layer of complexity and will be likely to influence the UK's approach to issues such as allocation keys.

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[36] This assumes that allocations within a Member State would use the same allocation keys as used at the EU27 level.
[37] The UK rebate is based on an adjusted net contribution which is smaller than the UK's total net contribution. The adjusted net contribution excludes an increasing share of spending in NMS from the calculation of the rebate, which has reduced the value of the rebate in recent years.

Table 12: Domestic funding contributions (€m) across the UK under different allocation keys and UK: EU co-financing rates

Allocation Key	Country	Base domestic contributions[38]			New 50:50 relative to base			New 60:40 relative to base			New 80:20 relative to base		
		CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
UAA	UK	804	0	804	4454	3905	550	7084	5857	1226	20229	15619	4610
	England	347	0	347	2516	2126	390	3948	3189	758	11106	8505	2601
	Scotland	254	0	254	1366	1203	163	2175	1804	371	6224	4811	1414
	Wales	147	0	147	300	332	-32	524	498	26	1643	1329	314
	N. Ireland	56	0	56	272	244	28	436	365	71	1256	975	282
Farm woodland	UK	804	0	804	343	852	-509	917	1278	-361	3785	3408	377
	England	347	0	347	172	385	-214	431	578	-147	1727	1540	187
	Scotland	254	0	254	262	383	-121	520	575	-55	1811	1533	277
	Wales	147	0	147	-51	71	-122	-3	107	-110	238	286	-48
	N. Ireland	56	0	56	-40	12	-52	-32	18	-50	9	48	-39
Permanent grassland	UK	804	0	804	9178	7413	1765	14170	11119	3050	39126	29652	9474
	England	347	0	347	3575	2913	663	5536	4369	1167	15341	11650	3691
	Scotland	254	0	254	3798	3009	789	5824	4513	1310	15953	12036	3918
	Wales	147	0	147	1052	890	162	1651	1335	316	4649	3561	1087
	N. Ireland	56	0	56	755	602	153	1160	903	257	3186	2408	779
N2K	UK	804	0	804	928	1286	-358	1794	1929	-135	6125	5145	979
	England	347	0	347	281	467	-185	595	700	-104	2166	1866	300
	Scotland	254	0	254	480	545	-65	846	817	29	2680	2179	501
	Wales	147	0	147	149	220	-71	297	329	-33	1036	878	157
	N. Ireland	56	0	56	19	55	-37	56	83	-27	243	222	21

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[38] These are approximate values subject to variation due to both exchange rate fluctuations and minor adjustments s to actual co-financing rates deployed.

Allocation Key	Country	Base domestic contributions[38]			New 50:50 relative to base			New 60:40 relative to base			New 80:20 relative to base		
		CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
OFA	UK	804	0	804	4696	4084	612	7446	6127	1320	21197	16338	4859
	England	347	0	347	2642	2219	422	4136	3329	807	11608	8878	2730
	Scotland	254	0	254	1567	1352	215	2477	2028	449	7028	5408	1620
	Wales	147	0	147	517	493	24	849	739	109	2508	1972	537
	N. Ireland	56	0	56	-30	20	-49	-16	29	-46	50	78	-29
LFA	UK	804	0	804	2717	2614	102	4477	3922	555	13278	10457	2821
	England	347	0	347	270	458	-188	579	687	-109	2122	1833	288
	Scotland	254	0	254	1784	1513	271	2803	2270	533	7897	6053	1844
	Wales	147	0	147	376	388	-12	637	582	55	1944	1553	391
	N. Ireland	56	0	56	287	255	32	459	382	77	1317	1020	297
Agricultural labour	UK	804	0	804	838	1219	-381	1659	1829	-170	5765	4878	887
	England	347	0	347	802	853	-51	1377	1280	97	4250	3414	836
	Scotland	254	0	254	-75	133	-208	15	200	-185	463	533	-69
	Wales	147	0	147	25	128	-103	111	192	-81	541	511	30
	N. Ireland	56	0	56	86	105	-19	157	158	-1	512	421	90
Extensive agriculture	UK	804	0	804	2919	2765	154	4781	4147	633	14088	11059	3029
	England	347	0	347	168	382	-215	425	573	-148	1711	1528	183
	Scotland	254	0	254	2955	2383	572	4559	3574	985	12580	9531	3049
	Wales	147	0	147	-147	0	-147	-147	0	-147	-147	0	-147
	N. Ireland	56	0	56	-56	0	-56	-56	0	-56	-56	0	-56

Changes to Axes Minimum Percentage Spend

Although the existing four-axes structure to Pillar II may not be retained beyond 2013, it is possible to explore how changes to the minimum percentage spend applied to each axis might interact with changes to the overall Pillar II allocation. Currently the UK countries have allocated most RDP funding to axis 2 (Environment and Land Management) within the minimum spends of 10%, 25%, 10% and 5% respectively for Axes 1, 2, 3 and 4. Any change in the minimum percentage spend thresholds would impact on the share of EU funding available for Axis 2; similarly, any change in overall budget (relative to the base) would impact on the absolute funding available.

An analysis at Appendix 9 (Table 49) considers the impact of a +/- 30% change in absolute budget alongside nominal threshold changes to illustrate the interaction of each in combination.

Linkages between Pillar I and Pillar II

Currently, although the overall budget allocations to Pillar I and Pillar II at the EU and Member State level are independent, the existence of modulation as a secondary mechanism for transferring funds from Pillar I to Pillar II means that they are linked. Specifically, an initial allocation Pillar II is then supplemented via compulsory and (for the UK) voluntary modulation. This means that initial budget shares are subject to adjustment, and that the degree of adjustment depends on both the percentage rate at which modulation is levied and the relative sizes of the initial Pillar I and Pillar II allocations.

For example, if the initial Pillar I budget is large and the initial Pillar II budget small, any modulation transfer will have a relatively greater impact on Pillar II than on Pillar I. In this case, a reduction in the initial Pillar I budget would also significantly affect the final Pillar II budget. Conversely, a large initial Pillar II budget will be relatively less altered by modulation and thus less sensitive to the initial Pillar I budget size. Table 13 summarizes these relationships qualitatively.

Table 13: Characterization of the sensitivity of a final Pillar II budget allocation to modulation transfers between initial Pillar I and Pillar II budget allocations of different sizes.

	Large Pillar II	Small Pillar II
Large Pillar I	Relatively insensitive	Very sensitive
Small Pillar I	Very insensitive	Relatively sensitive

Given the baseline situation in the UK of a large initial Pillar I allocation and a small initial Pillar II allocation, the final Pillar II budget allocation is currently very sensitive to modulation transfers and would be affected significantly by any change to the initial Pillar I allocation or the permissible rate of (especially voluntary) modulation.

However, the adoption of more objective allocation keys should mean that modulation will no longer be implemented and the link between the two Pillars severed. That is, the initial allocations to Pillar I and Pillar II would be (more strongly) based on "need" and should not require subsequent ad hoc adjustment via modulation. As such, no attempt has been made to model possible modulation adjustments to indicator-based allocations since to do so would require further speculation on effective modulation

rates and add another layer of complexity to the analysis. Moreover, such modelling is not necessary to identify funding "shortfalls" (and thus inferred requirement for supplementary funding) arising from different scenarios – as demonstrated earlier in this section by comparison of the baseline UK budget allocations with those offered under different allocation keys.

Transitional arrangements

As Pillar I and II budgets change to reflect the use of different allocation keys and/or reductions in the overall EU-level budget for the CAP, individual Member States will need to reassess and reprogram their expenditure profiles. For those enjoying increased budgets, this will be relatively painless; for those suffering cuts, it will involve hard decisions about relative priorities.

This process of adjustment could be eased by allowing Member States a transitional period during which budget changes were phased-in rather than implemented in one step. Such an approach would allow those facing budget cuts to (if necessary) unwind more gradually from on-going commitments and those facing increases to refrain from committing significant new expenditures on new interventions until they had some experience of planning and establishing them.

The manner of any transition and the period over which it applied would be subject to negotiation. Crudely, the longer the transition period, the more gradual the adjustment process and thus the greater the potential flexibility and ability to avoid short-term disruption. However, given the length of EU financial perspectives and previous RDR programming periods, it may be reasonable to assume that a three transition year period would be permitted.

Summary of UK results

UK-level results are presented in more detail than the general EU27 results. First, as with other Member States, the allocation results show the UK share of any given EU-level budget. This allows a like-for-like comparison of how the distribution of centrally-determined funding is affected by different allocation keys. For example, the UK share of the overall CAP budget increases under the UAA, Permanent grassland and OFA indicators but decreases under farm woodland, Natura2000, LFA, agricultural labour and extensive agriculture.

Second, the current deployment of voluntary modulation in the UK means that the like-for-like comparisons do not reflect the actual changes to effective Pillar I and Pillar II shares. That is, whilst shares of the overall CAP budget are correct, the relative changes to the Pillar I and Pillar II shares need to be compared to a slightly different baseline that accounts for the current discretionary transfer between them. Specifically, like-for-like baseline comparisons will exaggerate apparent Pillar II gains and underplay Pillar I gains. For example, the UAA indicator increases the UK's share of both Pillar I and Pillar II budgets, but the like-for-like figures of €255m and €919m equate to effective gains of €569m and €605m respectively. The significance of this adjustment varies, although no losses are converted to gains (or vice versa).

Third, although attention to shares of EU-funding is necessary, translating these into actual budget values also requires attention to domestic funding contributions under co-financing requirements. That is, co-financing exerts a gearing or leverage effect to generate a final domestic budget by combining domestic and EU funds in varying ratios. Translating shares into budget values also requires knowledge of absolute level of the EU contribution and thus the absolute size of the EU-level budgets for both Pillars. For illustrative simplicity, the EU-level budgets are assumed here to remain constant. Although this may be a restrictive assumption, it does allow

identification of how changes to allocation keys alone could manifest themselves in terms of potential funding surpluses or deficits relative to current expenditure patterns. For example, the increased Pillar II allocation under the UAA indicator would leverage approximately an additional €550m of domestic funds at 50:50 co-financing.

Fourth, the UK-level results are disaggregated across the four constituent countries of England, Scotland, Wales and Northern Ireland. This assumes that the allocation keys used at the EU-level are also used at the national level but does highlight the consequences of regional variation in indicators for budget outcomes. For example, the relative abundance of extensive agriculture in Scotland yields higher budget shares for Scotland in sharp contrast to the rest of the UK which sees reductions.

At the UK level, overall budget shares increase under UAA, permanent grassland and OFA but decrease under farm woodland, Natura 2000, LFA, agricultural labour and extensive agriculture. The same is true separately across Pillar I and Pillar II, except for Natura 2000, LFA and extensive agriculture which yield increases rather than decreases for Pillar II shares.

However, heterogeneity across the UK means that these headline national results are not repeated for the four constituent countries. This applies to the relative size of changes, but also to the direction of change. For example, although the UK gains under UAA across both Pillars, the Pillar I budget share for Northern Ireland and England reduces. Conversely, whilst the UK loses under LFA, both Wales and Scotland gain across both Pillars at the expense of England and Northern Ireland. England's Pillar II grows under agricultural labour but its Pillar I shrinks, as do both Pillars of all other countries. Equally, Scotland gains under extensive agriculture for both Pillars whilst the other three countries all lose out across both Pillars.

These relative patterns of budget share changes merely reflect the underlying relative abundance/scarcity of indicators in each of the four constituent countries. In particular, across all of the indicators with the exception of agricultural labour, Scotland enjoys higher relative gains and suffers lower relative losses than the other three countries essentially because it is has a relatively large (and predominantly Less Favoured) land mass characterized by relatively low-intensity grassland farming systems plus relatively more farm woodland and a high proportion of the UK's Natura 2000 designations.

As with the EU27 results, the variation between England, Scotland, Wales and Northern Ireland in terms of how budget shares and thus funding levels are affected by different allocation keys makes it possible that different positions will be adopted on the desirability of different indicators. For example, Scotland and Wales may be more disposed towards UAA or LFA than England and Northern Ireland. Permanent grassland is the only indicator to be universally beneficial across the UK.

Co-financing impacts within the UK

If domestic contributions are considered, those allocation keys favouring the UK in terms of Pillar II budget shares (e.g. UAA, Permanent grassland, OFA and LFA) would leverage additional domestic funding beyond the current levels at constant co-financing rates. For example, if the EU budget remained constant and a 50:50 ratio of UK: EU funds is assumed, then between €102m (LFA) and €1765m (Permanent grassland) would be leveraged. Higher rates of domestic support would yield even higher increases.

By contrast, allocation keys yielding a smaller Pillar II share (e.g. farm woodland, agricultural labour) would lead to lower co-financing requirements and a gearing effect on overall budget reductions. For example, -€509m less domestic funding under farm

woodland. Co-financing ratios would have to increase significantly (i.e. beyond 70:30) to leverage net additional domestic funds.

With respect to Pillar I, the absence of baseline co-financing means that any domestic funding would represent a net increase. For example, 50:50 co-financing of the current allocation would (depending on voluntary modulation status) add approximately €3.3bn to €3.6bn to the UK Pillar I budget. Hence, assuming a constant EU-level budget, 50:50 co-financing and the absence of modulation transfers, the effect of Pillar I co-financing is to double the absolute size of Pillar I for any given share. As with Pillar II, for allocation keys favouring the UK in terms of share of the EU budget, any co-financing leads unambiguously to higher domestic contributions and thus an even higher absolute budget gain. For allocation keys yielding a smaller share, domestic contributions are generally insufficient to offset the lower EU funding for Pillar I unless higher rates of co-financing are considered.

The implications of co-financing also apply to each of the four constituent countries, with the general observations above regarding gearing effects holding true. However, the differential impact of indicators and the different starting points for each country mean that the precise impact on changing values and (in some cases) the direction of change vary somewhat from the UK-level situation. For example, perhaps most notably, the relative share gains accruing to Scotland under most indicators also mean proportionately higher co-financing requirements. Although increased co-financing represents additional funding and thus opportunities for expenditure on policy interventions, it also represents an additional call on exchequer funds. Given that the general allocation of domestic funds to constituent parts of the UK (e.g. under the Barnett formula) is unrelated to the CAP, changes in co-financing requirements may lead to further domestic issues.

5. Scenarios for allocation

Although individual indicators could be used in isolation, precedents within (e.g.) cohesion and structural policies and within CAP modulation and Pillar II allocations suggest that indicators are more likely to be used in combination. That is, they may be used singly, in pairs, in triplets and so on. Moreover, indicators could be combined in a linear additive manner or a non-linear multiplicative manner and with equal or unequal relative weights. Previous instances of combinations deployed in relation to the CAP have generally been linear additive ones, with some recourse to multiplicative scaling based on a measure of relative prosperity. However, even if it is assumed that all indicators (other than per capita GDP) will be used in a linear additive manner, this still yields a large number of possible combinations.

Whereas reporting the allocation patterns for all single indicators is feasible (see previous Chapters), reporting the results of all possible combinations is clearly not. However, for linear combinations of indicators, the maximum and minimum shares (and thus maximum and minimum changes from baseline shares) for each Member State will be determined by the most and least favourable individual indicators for a given Member State. That is, a relative weight of 100% cannot be exceeded and assigning 100% to each indicator in turn yields the maximum and minimum shares: any linear additive combination of indicators will yield a result between these extremes.

On this basis, it is possible to use the previous results for individual indicators to illustrate the range of possible (linear, additive) combination outcomes across Member States in terms of the extreme limits. Table 14 to Table 16 do this for, respectively, raw allocations, allocations adjusted for higher resource costs in richer Member States and allocations adjusted for lower prosperity in poorer Member States. In all cases,

the Max, Min and Base shares are percentages of the total EU budget accruing to a Member State whereas the Max and Min Gains and Losses are the percentage changes to an individual Member State's share. Rounding errors may apply to some cells. The number of indicators (out of eight) yielding gains is also shown.

The Tables show that there is a wide range of possible gains and possible losses for most Member States across different individual indicators and that the magnitude of gains and losses is also highly variable. In all but a handful of cases, it is not possible to state categorically that a budget share will increase or decrease whatever allocation key(s) are used. In general, Member States with the smallest baseline budget shares suffer the greatest potential budget reductions but also enjoy the biggest increases – spectacularly so in some cases. However, as a share of the overall EU-level budget their shares typically remain relatively modest.

The variability across indicators and Member States highlights that selection of any indicator or combination of indicators will lead to winners and losers and will thus be politically contentious. The effect of prosperity scaling is readily apparent in terms of shifting shares between richer and poorer Member States. However, any linear additive combination of indicators would yield a result within the boundary of the extreme limits of changes as a result of individual indicators shown in Table 16-18.

Table 14: Extreme limits to impacts on total CAP, Pillar I and Pillar II budget shares by Member State (no prosperity scaling)

Member State	Gains out of 8			Max share	Min share	Base Share			Max Loss			Min Loss			Min Gain			Max Gain		
	CAP	PI	PII			CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
Austria	3	6	2	9.8%	0.9%	2.22%	1.71%	3.68%	-58%	-46%	-75%	0%	0%	0%	0%	0%	0%	343%	474%	167%
Belgium	1	1	5	2.2%	0.0%	1.15%	1.36%	0.54%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	95%	64%	316%
Bulgaria	4	4	3	4.4%	0.0%	1.59%	1.19%	2.74%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	173%	264%	59%
Cyprus	3	3	2	3.9%	0.0%	0.12%	0.12%	0.15%	-98%	-97%	-98%	0%	0%	0%	0%	0%	0%	3029%	3219%	2585%
Czech Rep.	2	4	2	3.9%	1.1%	2.22%	1.98%	2.93%	-52%	-47%	-64%	0%	0%	0%	0%	0%	0%	76%	98%	33%
Denmark	1	0	2	2.3%	0.0%	1.90%	2.31%	0.73%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	22%	0%	216%
Estonia	7	8	4	3.5%	0.2%	0.36%	0.22%	0.78%	-33%	0%	-69%	0%	0%	0%	0%	12%	0%	858%	1505%	343%
Finland	4	5	4	11.5%	0.1%	1.47%	1.29%	2.00%	-95%	-94%	-96%	0%	0%	0%	0%	0%	0%	680%	790%	475%
France	0	0	2	17.3%	3.3%	16.23%	18.79%	8.84%	-80%	-83%	-63%	0%	-8%	0%	0%	0%	0%	7%	0%	96%
Germany	0	0	1	12.8%	3.2%	12.09%	12.86%	9.88%	-73%	-75%	-67%	0%	0%	0%	0%	0%	0%	6%	0%	30%
Greece	0	0	1	5.0%	0.2%	5.00%	5.13%	4.64%	-96%	-96%	-96%	-1%	-3%	0%	0%	0%	0%	0%	0%	7%
Hungary	2	2	1	3.5%	0.7%	3.17%	2.87%	4.04%	-78%	-76%	-83%	0%	0%	-13%	0%	0%	0%	11%	23%	0%
Ireland	2	2	2	11.2%	0.0%	2.86%	3.01%	2.43%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	291%	272%	359%
Italy	3	3	3	16.4%	1.7%	9.88%	9.86%	9.95%	-83%	-83%	-83%	0%	0%	0%	0%	0%	0%	66%	66%	65%
Latvia	8	8	6	7.1%	0.8%	0.51%	0.32%	1.04%	0%	0%	-25%	0%	0%	0%	55%	145%	0%	1301%	2,112%	580%
Lithuania	7	7	2	5.4%	0.4%	1.06%	0.81%	1.75%	-60%	-48%	-76%	0%	0%	0%	0%	0%	0%	413%	565%	209%
Luxembourg	2	2	2	13.8%	0.0%	0.09%	0.08%	0.09%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	16074%	16372%	15271%
Malta	1	1	0	0.0%	0.0%	0.03%	0.01%	0.08%	-100%	-100%	-100%	0%	0%	-56%	0%	0%	0%	17%	179%	0%
Netherlands	0	0	4	1.8%	0.0%	1.66%	1.99%	0.71%	-100%	-100%	-100%	0%	-12%	0%	0%	0%	0%	5%	0%	146%
Poland	3	5	1	17.0%	3.1%	8.25%	6.68%	12.79%	-62%	-53%	-76%	0%	0%	0%	0%	0%	0%	106%	154%	33%
Portugal	7	8	2	6.1%	1.8%	2.06%	1.36%	4.08%	-12%	0%	-56%	0%	0%	0%	0%	33%	0%	199%	354%	51%
Romania	4	6	2	16.5%	1.2%	4.34%	2.60%	9.37%	-72%	-54%	-87%	0%	0%	0%	0%	0%	0%	281%	535%	76%
Slovakia	5	7	2	2.7%	0.7%	1.20%	0.85%	2.21%	-43%	-19%	-69%	0%	0%	0%	0%	0%	0%	128%	223%	24%
Slovenia	5	6	2	1.1%	0.2%	0.44%	0.32%	0.78%	-57%	-41%	-76%	0%	0%	0%	0%	0%	0%	150%	244%	39%
Spain	6	6	6	29.0%	5.3%	11.07%	11.83%	8.87%	-52%	-55%	-40%	0%	0%	0%	0%	0%	0%	162%	145%	227%
Sweden	6	6	5	14.0%	0.7%	1.77%	1.72%	1.91%	-60%	-59%	-63%	0%	0%	0%	0%	0%	0%	694%	716%	636%
UK	3	3	6	19.7%	2.3%	7.26%	8.74%	3.00%	-68%	-74%	-23%	0%	0%	0%	0%	0%	0%	171%	125%	556%

Table 15: Extreme limits to impacts on total CAP, Pillar I and Pillar II budget shares by Member State (prosperity scaling in favour of higher income MS)

Member State	Gains out of 8			Max share	Min share	Base Share			Max Loss			Min Loss			Min Gain			Max Gain		
	CAP	PI	PII			CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
Austria	4	6	2	9.8%	0.9%	2.22%	1.71%	3.68%	-58%	-46%	-75%	0%	0%	0%	0%	0%	0%	343%	474%	167%
Belgium	1	1	5	2.2%	0.0%	1.15%	1.36%	0.54%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	95%	64%	316%
Bulgaria	3	4	2	4.4%	0.0%	1.59%	1.19%	2.74%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	173%	264%	59%
Cyprus	3	3	2	3.9%	0.0%	0.12%	0.12%	0.15%	-98%	-97%	-98%	0%	0%	0%	0%	0%	0%	3029%	3219%	2585%
Czech Rep.	2	2	2	3.9%	1.1%	2.22%	1.98%	2.93%	-52%	-47%	-64%	0%	0%	0%	0%	0%	0%	76%	98%	33%
Denmark	1	1	3	2.3%	0.0%	1.90%	2.31%	0.73%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	22%	0%	216%
Estonia	7	8	4	3.5%	0.2%	0.36%	0.22%	0.78%	-33%	0%	-69%	0%	0%	0%	0%	12%	0%	858%	1505%	343%
Finland	5	6	4	11.5%	0.1%	1.47%	1.29%	2.00%	-95%	-94%	-96%	0%	0%	0%	0%	0%	0%	680%	790%	475%
France	1	0	3	17.3%	3.3%	16.23%	18.79%	8.84%	-80%	-83%	-63%	0%	-8%	0%	0%	0%	0%	7%	0%	96%
Germany	1	0	2	12.8%	3.2%	12.09%	12.86%	9.88%	-73%	-75%	-67%	0%	0%	0%	0%	0%	0%	6%	0%	30%
Greece	0	0	1	5.0%	0.2%	5.00%	5.13%	4.64%	-96%	-96%	-96%	-1%	-3%	0%	0%	0%	0%	0%	0%	7%
Hungary	1	2	0	3.5%	0.7%	3.17%	2.87%	4.04%	-78%	-76%	-83%	0%	0%	-13%	0%	0%	0%	11%	23%	0%
Ireland	3	2	3	11.2%	0.0%	2.86%	3.01%	2.43%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	291%	272%	359%
Italy	3	3	3	16.4%	1.7%	9.88%	9.86%	9.95%	-83%	-83%	-83%	0%	0%	0%	0%	0%	0%	66%	66%	65%
Latvia	8	8	5	7.1%	0.8%	0.51%	0.32%	1.04%	0%	0%	-25%	0%	0%	0%	55%	145%	0%	1301%	2112%	580%
Lithuania	6	7	2	5.4%	0.4%	1.06%	0.81%	1.75%	-60%	-48%	-76%	0%	0%	0%	0%	0%	0%	413%	565%	209%
Luxembourg	3	3	3	13.8%	0.0%	0.09%	0.08%	0.09%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	16074%	16372%	15271%
Malta	1	1	0	0.0%	0.0%	0.03%	0.01%	0.08%	-100%	-100%	-100%	0%	0%	-56%	0%	0%	0%	17%	179%	0%
Netherlands	1	0	5	1.8%	0.0%	1.66%	1.99%	0.71%	-100%	-100%	-100%	0%	-12%	0%	0%	0%	0%	5%	0%	146%
Poland	2	3	1	17.0%	3.1%	8.25%	6.68%	12.79%	-62%	-53%	-76%	0%	0%	0%	0%	0%	0%	106%	154%	33%
Portugal	7	8	1	6.1%	1.8%	2.06%	1.36%	4.08%	-12%	0%	-56%	0%	0%	0%	0%	33%	0%	199%	354%	51%
Romania	4	5	2	16.5%	1.2%	4.34%	2.60%	9.37%	-72%	-54%	-87%	0%	0%	0%	0%	0%	0%	281%	535%	76%
Slovakia	4	6	1	2.7%	0.7%	1.20%	0.85%	2.21%	-43%	-19%	-69%	0%	0%	0%	0%	0%	0%	128%	223%	24%
Slovenia	5	6	2	1.1%	0.2%	0.44%	0.32%	0.78%	-57%	-41%	-76%	0%	0%	0%	0%	0%	0%	150%	244%	39%
Spain	6	6	7	29.0%	5.3%	11.07%	11.83%	8.87%	-52%	-55%	-40%	0%	0%	0%	0%	0%	0%	162%	145%	227%
Sweden	6	6	6	14.0%	0.7%	1.77%	1.72%	1.91%	-60%	-59%	-63%	0%	0%	0%	0%	0%	0%	694%	716%	636%
UK	4	3	7	19.7%	2.3%	7.26%	8.74%	3.00%	-68%	-74%	-23%	0%	0%	0%	0%	0%	0%	171%	125%	556%

Table 16: Extreme limits to impacts on total CAP, Pillar I and Pillar II budget shares by Member State (prosperity scaling in favour of lower income MS)

Member State	Gains out of 8			Max share	Min share	Base Share			Max Loss			Min Loss			Min Gain			Max Gain		
	CAP	PI	PII			CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII	CAP	PI	PII
Austria	3	4	2	8.1%	0.8%	2.22%	1.71%	3.68%	-64%	-54%	-78%	0%	0%	0%	0%	0%	0%	265%	373%	120%
Belgium	1	1	3	2.0%	0.0%	1.15%	1.36%	0.54%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	73%	46%	269%
Bulgaria	4	5	3	6.3%	0.0%	1.59%	1.19%	2.74%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	297%	429%	131%
Cyprus	3	3	2	4.4%	0.0%	0.12%	0.12%	0.15%	-97%	-97%	-98%	0%	0%	0%	0%	0%	0%	3399%	3612%	2902%
Czech Rep.	3	4	2	5.0%	1.2%	2.22%	1.98%	2.93%	-47%	-41%	-60%	0%	0%	0%	0%	0%	0%	125%	153%	71%
Denmark	0	0	2	1.8%	0.0%	1.90%	2.31%	0.73%	-100%	-100%	-100%	-5%	-22%	0%	0%	0%	0%	0%	0%	147%
Estonia	7	8	5	4.9%	0.3%	0.36%	0.22%	0.78%	-22%	0%	-64%	0%	0%	0%	0%	31%	0%	1244%	2151%	522%
Finland	4	4	3	9.6%	0.1%	1.47%	1.29%	2.00%	-96%	-95%	-97%	0%	0%	0%	0%	0%	0%	550%	641%	379%
France	0	0	2	15.3%	3.0%	16.23%	18.79%	8.84%	-82%	-84%	-67%	-6%	-19%	0%	0%	0%	0%	0%	0%	73%
Germany	0	0	1	11.5%	2.6%	12.09%	12.86%	9.88%	-79%	-80%	-74%	-5%	-10%	0%	0%	0%	0%	0%	0%	17%
Greece	0	0	0	4.6%	0.2%	5.00%	5.13%	4.64%	-96%	-96%	-96%	-7%	-9%	0%	0%	0%	0%	0%	0%	0%
Hungary	2	3	1	4.9%	1.0%	3.17%	2.87%	4.04%	-69%	-65%	-75%	0%	0%	0%	0%	0%	0%	55%	71%	22%
Ireland	2	2	2	8.0%	0.0%	2.86%	3.01%	2.43%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	180%	166%	229%
Italy	3	3	3	16.0%	1.7%	9.88%	9.86%	9.95%	-83%	-83%	-83%	0%	0%	0%	0%	0%	0%	62%	63%	61%
Latvia	8	8	7	10.4%	1.0%	0.51%	0.32%	1.04%	0%	0%	-8%	0%	0%	0%	89%	199%	0%	1956%	3148%	899%
Lithuania	7	7	3	7.9%	0.6%	1.06%	0.81%	1.75%	-44%	-27%	-66%	0%	0%	0%	0%	0%	0%	646%	868%	349%
Luxembourg	1	1	1	4.9%	0.0%	0.09%	0.08%	0.09%	-100%	-100%	-100%	0%	0%	0%	0%	0%	0%	5652%	5758%	5367%
Malta	1	1	0	0.0%	0.0%	0.03%	0.01%	0.08%	-100%	-100%	-100%	0%	0%	-52%	0%	0%	0%	27%	203%	0%
Netherlands	0	0	4	1.3%	0.0%	1.66%	1.99%	0.71%	-100%	-100%	-100%	-22%	-35%	0%	0%	0%	0%	0%	0%	81%
Poland	4	5	1	20.8%	4.5%	8.25%	6.68%	12.79%	-46%	-33%	-65%	0%	0%	0%	0%	0%	0%	152%	212%	63%
Portugal	8	8	2	7.7%	2.1%	2.06%	1.36%	4.08%	0%	0%	-48%	0%	0%	0%	3%	57%	0%	273%	466%	88%
Romania	4	6	3	21.0%	1.8%	4.34%	2.60%	9.37%	-58%	-31%	-81%	0%	0%	0%	0%	0%	0%	383%	706%	124%
Slovakia	6	7	2	3.7%	0.8%	1.20%	0.85%	2.21%	-33%	-5%	-64%	0%	0%	0%	0%	0%	0%	212%	342%	69%
Slovenia	5	6	2	1.3%	0.2%	0.44%	0.32%	0.78%	-55%	-38%	-75%	0%	0%	0%	0%	0%	0%	189%	298%	61%
Spain	6	6	6	25.9%	5.4%	11.07%	11.83%	8.87%	-51%	-54%	-39%	0%	0%	0%	0%	0%	0%	134%	119%	192%
Sweden	5	5	5	11.0%	0.5%	1.77%	1.72%	1.91%	-73%	-72%	-75%	0%	0%	0%	0%	0%	0%	520%	537%	475%
UK	3	2	5	16.8%	1.9%	7.26%	8.74%	3.00%	-74%	-78%	-36%	0%	0%	0%	0%	0%	0%	131%	92%	458%

6.   Conclusions

This report has focused on how any given budget could be distributed across Member States through the use of more objective criteria than are currently used. Although influenced by on-going EU enlargement and recent policy reforms, the current distribution of CAP funding is dominated by the legacy effect of past budget allocations which in turn largely reflect historical rather than current stated policy objectives. This is particularly the case for Pillar I but is also evident in Pillar II, perhaps most notably with respect to the UK's low share of the latter budget.

Precise presentation of the current (baseline) distribution is hindered by several complicating factors. These include the ad hoc, secondary readjustment of initial allocations through the use of modulation, the varying significance of domestic funding in different member states and the transitional status of some New Member States. Hence like-for-like comparisons across Member States and different allocation options were sought by treating all Member States as if they had ended any transitional period, domestic funding was excluded from the allocation analysis and care was taken to exclude compulsory modulation from the baseline Pillar I allocation but to include it in the baseline Pillar II allocation. Voluntary modulation (of relevance only to the UK) was ignored in the baseline allocation. This reflects the fact that whereas compulsory modulation effectively represents a central (i.e. EU-level) allocation decision that differs only in its mechanics from the initial central allocation, voluntary modulation is a domestic choice.   More detailed assessment of domestic funding through both co-financing and voluntary modulation was applied to the UK-specific analysis.

Basis for budget allocations

Shifting away from the current budget profile is hampered both by the highly politicized nature of the CAP – by attention to "winners and losers" rather than the need for and efficiency of policy interventions – but also by genuine difficulties in defining "necessary" expenditures. For example, different forms of intervention may have different expenditure implications even when addressing the same objective (e.g. regulatory controls vs. incentive payments) and may have different degrees of effectiveness depending on local circumstances (i.e. are influenced by heterogeneity in socio-economic and biophysical conditions). Equally, the characteristic bundling together of different objectives in policy statements makes it harder to disentangle separate expenditure needs and in any case policy concerns and responses are dynamic rather than static.

Thus, whilst CAP budget allocations would ideally reflect the resource costs of meeting policy objectives, estimation of such costs (of budgetary "needs") is hindered by a number of factors. In such circumstances, the use of allocation keys – based on indicators – serves as a proxy mechanism for determining the distribution of budgetary resources, accepting that the distribution will only at best approximate the true "need". The better that an indicator reflects policy conditions and objectives, the closer the approximation. Given that both the requirements for intervention and the potential for intervention to generate desired outcomes can vary between and within Member States, indicators able to reflect such heterogeneity are more likely to yield a better approximation. For example, by distinguishing between different types of land or labour. However, such sub-division and disaggregation increase data requirements and add complexity through the need for indicator combinations/layering. Moreover, indicators also need to be supported by robust and widely available data, to avoid perverse incentives and to relate favourably to equity as well as efficiency concerns.

Of a number of potential indicators considered, many were disregarded as lacking desirable characteristics such as, for example, good data availability or clear policy relevance. Of those selected for modelling, none were without weaknesses but most were satisfactory in relation to at least some of the specified criteria. Here, whilst it is important to note the imperfections and limitations of adopting crude allocation keys it is equally important to acknowledge the risk of neglecting the good in a vain search for the perfect. Hence, in the absence of a well-defined "optimal" budget allocation and/or a precise mechanism to achieve such an allocation, any mechanism that shifts the allocation in a desirable manner is to be welcomed i.e. it is the direction of travel that matters. Within this, different allocation keys – both individually and/or in combination – will yield different patterns, as reported in the results section.

Reallocation results

Perhaps the most striking feature of analysis is that any of the chosen allocation keys would lead to a redistribution of budget shares – recreating the existing allocation across Member States is not possible. In many cases, the redistribution is quite significant, meaning that there will be big winners and losers. Moreover, due to heterogeneity in farming and environmental conditions between (and within) Member States, the pattern of redistribution varies with the particular choice of indicator – suggesting that the adoption of allocation keys will be highly politicized. The magnitude of potential shifts in funding patterns suggests that transitional arrangements would probably be demanded by Member States suffering the biggest proportional losses.

At the UK level, whilst gains are possible under some indicators, losses are possible under other indicators. Perhaps more importantly, the disaggregated impact of UK-level changes is not uniform across the four constituent countries. In particular, under the selected indicators Scotland gains and Northern Ireland loses in the majority of cases, often irrespective of the UK position.

Co-financing

The use of co-financing is perhaps a side-issue to the allocation keys analysis presented here in that it does not affect shares of the EU CAP budget or the absolute level of EU funds per se. Rather co-financing is of interest in terms of how expenditure is shared between EU and domestic sources and in terms of how the EU might adjust its contribution.

For the latter point, whilst the presumption may be that co-financing increases the absolute size of public expenditure under the CAP budget, it may equally be the case that the EU contribution reduces as domestic funds are deployed. This could be because the EU simply wishes to reduce its overall expenditure and/or to divert resources away from the CAP into other policy areas. Hence, within the CAP, introducing 50:50 co-financing to Pillar I might increase expenditure under Pillar I but equally might see Pillar I expenditure held constant (or declining) if EU funds were diverted to Pillar II or to other policy areas outwith the CAP.

Even if EU funding remained constant, co-financing need not necessarily lead to anticipated increased expenditure levels if Member States declined to meet part or all of the co-financing requirements. That is, in extremis, a Member State could fail to offer any domestic funds and forgo the EU funding or, as happens currently in Pillar II, Member States can (within limits) vary the co-financing rate and thus vary the degree to which domestic funding is required. This means that overall expenditure shares under the CAP are not dictated fully by the share of EU funding - unless all Member States apply the same uniform rate, in which case relative budget shares are

unaffected but expenditures are higher (e.g. double for 50:50 co-financing). While due to current exchequer pressures, domestic contributions may be under pressure regardless of CAP funding levels, the case has been articulated in other research for allocating greater CAP funding to environmental objectives, including attempts to estimate the scale of funding needed (Cao et al., 2009; Rayment & Cooper, 2010).

Further work

The use of crude indicators as allocation keys, either individually or in isolation, represents a compromise between a number of competing requirements. Hence, whilst none of the indicators considered are perfect, pragmatically they may represent sufficiently robust and politically acceptable metrics for guiding budget reallocations. Nevertheless, it would be prudent to seek continued refinement of indicators such that they reflect better the underlying resource costs of meeting policy objectives. In particular, existing EU-wide efforts in relation to defining and measuring future indicators more directly linked to biodiversity, soil health, water quality and climate change issues should be encouraged. For example, high nature value farmland or soils at risk could provide better targeting than cruder keys such as UAA or LFA.

Separately, whilst numerical exploration of "what if" budget allocations may be helpful in identifying possible limits to shares and how their patterns shift, these should not be viewed in isolation from the political economy of CAP (and EU) budget negotiations. Hence it would be helpful to canvass, opinions from other Member States on the perceived acceptability of different allocation keys and the relevance of possible future indicators too.

Appendix 1: Bibliography

Cao, Y., Elliott, J., McCracken, D., Rowe, K., Whitehead, J. and Wilson L. 2009. *Estimating the Scale of Future Environmental Land Management Requirements for the UK.* A report by ADAS and SAC to the LUPG.

Barca, Fabrizio. 2009. An Agenda for a Reformed Cohesion Policy: A Place-based Approach to Meeting European Union Challenges and Expectations: Report prepared at the request of Danuta Hübner, Commissioner for Regional Policy.

Bielza, Maria, Josef Stroblmair, Javier Gallego, Costanza Conte, and Christoph Dittmann. 2009. Risk management and agricultural insurance schemes in Europe.

Brouwer, F., Glenn Fox, and R. Jongeneel. 2010. *The economics of regulation: Compliance with public and private standards in agriculture.* Oxford: CABI.

Commission Regulation. 2004. Commission Regulation No 796/2004 laying down detailed rules for the implementation of cross-compliance, modulation and the integrated administration and control system provided for in of Council Regulation (EC) No 1782/2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers.

Council of the European Union. 1999. Council Regulation (EC) No 1257/1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF) and amending and repealing certain Regulations.

———. 2003. Council Regulation (EC) No 1782/2003 of 29 September 2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers and amending Regulations (EEC) No 2019/93, (EC) No 1452/2001, (EC) No 1453/2001, (EC) No 1454/2001, (EC) 1868/94, (EC) No 1251/1999, (EC) No 1254/1999, (EC) No 1673/2000, (EEC) No 2358/71 and (EC) No 2529/2001.

———. 2005. Council Regulation (EC) No 1698/2005 of 20 September 2005 on Support for Rural Development by the European Agricultural Fund for Rural Development (EAFRD).

———. 2006. Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1260/1999.

———. 2009. Council Regulation (EC) No 73/2009 of 19 January 2009 establishing common rules for direct support schemes for farmers under the common agricultural policy and establishing certain support schemes for farmers, amending Regulations (EC) No 1290/2005, (EC) No 247/2006, (EC) No 378/2007 and repealing Regulation (EC) No 1782/2003.

Defra. 2006. Environmental Impacts of Food Production and Consumption.

———. 2009. UK Food Security Assessment: Detailed Analysis.

DG Joint Research Centre, Institute for Environment and Sustainability, and Institute for Prospective Technological Studies. 2009. Sustainable Agriculture and Soil Conservation.

EEA. 2007. CLC2006 technical guidelines: EEA Technical report No 17/2007.

European Commission. 2004. Commission Regulation 796/2004 laying down detailed rules for the implementation of cross-compliance, modulation and the integrated administration and control system provided for in of Council Regulation (EC) No 1782/2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers.

———. 2009a. Report on Implementation of Forestry Measures under the Rural Development Regulation 1698/2005 for the Period 2007-2013.

———. 2009b. Rural Development in the European Union: Statistical and Economic Information: Directorate-General for Agriculture and Rural Development.

European Council. 1999. Council Regulation (EC) No 1268/1999 on Community support for pre-accession measures for agriculture and rural development in the applicant countries of central and eastern Europe in the pre-accession period.

European Environmental Agency. 2009. Annual European Community Greenhouse Gas Inventory 1990-2007 and Inventory Report 2009.

———. 2010. Distribution and targeting of the CAP budget from a biodiversity perspective.

Institute for European Environmental Policy. 2007. Final Report for the Study on HNV Indicators for Evaluation.

Jacobs. 2008. Environmental Accounts for Agriculture: Report for Defra.

Land Use Consultants. 2009. Adapting agricultural policy to increased flood risk.

Nowicki, P., V. Goba, A. Knierim, H. van Meijl, M. Banse, B. Delbaere, J. Helming, P. Hunke,, T. Jansson K. Jansson, L. Jones-Walters, V. Mikos, C. Sattler, N. Schlaefke, I. Terluin and D., and Verhoog. 2009. Scenar 2020-II – Update of scenario study on agriculture and the rural world.

OECD. 2009. *Managing Risk in Agriculture: A Holistic Approach*. Paris: OECD.

Paracchini, Maria Luisa, Jan-Erik Petersen, Ybele Hoogeveen, Catharina Bamps, Ian Burfield, and Chris van Swaay. 2008. High Nature Value Farmland in Europe: An estimate of the distribution patterns on the basis of land cover and biodiversity data.Rayment, M;& Cooper, T. 2010. Developing a More Comprehensive Rationale for EU Funding for the Environment An IEEP report to the LUPG

Schulze, E.-Detlef, Christoph Heinze, John Gash, Andrea Volbers, Annette Freibauer, and Anastasios Kentarchos. 2009. Integrated Assessment of the European and North Atlantic Carbon Balance: Key Results, Policy Implication for 2012 and Reserach Needs: Study funded under the 6th Framework Program for Research.

University of Gloucestershire. 2008. Review of Rural Development Instruments: Study commissioned by DG Agriculture and Rural Development.

Zahrnt, Valentin. 2009. Public Money for Public Goods: Winners and Losers from CAP Reform: ECIPE Working Paper No. 08/2009.

Appendix 2: Terms of Reference (ToR)

The aim of this research is to identify indicators that could be used as the basis for future allocation of the EU CAP budget between Member States. There are six specific objectives as follows:

Objective 1 – Available indicators

a) To review existing work on individual indicators that could be used (individually or in weighted combinations) as the basis for allocation of Pillar I and Pillar II CAP funding in the future and to identify any additional indicators that would also meet the necessary availability and robustness criteria (as outlined by Zahrnt, 2009). Potential indicators, data sources, and any associated data issues should be identified for the following objectives:

   i) CAP Pillar I – Income support/social objectives (e.g. possible indicators might include land quality, existing CM key)

   ii) CAP Pillar I – Environmental objectives (e.g. scope for different/tiered rates related to 'environmental quality', cross-compliance)

   iii) CAP Pillar II - Environmental objectives (e.g. Natura 2000 area, Forest Area, Organic farming area, climate change mitigation and adaptation).

The final selection of indicators from Objectives 1 and 2 to be used for the analysis outlined in Objectives 3-5 will be agreed with the project steering group.

Objective 2 – Future indicators

a) To identify indicators that do not meet the current availability criteria set out in objective 1 but that would be desirable as the basis of allocation keys for programmes in the future for the environmental objectives outlined in objective 1ii and iii. These would have to meet the broad criteria outlined above and also be sufficiently unambiguous to avoid manipulation.

   Consideration should be given to the suitability of the identified indicators for use in the structural fund allocation keys and whether there are common environmental indicators for appropriate to all European funding streams.

Objective 3 – Development of scenarios and application of available indicators to existing allocations– identifying winners and losers EU level

a) Assess separately, each of the potential indicators identified under objective 1 against the existing core CAP 2013 allocations (relative % of budget and absolute – compared to existing annual EU CAP Pillar I and 2 budgets) for each EU-27 Member State to identify potential gainers and losers.

b) Assess separately, each of the potential indicators identified in objective 1 against the existing core allocations (relative % of budget and absolute – compared to existing UK country CAP Pillar I and 2 budgets) for each UK country to identify potential gainers and losers.

c) Synthesise the key patterns that emerge in relation to indicators/UK countries and other Member States.

Objective 4 - Co-financing scenarios

a) For Pillar I quantify the impact of the co-financing scenarios (50-50, inversely weighted by GDP or similar, co-financing precedents set by CAP Health Check Agreement) on each

individual indicator derived allocation and compare to the existing total Pillar I programme (including co-financing) for each Member States to identify potential gainers and losers.

b) For Pillar II quantify the impact of co-financing inversely weighted by GDP or similar on the existing core CAP 2013 allocations and each individual indicator derived allocation and compare to existing total Pillar II programme (including co-financing) for each Member States to identify potential gainers and losers.

c) Synthesise the key patterns that emerge in relation to indicators/countries and highlight any key differences that emerge compared to objective 3.
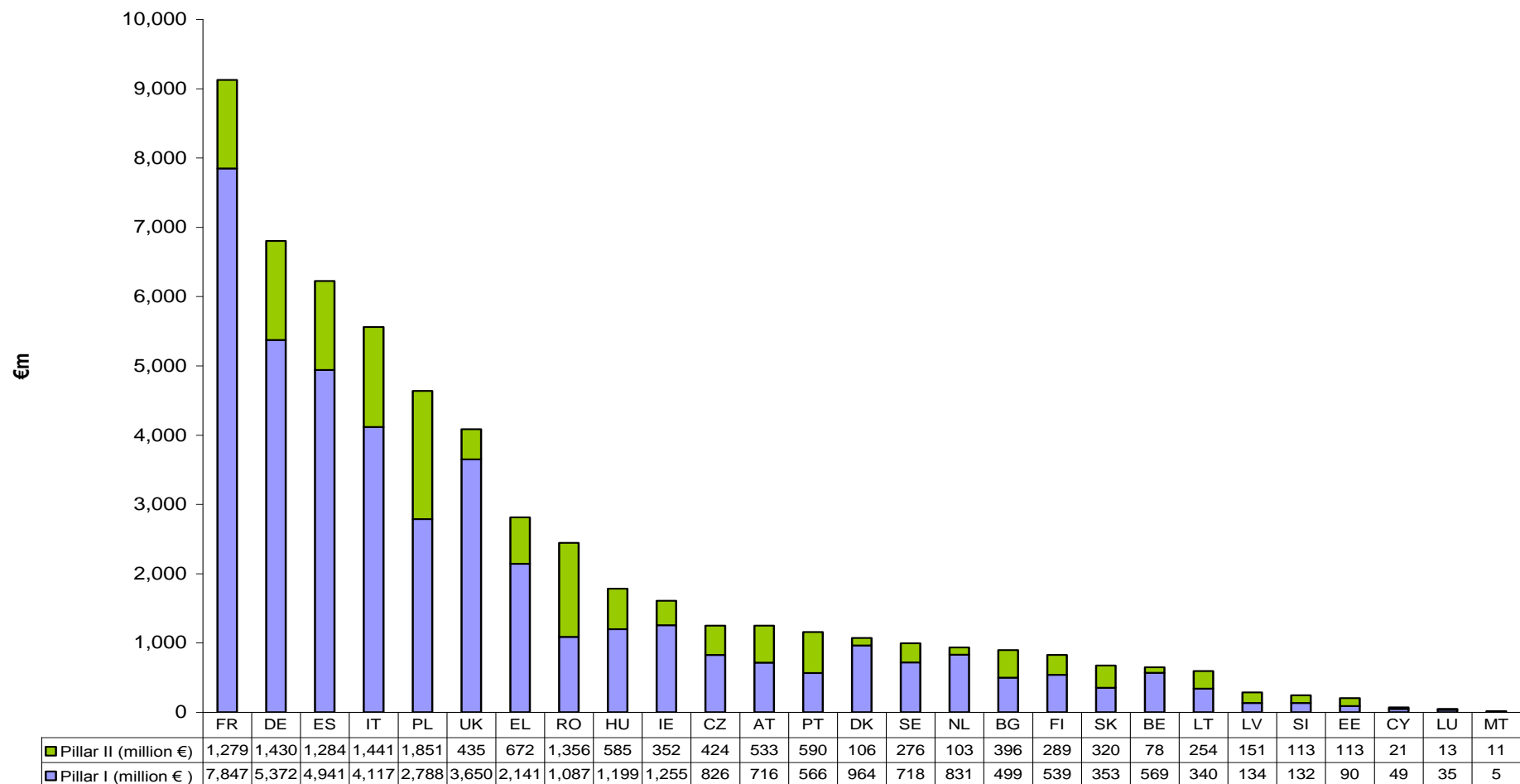
Objective 5 - Detailed exploration of the UK position

a) Assess the results from the scenarios developed in objectives 3 and 4 for the UK and individual UK countries, specifically:

❑ in relation to existing Pillar II allocations and current transfers from modulation (compulsory and voluntary)

❑ the extent to which a transitional component to allocation criteria (based on existing allocations) could effectively be used to smooth the transition to more objective criteria.

❑ sensitivity of Pillar II allocations to changes in axis minimum spends.

❑ sensitivity of Pillar II allocations to changes in overall Pillar I and Pillar II budgets.

Objective 6 – Conclusions and future work

a) Draw out key conclusions and contextualise considering wider political factors (e.g. UK budget rebate) and some consideration of other major contributors to EU budget (i.e. Germany) and major CAP beneficiaries (i.e. France, Italy, Poland).

b) Highlight areas for further work.

Appendix 3: Distribution of CAP payments until 2013

Figure 11: Distribution of Pillar I and Pillar II CAP payments to Member States (2013)

	FR	DE	ES	IT	PL	UK	EL	RO	HU	IE	CZ	AT	PT	DK	SE	NL	BG	FI	SK	BE	LT	LV	SI	EE	CY	LU	MT
Pillar II (million €)	1,279	1,430	1,284	1,441	1,851	435	672	1,356	585	352	424	533	590	106	276	103	396	289	320	78	254	151	113	113	21	13	11
Pillar I (million €)	7,847	5,372	4,941	4,117	2,788	3,650	2,141	1,087	1,199	1,255	826	716	566	964	718	831	499	539	353	569	340	134	132	90	49	35	5

Note: 2013 figures were used for Bulgaria and Romania. Compulsory modulation has been deducted from PI and added to PII, but voluntary modulation has not.

Appendix 4: Objectives not explicitly considered in this study

Three policy objectives that play a major role in the public debate on the CAP have not been incorporated in the study. These are food security, farm income stabilization and the compensation for demanding EU standards.

Food security

The evidence is strong that food security is not endangered in the EU for the foreseeable future.[39] For more than five decades, the EU has produced more than enough food to nourish its citizens in every single year. In the future, the European food production potential is likely to grow further thanks to technological progress and improved farming methods, while EU population growth will be negligible. If the need arises, farmers can easily expand cultivated areas, use more intensive farming methods and shift production patterns to increase yields. In particular, curbing meat, milk, and biofuels production could free up capacity for growing basic grains. Moreover, throwing away less food is a guaranteed way to have more on our plates if food should ever become scarce. Finally, the EU has sufficient purchasing power to fulfil its needs even on a high-price world market.

In the long term, environmental degradation might undermine EU food security. These indirect threats to food security are accounted for in this study through allocation criteria reflecting environmental objectives.

Farm income stabilization

Farmers themselves have a variety of tools at their disposal in order to cope with risks. They can diversify their income by producing different crops and livestock and by engaging in off-farm work or non-agricultural on-farm activities, such as tourism. They can share risks along the agricultural market chain through contractual long-term arrangements, for instance with supermarkets. Furthermore, they can rely on risk-pooling in producer cooperatives, on insurance and hedging on options/futures markets, and on capital and debt management. Governmental intervention weakens farmers' incentive to lower their income variability.

Given this 'moral hazard' and other problems, such as a lack of farm household income data, it is currently not clear which farm household should be protected against which risks through which instruments and up to which level.[40] This makes any modelling of financing needs impossible.

Compensation for Community standards

Several considerations speak against leakage of production to foreign countries with less demanding standards. First, imported food must in any case meet many of the EU's legal minimum standards, notably those on human, animal, and plant health. Second, an ever increasing share of food is sold by brands and retailers that impose their own, more demanding standards. Third, when EU producers have to comply with stricter standards than their foreign competitors, it is not solely to their detriment. High standards increase consumer confidence in the safety of EU products, and also their respect for environmental and animal welfare values. Fourth, high hygiene standards furthermore improve animal and plant health, and traceability requirements enable more targeted intervention in the case of pest and disease outbreaks. Farmers therefore incur fewer losses. Fifth, the costs EU farmers incur by

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[39] See Defra (2009) and the declaration on 'A Common Agricultural Policy for European Public Goods' by Hofreither et al. (2009).
[40] Bielza et al. (2009) and OECD (2009)

complying with legal minimum standards that do not apply to foreign farmers appear generally moderate.41

If some agricultural production is transferred in response to high EU standards, this is not inevitably undesirable. Even where a global public good is concerned, such as biodiversity or the climate, it is not clear whether a country with higher standards has indeed a better environmental performance. European farmers may employ relatively polluting production techniques despite the high environmental standards in the EU. For instance, land may be scarcer in Europe, while agro-chemicals and machines may be better available, than in other countries. Or the cold winters in many European member states may require using energy to keep animals in stables, whereas animals can graze freely in other countries throughout the year. A transfer of production to countries with lower standards is not necessarily harmful to the global environmental commons.42

A strong case for compensating EU farmers is therefore missing so far. Moreover, it is not clear how such compensation would be put in practice. Accordingly, it is impossible to devise suitable allocation criteria at the moment.

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41 See Brouwer, Fox, and Jongeneel (2010).
42 See Defra (2006).

Appendix 5: Assessment of potential indicators

Utilisable Agricultural area

Table 17: Indicator assessment – Utilisable Agricultural Area (UAA)

Criterion	Comments
Data availability	Eurostat: Farm Structure Survey
Data robustness	Good. Routinely recorded.
Policy priority	Moderate. The need for funds is most straightforward when it comes to enhancing the amenity value of landscapes but is also reasonably close for climate protection, biodiversity preservation, and water management measures. There is a relatively strong link to Axis 2 measures (Agri-environment payments and Non-productive investments) and a weaker link to some Axis 1 measures (Use of advisory services, Setting up of management, Relief and advisory services, Infrastructure, Restoring agricultural production potential, Meeting standards based on Community legislation). The link to farm income objectives is weak (compared to indicators such as the number of low-income farm households or simply agricultural labour).
Allocative effectiveness	Moderate. Generally, the costs of sustainable farming practices - and thus the necessary incentives to change farming practices - differ across member states and production systems. They are, in particular, highest for permanent crops, then arable crops and thirdly, permanent grassland. Also, the value of changes in farming practices differs across agricultural areas (e.g. biodiversity improvements are especially valuable in corridors of migrating species).
Dynamic incentives	Weak. There is no incentive for beneficial land use changes within agriculture (e.g. to move from arable crops to grassland) or to change the legislative baseline (e.g. to tax fertilizer use or to improve public accessibility). The incentive to maintain agricultural areas (compared to non-agricultural uses) is weak: member states' entitlements to subsidies based on agricultural area is unlikely to be translated into instruments that are targeted at expanding agricultural area – only the cross-compliance condition of the Single Farm Payment tends to maintain agricultural areas. Furthermore, the benefits of expanding/maintaining agricultural area per se (rather than in areas where they are scarce, e.g. from the biodiversity of tourism perspective) is questionable.
Fairness	Moderate. The cost of provision of public goods per hectare of agricultural area across member states, given the spatial heterogeneity of both biophysical and socio-economic characteristics.
Alternative indicators	As a blunt catch-all indicator it competes/overlaps with the entire set of indicators.
Recommendation	**INCLUDE**

Given the agricultural focus of the CAP, UAA is an obvious candidate indicator, one that is easily understood and well recorded.   That is, since farming activity has to occur somewhere, agricultural production is clearly linked to the area of land farmed, as is the provision of public goods from farmland.   Moreover, UAA has been used previously in allocating modulation receipts and in setting Pillar I budgets for New Member States.

However, linkages between area and policy outcomes are neither necessarily linear nor unaffected by other factors. For example, both agricultural production and many public goods also depend on prevailing biophysical conditions and the intensity of management at a given location, not just the area involved. As such, farmland may display considerable local spatial and temporal heterogeneity in terms of its potential requirement for policy support and potential contribution to policy outcomes: not all parcels of land will be of equal policy relevance. If such heterogeneity – either between and within Member States – is low, or total area is (coincidentally) correlated with the actual area of highly-policy-relevant land, then

UAA may be a reasonable proxy. However it seems likely that a finer classification of land that addressed some of the heterogeneity would improve the approximation.

Forest area

Table 18: Indicator assessment – Forest area/Farm woodland

Criterion	Comments
Data availability	Statistics on farm woodland available through Eurostat (FSS/land use-other farmland: wooded area)
Data robustness	Relatively good.
Policy priority	Good. Strong link to climate change objectives through carbon sequestration but also contributions to biodiversity and renewable energy. The importance of responsible forest stewardship is increasingly being recognized.[43] Management of the wider Forest Area is an important environmental land objective; while Farm Woodland is relevant for Pillar I allocation but an element of the wider Forest Area is covered by Pillar II support. Farm woodland is a reasonable proxy to cover woodland aspects for the purpose of this work.
Allocative effectiveness	Reasonably good. The marginal payoff of subsidies to promote sustainable forestry practices appears to be high. Allocative effectiveness increases if entitlements based on forest areas are responsive to the extent of management for conservation and their public goods value (e.g. the MCPFE classes[44]).
Dynamic incentives	Poor. The level of payments will be too low to change the size of overall forest areas, given significant existing stocks and the impact of other factors (e.g. timber prices, possible inclusion in carbon emission trading). Stronger dynamic benefits obtained by focusing on forest classes with high public goods value.
Fairness	Moderate. While all forest contributes to climate change through carbon sequestration, other outcomes (e.g. biodiversity, amenity value) may not be realised in many instances. Also, member states with large forest areas whose maintenance is in the national interest (often on purely economic grounds without governmental intervention) would reap windfall gains. Or in some cases, vice versa, environmental management responsibilities may be large.
Alternative indicators	Land use changes (annual changes in % for different forest classes)
Recommendation	**INCLUDE Farm Woodland**

An integrated (rural) land use policy would perhaps view the policy distinction between forestry and agriculture as unhelpful in that both can occupy large areas of land and both can contribute to several policy objectives. For example, forestry can (positively or negatively) influence climate change mitigation and adaptation, hydrological management and biodiversity and changes to the area enrolled in forestry and/or its management treatment could contribute to policy objectives. As such it is reasonable to consider forestry as an allocation key. However, as with UAA, different types of forestry are likely to be of differing policy relevance in terms of their need for public intervention and/or potential to contribute to policy objectives. For example, conifers versus broadleaf species or large scale commercial versus smaller (farm) scale woodlands. The latter distinction is perhaps important in that extending the CAP into large scale forestry could be resisted politically.

First, in many cases, support arrangements for forestry operate at least partially outwith the CAP, for example via direct state ownership, bespoke grant schemes or preferential tax regimes (which are typically justified with reference to similar market imperfection/failure arguments as used in agriculture). This means that widening the CAP to include large scale

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[43] See European Commission (2009a) and Schulze et al. (2009).
[44] Ministerial Conference on the Protection of Forests in Europe www.mcpfe.org

forestry should be accompanied by an unpicking/harmonising of existing support mechanisms, which may be difficult both technically and politically. Second, assuming that an allocation driven by forestry would be spent on forestry-related policy efforts[45], it would potentially enrol significant additional hectares within the CAP and dilute the agricultural focus. To date, forestry has been covered under Pillar II, where EU intervention has a narrower rationale, focusing on delivering public goods rather than market related issues.

Nevertheless, (new) farm woodland is already accommodated within the CAP – both in terms of eligibility for the Single Payment and for Pillar II grant schemes. As such, including farm woodland as an allocation key alongside farmed land may be appropriate. That is, the areas involved are relatively modest and can (more easily) be regarded as part of a farming system than large scale forestry.

Permanent grassland area

Table 19: Indicator assessment – Permanent Grassland Area

Criterion	Comments
Data availability	Eurostat: Farm Structure Survey
Data robustness	Good. Routinely recorded
Policy priority	High. There is a strong link with the provision of public goods (water management, biodiversity, climate, amenity value) which is more direct than in the case of agricultural area.
Allocative effectiveness	Low (in combination with agricultural area). Generally, the yields and the costs of sustainable farming practices - and thus the necessary incentives to change farming practices – are relatively **low** for permanent grassland. If agricultural area is used as an indicator, additional entitlements based on permanent grassland can only be justified for the maintenance of or creation/conversion to grassland. Considerations of allocative effectiveness, which are based on targeting payments where the marginal return is highest, thus cannot support the use of this indicator.
Dynamic incentives	Moderate at best. Absolute payments per ha compared to the cost of grassland conversion are so low that sufficient incentive effects are not ensured. Other factors (e.g. meat and milk prices, feedstuff prices) will dominate such payments.
Fairness	Moderate. Absolute payments per ha compared to the cost of grassland conversion are so low that adequate (fair) cost coverage is not ensured. Furthermore, significant windfall profits for member states with large grassland areas whose maintenance is in the national interest (often on purely economic grounds without governmental intervention) would occur if using grassland area as the basis for funding allocations.
Alternative indicators	Land use changes, extensive agriculture. The rationale for this indicator is weak and this should be reflected in weighting within scenarios; ideally we should model land-use changes, directly rewarding grass and conversion
Recommendation	**INCLUDE**

As with UAA, Permanent grassland area is easily understood and well recorded. Yet grass-based livestock farming systems are often associated more closely with a number of environmental and socio-economic issues than arable systems are. For example, maintenance of semi-natural habitats, biodiversity and landscape features plus the tendency for some (e.g. store) systems to generate only low incomes. As such, permanent grassland area may be more appropriate than UAA as an allocation key for environmental purposes.

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[45] This is common across all of the keys in that it is assumed that the budgetary "need" indicated is translated into policy expenditure related to that need rather than diverted elsewhere.

However, permanent grassland is itself a variable category with respect to, for example, grazing pressure and fertiliser applications. Hence, although probably offering some targeting advantages over UAA, using permanent grassland as an indicator will still incur potentially significant misallocations due to heterogeneity. Moreover, excluding arable land uses risks neglecting the policy relevance of, for example low intensity cropping or pollution mitigation opportunities in arable areas.

Other land-use stocks and changes

Table 20: Indicator assessment – Other land-use stocks and changes

Criterion	Comments
Data availability	Farm Structure Survey (FFS) for main production systems and crops. CORINE Land Cover (CLC) database for additional, in particular non-agricultural, land-use classes (e.g. natural grasslands, peat bogs, and moors and heathland). National sources (statistics, experts) for more fine-grained land-use classes (than the 44 CLC classes) in line with the detailed Habitat Directive classification system.[46]
Data robustness	FFS relatively good. The primarily satellite-based CLC poses two problems: precision (minimum mapping unit 25 hectares though land cover changes of at least 5 hectares are also mapped) and reliability.[47] A practical problem of a different order is that such data becomes only available ex-post (the most recent CLC data is currently for 2006). At least funds for land-use stocks would therefore have to be based on relatively old data. For land-use changes, it would be envisaged to forward subsidies to member states in line with commitments for land-use changes and to claim back of these funds from member states that cannot prove corresponding land-use changes linked to subsidy programs.
Policy priority	Good. Certain land use classes exhibit strong environmental benefits (water management, biodiversity, climate, amenity value) and payments may be required for their maintenance or creation.
Allocative effectiveness	This depends on the detail of land-use classes and the specific land-use class in question. Generally, the more narrowly defined land-use classes with specific entitlements are, the more homogenous the marginal return of agricultural subsidies is across member states. For many environmentally valuable land-use classes, the concept of allocative effectiveness is not applicable because they are not being used for farming.
Dynamic incentives	Absolute payments per ha compared to cost of creation of such area (afforestation/reforestation; grassland conversion; wetland restoration) are so low that sufficient incentive effects are not ensured. Payments linked to land-use changes are therefore necessary to create incentives.
Fairness	Moderate. Rewarding stocks may create windfall gains for some Member States while others would not be sufficiently rewarded for the high cost of certain land-use changes (afforestation/reforestation; grassland conversion; wetland restoration). Rewarding land-use changes may be perceived as unjust as those member states with least preserved forest or wetlands would benefit most.
Alternative indicators	HNV area (and all the other indicators based on land use).
Recommendation	**Develop.** The task is 1) to define land-use classes that are priority spending targets and 2) to improve accuracy of mapping through more fine-grained assessment of satellite images and greater use of national data. The CLC project has seen significant improvements between the 2000 and 2006 version. However, it will neither be possible to resolve the data issues nor to come to a political agreement on the value of different land-use classes in time for the post-2013 CAP. A highly differentiated system of entitlements to EU funding based on land-use stocks and changes should be in the objective of the 2020-CAP reform.

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[46] See Paracchini et al. (2008) for an attempt to exploit these bottom-up sources.
[47] See EEA (2007) and Paracchini et al. (2008).

Natura 2000

Table 21: Indicator assessment – Natura 2000

Criterion	Comments
Data availability	Data available through Natura 2000 spatial dataset and Corine Land Cover database.
Data robustness	Good. Clearly designated, registered and monitored.
Policy priority	Good. Close links to policy objectives, especially the protection of biodiversity.
Allocative effectiveness	Moderate. The value of changes in farming practices is more homogenous for Natura 2000 areas than for agricultural area. However, the costs of maintaining the Natura 2000 areas varies with the level and kind of agricultural productivity that would be prevalent without the Natura 2000 status. Allocative effectiveness (as well as dynamic incentives and fairness) could thus be improved if payments for Natura 2000 areas were made conditional on the type of land-use within these areas (e.g. somewhat higher for agricultural area than for forests and significantly higher than for non-productive alpine areas).
Dynamic incentives	Good. Use as a funding key disposes Member States to extend their Natura 2000 areas. However, as there is variation across Member States in terms of baseline requirements for Natura 2000, the change/improvement is therefore not entirely comparable.
Fairness	Good. Member States that designate Natura 2000 areas pay a price as they have to fulfil strict EU requirements that limit land use. It is thus fair to reward such efforts. However, there may be an issue that the stringency of legal baseline varies across Member States. Farming restrictions are different as well as income forgone.
Alternative indicators	To some extent: HNV area.
Recommendation	**INCLUDE**

As spatial designations guided by assessments of environmental vulnerability and value, N2K sites and their total area serve as a useful indicator of acknowledged environmental policy relevance.

However, N2K status by itself says little about the policy needs of individual sites for protection/support beyond that offered by (regulatory) designation. As such, some assessment of (e.g.) the number of sites not in favourable condition or of the policy effort needed to achieve and maintain favourable condition would be more appropriate. This is exactly the same principle as with, for example, UAA or permanent grassland: the total area is of less interest than the area needing policy intervention and/or contributing to policy objectives. Similarly, the prevalence of N2K in a Member State says little about the policy relevance/needs of non-designated land. Finally, we also need to consider the significance of the area of N2K which lies outside the remit of CAP land management actions, for example, marine sites.

Organic farmland

Table 22: Indicator assessment – Organic farmland

Criterion	Comments
Data availability	The data are provided by the inspection bodies to the national authorities in charge. Datasets are held by Eurostat.
Data robustness	Good. Annually recorded as required by European Action Plan for Organic Food and Farming, Brussels, 10.06.2004.
Policy priority	Moderate. Organic farming is often considered to be beneficial for many environmental public goods (for example, biodiversity, amenity value, water quality), while its performance in the fight against climate change, for animal welfare, and for healthy food is under debate. However, a recent research report[48] puts even some of the core advantages of organic agriculture into doubt. There is an argument that consumers pay for the additional environmental credentials of organic food through prices and as such, there is a lesser degree of market failure. There are also questions of adverse selection (tendency for extensively managed land to be entered into the scheme) and as such limited additionality.
Allocative effectiveness	Moderate. Due to the standardization of organic farming practices, relatively homogenous benefits and costs occur across member states. Entitlements for organic farming could be further differentiated on a product basis to reflect different cost per hectare (e.g. separate rates for vegetables), given that member states specialize in different organic products. A problem with this indicator arises over double-counting if additional indicators are used to reflect public goods linked to organic farming, notably biodiversity (this would punish member states that achieve biodiversity by other means than organic farming).
Dynamic incentives	Moderate. Even a payment based on stocks is likely to create incentives given the relatively low percentage shares of organic farming in overall agricultural area and the high rates per hectare that are frequently being paid.
Fairness	Moderate. The potential benefits are most significant in more intensive agricultural systems where income forgone and the additionality of benefits are greatest. Also, the entitlements for organic farming are often differentiated on a sector basis e.g. higher for horticulture than grassland. There is a link to the development of consumer markets which might discriminate against the EU12.
Alternative indicators	Low input farming or extensive agriculture.
Recommendation	**INCLUDE**

Organic agriculture is typically portrayed as less environmentally damaging than conventional agriculture, at least on a per hectare basis. As such, the extent of organic farming in a Member State may be taken as an indicator of the prevalence of farming systems associated with more positive environmental outcomes.

However, use of an organic designation raises a couple of issues. First, as a specific sub-category of land use, organic cropping can increase (or decrease) relatively easily. This means that, potentially, budget allocations can be manipulated. Second, if extensive cropping is associated with positive environmental outcomes, then the budget allocation is effectively to maintain existing outcomes rather than to fund remedial action to improve outcomes elsewhere – which may or may not be desirable.

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[48] http://www.timesonline.co.uk/tol/news/environment/article7116158.ece

Low input farming

Table 23: Indicator assessment – Low input farming

Criterion	Comments
Data availability	Low input farming can be defined in terms of mineral fertiliser and/or pesticide use although there are caveats around the presence of livestock enterprises, notably intensive systems where nutrients are imported as livestock feed. At national level, it is possible to consider the gross nutrient balance (GNB), which is the suggested basis for measuring the 'Improvement in water quality' impact indicator for the RDP. GNB is available through IRENA 18 for EU-15 but not available for new member states.
Data robustness	Moderate. Good for EU-15.
Policy priority	Moderate. Reductions in input use can be linked to water quality, biodiversity and climate change objectives. Taxing inputs is a simple and efficient alternative, although this would apply at Member States level and possibly lead to market distortions.
Allocative effectiveness	Poor. Optimal input use depends on various factors: marginal output gains; complementarity farming techniques (e.g. buffer strips) that influence the marginal environmental damage; and natural conditions (e.g. soil quality) that influence the marginal environmental damage. Input use is a helpful indicator for the overall direction of farm policy but may not be appropriate across the EU as a funding key.
Dynamic incentives	Poor. As above.
Fairness	Poor. Targeting changes for high use is hard to justify (on fairness grounds) while targeting low use static allocative ineffectiveness (low input may be the most efficient solution).
Alternative indicators	Extensive agriculture
Recommendation	**EXCLUDE**

Extensive agriculture

Table 24: Indicator assessment – Extensive agriculture

Criterion	Comments
Data availability	Combined UAA of extensive grazing and extensive arable, where extensive grazing is defined as UAA where livestock density is less than 1 LU/ha of forage area and extensive arable is defined as UAA where cereals yield is less than 60% of EU27 average. Available through Farm Structure Survey.
Data robustness	Moderate. Routinely collected and recorded but reflects average data at NUTS3 level and does not pick up smaller extensive areas.
Policy priority	Moderate. Extensive grazing and extensive arable can deliver biodiversity, landscape services, recreation/tourism value and animal welfare but this also depends on the inherent environmental or landscape value of the area.
Allocative effectiveness	Moderate at best. Costs and benefits of extensive agriculture differ strongly across member states – extensive agriculture may be the economically efficient solution without government intervention in many areas.
Dynamic incentives	Low. Large stocks of extensive agriculture and low rates (if paid in addition to entitlements from agricultural land) imply weak incentives.
Fairness	Differences in cost of maintaining extensive agriculture undermine the fairness of EU-wide standardized entitlements (adverse selection/windfall profits). However, this may not be perceived as unfair as these are generally low-yielding areas. That is, windfall profits go to rather poor farmers and regions.
Alternative indicators	
Recommendation	**INCLUDE**

Mirroring the use of organic farmed area as an indicator low intensity cropping systems, extensive grassland offers an indicator of the extent of low intensity livestock farming. In so doing it further sub-divides permanent grassland into a category more likely to be associated with environmental potential such as semi-natural habitats and biodiversity.

However, as with organic cropland, the use of extensive grassland as an indicator poses a dilemma with respect to how budget "need" is being characterised. That is, if extensive grassland is associated with positive environmental outcomes, then the budget allocation is effectively to maintain existing outcomes rather than to fund remedial action to improve outcomes elsewhere.

Reduced/no tillage

Table 25: Indicator assessment – Reduced/no tillage

Criterion	Comments
Data availability	IRENA 14.2 Tillage systems and report on Sustainable Agriculture and Soil Conservation.[49]
Data robustness	Moderate.
Policy priority	Moderate. Reduced/no tillage is associated with improved soil quality, greater biodiversity, lesser water abstraction and increased carbon sequestration. There is a risk of increased chemical use to control weed and pests.
Allocative effectiveness	Poor. The cost of reduced/no tillage differs greatly across member states; it represents an economically efficient production method in many instances.
Dynamic incentives	Moderate. Right incentive effect but very weak as payment levels will be low.
Fairness	Poor. The cost of reduced/no tillage differs greatly across member states; it represents an economically efficient production method in many instances.
Alternative indicators	
Recommendation	**EXCLUDE**

Wildlife populations

Table 26: Indicator assessment – Wildlife populations

Criterion	Comments
Data availability	Protected habitats (dependent on continuation of extensive farming practices), available at IRENA 4 and IRENA 28 (farmland bird population) for EU-15.
Data robustness	Moderate.
Policy priority	Good. Links to biodiversity objectives.
Allocative effectiveness	Poor. Although farming has had a major impact on wildlife and some species that are reliant on specific management of agricultural land, wildlife diversity varies for natural and non-agricultural anthropogenic reasons and does not indicate CAP spending needs *per se*.
Dynamic incentives	Poor. Providing funding entitlements for poor preservation status of wildlife populations (as would be reasonable to maximize allocative effectiveness) creates an adverse (if weak) incentive.
Fairness	Poor. Unjust reward of poor preservation status of wildlife populations.
Alternative indicators	HNV area
Recommendation	**EXCLUDE**

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[49] DG Joint Research Centre, Institute for Environment and Sustainability, and Institute for Prospective Technological Studies (2009)

High Nature Value Farmland (HNVF)

Table 27: Indicator assessment – High Nature Value Farmland (HNVF)

Criterion	Comments
Data availability	IRENA 23 indicator and FADN.
Data robustness	Poor. The European Environmental Agency (2010) estimates based on land cover classes is not consistent with the DG Agri (2007) estimate based on farming practice surveys. Both estimates do not claim to measure the full HNV definition or to be very reliable in those aspects they measure. Some data is available for % estimates for HNV classifications and could be translated into ha (see Paracchini et al. 2008)
Policy priority	Good. The EU has given a high priority to the concept and designation of HNVF as a common basis for quantifying important areas for delivering public goods.
Allocative effectiveness	Moderate. HNV represents a targeted approach to identifying and protecting areas of environmental importance (and need for Pillar II measures). However, the costs (even more than the benefits) of maintaining HNV areas differ across member states.
Dynamic incentives	Good. The strength of the incentive effects is, however, moderated by the fact that it is difficult to create HNV areas.
Fairness	Good. The problem of rewarding stocks of HNV areas in some member states where the maintenance of these areas is relatively cheap may not be perceived as unfair as these are generally low-yielding areas. That is, windfall profits go to rather poor farmers and regions.
Alternative indicators	Natura 2000, extensive agriculture, land use and land use changes
	HNV is a composite of three different types of agricultural area with the following characteristics: semi-natural vegetation; mosaic, low intensity, structural elements; supporting rare species (birds and butterflies).[50] It may be preferable to target the areas conflated in the HNV concept separately. For instance, maintenance of low-intensity, mosaic agriculture may be more costly than semi-natural vegetation. One might also want to differentiate further within these three area types. Another limitation is that HNV includes only agricultural areas supporting rare species. However, protecting non-agricultural areas supporting rare species may also be costly. The data collected in the HNV project may therefore constitute a good starting point for different categories of area that entitle to CAP funds.
Recommendation	EXCLUDE

[50] Paracchini et al. (2008), Institute for European Environmental Policy (2007)

Landscape (designated areas)

Table 28: Indicator assessment – Landscape (designated areas)

Criterion	Comments
Data availability	EEA (National – CDDA).
Data robustness	Moderate. Currently not complete (according to EIONET) but could be improved if it was to be used for funding entitlements.
Policy priority	Moderate. Designated areas can be linked to biodiversity, landscape and tourism /rural development objectives. However, many of these advantages are primarily a local or national public good rather than an EU public good. Furthermore, designation as Natura 2000 is the preferable option: the selection criteria are better targeted at valuable areas and EU-wide minimal protection obligations exist and are being monitored. If designated areas were used as a funding key for areas of special cultural, scenic and biodiversity value that do not qualify for Natura 2000 status, a stricter classification system would have to be introduced.
Allocative effectiveness	Poor. The costs and benefits of designated areas are highly heterogeneous across member states (with the EU's largest designated area, a Danish national Park in Greenland, being an extreme example).
Dynamic incentives	Poor. As existing stocks are very significant and payments per hectare low (especially where they top up entitlements for agricultural area), the incentive effect is very modest. Assigning attachments based on designated areas could weaken against incentives to establish Natura 2000 areas.
Fairness	Poor. As above.
Alternative indicators	HNVF and Natura 2000.
Recommendation	**EXCLUDE**

Table 29: Indicator assessment – Soils (at risk)

Criterion	Comments
Data availability	Can be defined in terms of area at risk of soil erosion, soil organic matter, compaction, contamination etc. Data available at the Soil Atlas of Europe[51]. Soil erosion appears to be the most suitable indicator (in terms of cross-border effects, cross-European prevalence and measurability).
Data robustness	Moderate. Estimation based on soil, topographical, climate and land use data (Pan–European Soil Erosion Risk Assessment model) with limited bottom-up validation ('A pan-European calibration of erosion rates is not practicable because there are only a limited number (between 50 and 100) of acceptable measurements of erosion rates throughout Europe, and these differ significantly in methodology and scale.'[52])
Policy priority	Moderate. There is a strong public goods case for solid preservation, mainly in terms of future food production, climate change, water quality and biodiversity[53]. However, the polluter-pays-principle would suggest that member states should be primarily in charge of this issue and that subsidies should be complemented by binding regulation. The Soil Framework Directive (SFD) requires Member States to identify areas at risk of soil degradation, in its widest sense, and to take measures to address those risks.
Allocative effectiveness	Moderate. The costs and benefits of preventing soil erosion are heterogeneous across member states. Some sustainable soil management practices are in the long-term business interest of farmers.

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[51] http://eusoils.jrc.ec.europa.eu/projects/soil_atlas/index.html
[52] http://eusoils.jrc.ec.europa.eu/ESDB_Archive/eusoils_docs/esb_rr/n16_ThePeseraMapBkLet52.pdf
[53] http://ec.europa.eu/environment/soil/biodiversity.htm

Dynamic incentives	Low. Rewarding member states for their areas at risk of soil erosion creates an adverse incentive.
Fairness	Moderate. Rewarding member states for their areas at risk of soil erosion may be perceived as unfair as soil erosion is partly the result of the legal baseline and past agricultural subsidy use (i.e. intensive production has been promoted in some member states, whereas others have invested in agri-environmental payments). It could also be argued that soil preservation should be part of the legal baseline (especially given that soil degradation affects primarily intensively managed arable land). Member states with less intensive crop production and more pastures – which are less affected by soil degradation – reap lower yields per hectare and could object to paying for the negative side-effects of other member states' more intensive farming practices.
Alternative indicators	
Recommendation	Any entitlements based on soil degradation would require in-dept examination that identifies soil degradation problems that are relatively 1) costly to reverse, 2) dependent on natural conditions (rather than being driven by unsustainable farming practices), 3) detrimental from an EU (rather than local/national) perspective. This could be part of a highly differentiated system of entitlements to EU funding after 2020.

Land abandonment

Table 30: Indicator assessment – Land abandonment

Criterion	Comments
Data availability	Not available
Data robustness	N.A
Policy priority	Moderate at best. Land abandonment may harm landscape, biodiversity and tourism/rural development objectives. But land abandonment has been weak in the past and is forecasted to remain so during the coming decade.[54] Furthermore, not all land abandonment has negative effects on public goods, while positive biodiversity, water and climate effects are possible.
Allocative effectiveness	Low. Land abandonment does not automatically imply loss for public goods.
Dynamic incentives	Low. Negligible potentially adverse effect from rewarding member states with high rates of land abandonment.
Fairness	Low. Land abandonment is in principle a normal adaptation to market signals, leading to greater economic efficiency.
Alternative indicators	Areas of high environmental value (that are disproportionally threatened by land abandonment and where this is more likely to be problematic) should be captured through Natura 2000 or HNVF
Recommendation	**EXCLUDE**

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[54] Nowicki, K. Jansson, and Verhoog (2009)

Flood management

Table 31: Indicator assessment – Flood management

Criterion	Comments
Data availability	Several European Commission initiatives including the European Flood Action Plan, the Directive on the Assessment and Management of Flood Risks have provided datasets on flood risk which might provide a basis for quantifying area at risk of flood[55].
Data robustness	Poor.
Policy priority	Moderate. Flood prevention provides a wider societal benefit but is mostly a local public good[56]. Alternative to EU-wide action, cooperation on a river-basin basis may yield better results.
Allocative effectiveness	Low. 'Areas at risk of flood' is a poor proxy for the benefits and costs of flood risk mitigation through agricultural practices and land use more broadly. E.g. the benefits of flood risk mitigation are higher in more densely populated areas. Moreover, some mitigating measures may best be taken in upstream member states.
Dynamic incentives	Moderate. May be hard to avoid deadweight.
Fairness	Moderate. It is difficult to find a common basis for defining areas at risk of flood. Flood risks are partly the result of poor land use practices (agriculture, management of water courses) and poor development planning – and thus 'home-made'.
Alternative indicators	
Recommendation	**INCLUDE** as a future indicator.

Water scarcity

Table 32: Indicator assessment – Water scarcity

Criterion	Comments
Data availability	State & Quantity of Water Resources (EWN-4) from EIONET.[57] The EEA is in the process of establishing a European Water Scarcity and Drought Information System (WSDIS). But it is difficult to agree on a clear and shared definition of water scarcity that would require CAP funding.
Data robustness	Moderate.
Policy priority	Moderate. Implications of water scarcity for biodiversity, quality-of-life/tourism, alternative water uses (households, industry) and transportation. However, the cross-border effects of water abstraction are limited. Furthermore, water-pricing is the most appropriate policy response, as recommended in the Water Framework Directive (WFD).
Allocative effectiveness	Poor. Water scarcity does not necessarily indicate a spending need for agricultural subsidies to promote water-saving farming practices. In some cases, water saving adaptations in farming practices may be adequate, in others more fundamental changes in production systems/intensity may be necessary.
Dynamic incentives	Poor. Rewarding water scarcity would create an incentive for the excessive exploitation of water resources in agriculture and beyond.
Fairness	Poor. The legal baseline and general water management efforts – in agriculture and beyond – vary considerably across member states. Water scarcity can be

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[55] http://natural-hazards.jrc.ec.europa.eu/activities_flood_riskmapping.html
[56] Land Use Consultants (2009)
[57] http://rod.eionet.europa.eu/obligations/184

	interpreted as a lacking adaptation of farming to natural circumstances that should not entitle for funding (e.g. maize production in water scarce areas).
Alternative indicators	
Recommendation	**EXCLUDE**

Water quality

Table 33: Indicator assessment – water quality

Criterion	Comments
Data availability	EEA through regulation, notably the Nitrates Directive and the WFD.
Data robustness	Good. Routinely recorded.
Policy priority	Moderate. Local water quality is important for drinking water, swimming, biodiversity and there are transboundary effects through rivers/lakes/seas (eutrophication). However, fertilizer/nitrate balance taxes are a more efficient instrument and correspond to polluter-pays-principle (already practiced in some countries). Also, cooperation between member states that share rivers, lakes or seas may complement EU-wide solutions.
Allocative effectiveness	Moderate. Nitrate in water is largely from agriculture (%) so reasonably strong causal link exists. However, transboundary issues make it difficult to allocate funding on this basis; more money should go where strong transboundary effects exist.
Dynamic incentives	Poor. Rewarding poor water quality would create an adverse incentive in the use of other policy instruments that strongly influence water quality (regulation, taxes).
Fairness	Moderate at best. Policy instruments strongly influence water quality (regulation, taxes) but common basis for regulation at Community level. Water pollution is closely connected to yield-increasing fertilization (which is economically efficient especially in fertile areas) and intensive livestock management. It is difficult to see why member states which reap the economic benefits of water-polluting agriculture should receive preferential EU-support for water protection.
Alternative indicators	There are several possibilities, including land which is environmentally managed (organic cropland, extensive grassland) and certain land use changes such as conversion to grassland or forest.
Recommendation	It may be possible to identify certain areas where member states should take especially demanding action to reduce water pollution that affects several member states (e.g. Baltic Sea). This may deserve special compensation.

Public access

Table 34: Indicator assessment – Public access

Criterion	Comments
Data availability	Poor.
Data robustness	Poor. The quantity and quality of access are difficult to measure.
Policy priority	Moderate. This is very much a public good but at a local level and is dependent on cultural norms.
Allocative effectiveness	Poor
Dynamic incentives	Poor
Fairness	Poor
Alternative indicators	
Recommendation	**EXCLUDE**

GHG Emissions

Table 35: Indicator assessment – GHG Emissions

Criterion	Comments
Data availability	Data from IRENA 34.1 Share of Agriculture in GHG emissions[58].
Data robustness	Poor. CH4 emissions from livestock differ across breeds, with feedstuff and feeding practices, manure handling etc. Greenhouse gas emissions from land (N2O, CO2, CH4) vary with soils, climate, fertilizer quantities and management etc.
Policy priority	High. Farm level measurement insufficiently reliable for taxing/emission trading. Only energy emissions produced by agriculture (direct and incorporated into fertiliser etc) are covered by EUETS[59].
Allocative effectiveness	Moderate. The benefits of GHG reductions are identical across member states but the marginal abatement costs differ significantly across member states due to different breeds, feedstuffs and farming systems etc.
Dynamic incentives	Poor. Rewarding absolute emission levels would create an (probably insignificant) adverse incentive. Rewarding reductions in GHG emissions is difficult as other factors are influential, such as decreases in LU numbers (besides for the problem that data is available only ex post). Reward in emission reductions per ha or LU improvements would be better but even more sensitive due to data difficulty.
Fairness	Poor (for reasons above). Rewarding reductions would be difficult to justify because this would tend to reward member states with climate on currently farming practices at the baseline period.
Alternative indicators	Livestock numbers, reduced/no tillage, low input farming
Recommendation	**Develop.** If data becomes sufficiently reliable, emission trading is the most likely policy solution to reduce GHG emissions from agriculture. It remains to be seen in the context of the post-2020 CAP whether and how such a solution will be combined with subsidies and what suitable entitlement indicators could be in this case.

Carbon sequestration

Table 36: Indicator assessment – Carbon sequestration

Criterion	Comments
Data availability	Available from GHG emission inventories submitted to UNFCCC and research.[60]
Data robustness	Poor.
Policy priority	High. The potential for carbon sequestration is high and underexploited.[61]
Allocative effectiveness	Moderate. No reasonable link between absolute amounts of carbon sequestration in a given member state and marginal cost of sequestration. Also, subsequent releases from soil and biomass would have to lead to deductions in entitlements (which pose a measurement problem).
Dynamic incentives	Poor. Very weak positive incentive effect. Tremendous windfall gains for member states with large forests and suitable soil/climatic conditions for carbon sequestration (Northern Europe).
Fairness	Poor. Sequestration does not sufficiently mirror policy effort and is distributed highly unevenly across member states.
Alternative	Permanent grassland, extensive agriculture, forests, land use and land use

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[58] European Environmental Agency (2009).
[59]
[60] European Environmental Agency (2009) and Schulze et al. (2009).
[61] Schulze et al. (2009)

	changes, reduced/no tillage.
indicators	
Recommendation	**Develop.** If carbon sequestration is used directly as an entitlement for subsidies (rather than e.g. land use changes), it has to reflect sequestration actions. Such performance-based subsidy allocation would require not only more reliable data but also a different mindset (accepting ex-post rewards for proven performance). It could be part of the post-2020 CAP.

Energy crops

Table 37: Indicator assessment – Energy crops

Criterion	Comments
Data availability	'UAA devoted to renewable energy' and 'Production of renewable energy from agriculture and forestry (ktoes)'[62]
Data robustness	Moderate. A wide range of crops can be used for renewable energy generation.
Policy priority	Poor. Linked to climate change objectives and energy policy but risks associated with 1) displacement of food production to developing countries at the expense of the environment and 2) increased food prices to the detriment of the global poor. There have been significant efforts to use demand side actions to develop the renewable energy market, including EUETS (market for carbon abatement), mandatory biofuel use and feed-in tariffs for electricity. As such, supply side initiatives are less relevant for energy crops and should be avoided. Investments into research and development for renewable energies and energy price increases appear more efficient.
Allocative effectiveness	Poor. Stocks of renewable energy crops do not reflect marginal costs of expanded production.
Dynamic incentives	Moderate.
Fairness	Moderate.
Alternative indicators	
Recommendation	**EXCLUDE**

Livestock numbers

Table 38: Indicator assessment – Livestock numbers

Criterion	Comments
Data availability	FFS.
Data robustness	Good.
Policy priority	Mixed. Links to biodiversity and landscape services are better captured through (extensive) grazing area. A stronger case could be made to use livestock numbers as a proxy for investments that have to be made to reduce GHG emissions. This would require weights per species. Furthermore, it could be argued that livestock production is especially affected by Community standards (animal welfare, SPS/traceability, GMO feed) and that livestock producers should thus be compensated. But such an argument depends strongly on future regulatory developments (a tightening of animal welfare regulation would speak in favour, greater national discretion in GMO policy would speak against it). Finally, numbers of certain livestock species could be taken as a proxy for funding needs for social policy objectives. Some livestock sectors have faced particularly strong structural difficulties in the past and their perspectives are

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[62] Objective 25 in European Commission (2009b).

	relatively poor (especially in the case of further tariff liberalisation via a Mercosur FTA or WTO Doha deal). This could create spending need for measures such as early retirement, diversification and training.
Allocative effectiveness	Moderate, depending on the specific policy objective and design. Heterogeneity of GHG emission costs, extra costs from EU standards (e.g. dependence on feedstuff imports) and structural/social problems in the livestock sector.
Dynamic incentives	Poor. Rewarding livestock numbers would not contribute to any of the policy objectives mentioned above.
Fairness	Could in principle be high as a transfer mechanism to compensate member states that incur special costs as a result of EU policies (climate objectives, production standards, trade liberalisation). But agreeing on the adequate weights for livestock species would be difficult from especially from a standards-compensation and social-policy perspective.
Alternative indicators	
Recommendation	**EXCLUDE (possibly transitional indicator).**

GDP per capita

Table 39: Indicator assessment – GDP per capita

Criterion	Comments
Data availability	Eurostat.
Data robustness	Good. Routinely collected.
Policy priority	N/A.
Allocative effectiveness	Necessary correction (not reflecting a policy objective per se). In richer Member States (with higher GDP per capita), farm gate prices, wages in non-agricultural jobs that are comparable to agricultural employment, and land rental prices tend to be higher. Therefore, higher payments are also necessary to establish sufficient incentives for agri-environmental schemes that generally imply less output per unit of labour and land. In addition, a higher level of income support is needed to ascertain a fair standard of living for farmers. Purchasing power standards should not be applied as this would negate the aim of reflecting higher resource costs. Conversely, although more properly the remit of structural and cohesion policies, relative GDP per capita can be used to transfer funds from richer to poorer Member States. In this case, purchasing power standards should be applied.
Dynamic incentives	N/A.
Fairness	Moderate. The inclusion of GDP per capita may be resented for contradicting the principle of European solidarity but agricultural policies should not become a tool for accelerating economic convergence in the EU. Structural policies are more effective to this end.
Alternative indicators	
Recommendation	**INCLUDE, but as prosperity scaling rather than indicator per se**

Agricultural labour

Table 40: Indicator assessment – Agricultural labour

Criterion	Comments
Data availability	Available through Labour Survey (Eurostat)
Data robustness	Good. Routinely collected.
Policy priority	Moderate. Some expenses of Axis 1 (reflecting primarily socio-economic objectives) are related to the amount of agricultural labour. These include primarily measures of the first axis: vocational training and information actions; setting up of young farmers; early retirement; use of advisory services; setting up of management, relief and advisory services; meeting standards based on Community legislation; participation of farmers in food quality schemes; and producer groups. To a minor extent, the transaction costs for government and farmers of many measures under Axis 2 increase with agricultural labour. Under the Axis 3, funding needs for diversification into non-agricultural activities are significantly linked to agricultural labour.
Allocative effectiveness	Moderate (assessment varies with the specific policy objective which agricultural labour shall reflect).
Dynamic incentives	Poor. Adverse incentive. More problematic if subsidies are used in ways that keep labour in agriculture (farm income support, setting up young farmers etc) than for restructuring.
Fairness	Moderate. Can be perceived as an expression of European solidarity to help those member states with the largest farming population to restructure (and, in many cases, leave the sector).
Alternative indicators	
Recommendation	**INCLUDE**

Whereas most other indicators relate to land, agricultural labour relates to another aspect of agricultural activity – namely the workforce input. This is important since land management involves the combination of different resources – land, labour and capital – and the requirements for and potential outcomes of policy interventions thus depend on more than just land itself.

An abundance of agricultural labour may be interpreted as indicating a need for adjustment assistance (e.g. retraining to aid migration to other sectors) whilst a scarcity of labour may be interpreted as a need for support to retain a workforce capacity for land management (e.g. to avoid abandonment and depopulation). However, as with land, agricultural labour displays considerable heterogeneity in terms of (e.g.) age, skills and mobility meaning that a more detailed profile breakdown might shed more light on particular policy needs and potential outcomes.

Farm income

Table 41: Indicator assessment – Farm income

Criterion	Comments
Data availability	FADN
Data robustness	Good but some data/definition problems across Member States. Fluctuations in farm incomes make it difficult to take this indicator for long-term funding decisions.
Policy priority	Moderate.
Allocative effectiveness	Poor. Data on household incomes from farming does not reflect the number of household members relying on the farm, the time household members invest into farming (e.g. part-time farming), households off-farm incomes, and households' assets (which should also matter for income support). An indicator rewarding low

	farm income does therefore not reflect social-policy spending needs sufficiently closely.
Dynamic incentives	Poor. Adverse incentive. More problematic if subsidies are used in ways that keep labour in agriculture (farm income support, setting up young farmers etc) than for restructuring.
Fairness	Poor. For the reasons above.
Alternative indicators	
Recommendation	**EXCLUDE**

Agricultural GVA

Table 42: Indicator assessment – Agricultural GVA

Criterion	Comments
Data availability	Economic Survey (Eurostat)
Data robustness	Good
Policy priority	Moderate. Links to agricultural competitiveness for Axis 1 measures, notably value added through EU food quality schemes.[63]
Allocative effectiveness	Poor. Not a very accurate measure of funding needs, especially for restoring agricultural production potential and meeting standards.
Dynamic incentives	Moderate. An extremely weak incentive effect in the right direction.
Fairness	Poor. It would favour more productive member states whose farmers tend to have less difficulty in surviving without income support.
Alternative indicators	
Recommendation	**EXCLUDE**

Agricultural labour productivity

Table 43: Indicator assessment – Agricultural labour productivity

Criterion	Comments
Data availability	Economic Accounts for Agriculture (Eurostat)
Data robustness	Good
Policy priority	Moderate. Links to competiveness of agriculture in Axis 1 measures. Measures that enhance agricultural labour productivity (defined for instance as value added/AWU) include vocational training and information actions, advisory services, modernisation of agricultural holdings, the cooperation for the development of new products, infrastructure and the participation or farmers and food quality schemes and producer groups. Together, these measures account for more than half of Axis 1 spend (though it should be noted that not all of these measures are exclusively targeted at competitiveness - counter example: advisory services for sustainable farming).
Allocative effectiveness	Poor. Differences in agricultural productivity derive from natural circumstances (such as water availability and soil quality) and reflect the general level of economic development of a country (with higher productivity needed to ascertain a fair standard of living for farmers in higher income countries). Accordingly, farm-level subsidies to enhance productivity (if paid at all) should be allocated only according to effectiveness considerations, and it is not clear that low

[63] EU quality schemes include Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) for agricultural farm products and foodstuffs, wines and spirits; Traditional Speciality Guaranteed (TSG) for agricultural farm products and foodstuffs and Organic farming http://ec.europa.eu/agriculture/quality/

	productivity is a good indicator for high marginal returns on investment. It is not clear that low productivity is a good indicator for high marginal returns on investment.
Dynamic incentives	Poor. Rewarding low productivity would create an adverse incentive.
Fairness	Poor. For the reasons above.
Alternative indicators	
Recommendation	**EXCLUDE**

Less Favoured Area (LFA)

Table 44: Indicator assessment – Less Favoured Area (LFA)

Criterion	Comments
Data availability	Available from DG Agri.
Data robustness	Moderate. There is a need to enhance the transparency, robustness and coherence of the area delimitation system throughout the EU[64]. The Commission has now proposed a list of verifiable delineation criteria based on the severity of handicaps (e.g. low temperature, heat stress and steep slope) but Member States have yet to provide datasets.
Policy priority	Moderate. Links to social and environmental objectives 'to ensure continued agricultural land use and thereby contribute to the maintenance of a viable rural community' and 'to maintain countryside'[65], but the links are weak.
Allocative effectiveness	Poor. The use of LFA for Pillar I allocations is currently included (inversely) to reflect reduced productive potential and as such income potential. However, there is no reason to compensate cost disadvantages *per se* – production in a market economy should take place where it is most efficient. Only if the LFA payments are transformed into a targeted instrument to avoid land abandonment in areas where the resulting damages to public goods of European interest (notably biodiversity) would be significant, will it become an instrument that clearly contributes to overarching policy objectives and that could thus create entitlements in a rational allocation system. The proposed delineation criteria do not point in this direction as they measure only productivity disadvantages with no relationship to public goods.
Dynamic incentives	Moderate. A weak positive incentive to maintain LFA that may yield some public goods.
Fairness	Poor - there is no reason to compensate cost disadvantages *per se*. Since LFAs currently receive 14% of second pillar payments, it is likely that transitional payments may be needed if there is a significant shift of support away from less advantaged areas, while land prices and rents adjust and farmers realign their production systems or leave the sector.
Alternative indicators	LFA with specific handicaps
Recommendation	**INCLUDE LFA Mountain Areas and Intermediate Areas**

As with UAA, LFA is easily understood and well recorded – although currently subject to some uncertainty due to revisions of the designation criteria. Notwithstanding somewhat elastic boundaries, core elements of LFAs (i.e. the mountain and intermediate areas) are associated more closely with a number of environmental and socio-economic issues than UAA or even permanent grassland. For example, maintenance of semi-natural habitats,

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[64] In 2003 the implementation of the LFA scheme was subject to criticisms in a report of the European Court of Auditors, in particular as regards the designation of intermediate LFAs and the lack of targeting of the aid
[65] Council of the European Union (1999)

biodiversity and landscape features plus the predominance of low intensity farming systems to generate only low incomes. As such, LFA area may be more appropriate than UAA or permanent grassland as an allocation key for both environmental and socio-economic concerns.

However, this presumes that a new LFA designation will result in less internal variability than currently with respect to, for example, grazing pressure and fertiliser applications. Hence, while offering some targeting advantages over UAA, using LFA as an indicator may still incur potentially significant misallocations due to heterogeneity. Moreover, as with permanent grassland, largely excluding arable land uses risks neglecting the policy relevance of, for example low intensity cropping or pollution mitigation opportunities in arable areas.

Age structure in agriculture

Table 45: Indicator assessment – Age structure in agriculture

Criterion	Comments
Data availability	Farm Structure Survey (Eurostat)
Data robustness	Moderate as many holdings are family partnerships.
Policy priority	Poor. Links to Axis 1 competitiveness measures to support young farmers and to encourage early retirement. Little evidence of significant market failure in the processes of entry to and exit from farming. Therefore, it is lacking public good case for the support. Furthermore, deadweight is high to support age structure changes. Member states increasingly prefer measures that enhance human resources within agriculture (whether young or old) or that help farmers to change the sector, rather than measures to support entry or exit from the sector.
Allocative effectiveness	Poor.
Dynamic incentives	Poor.
Fairness	Poor.
Alternative indicators	
Recommendation	**EXCLUDE**

Number of farms

Table 46: Indicator assessment – Number of farms

Criterion	Comments
Data availability	Farm Structure Survey (Eurostat)
Data robustness	Generally good but some quality assurance issues surrounding self-reporting and difficulties of separating holdings from businesses
Policy priority	Poor. Related to Axis 1 measures, but links are weak. Potential economies of scale suggest some extent of inverse relationship with competitiveness. Need for payments to accelerate structural change and soften the social repercussions (diversification into non-agricultural activities) and to cover higher transaction costs for governments and farmers (in axis 1 and 2).
Allocative effectiveness	Poor. Especially with the advent of the SFP, ownership and management structures are becoming increasingly divergent such that a farm seen from the ground may be part of one or more, larger farm business and occupants of the farmhouse may have little to do with it.
Dynamic incentives	Poor. It is hard to relate number of farms to any changes in agriculture or the environment.
Fairness	Poor.
Alternative indicators	
Recommendation	**EXCLUDE**

Semi-subsistence farming

Table 47: Indicator assessment – Semi-subsistence farming

Criterion	Comments
Data availability	Farm structure Survey (Eurostat)
Data robustness	Good
Policy priority	Poor. The funding volume for measures to support semi-subsistence farming (connected to the submission of a business plan) is low (with 3% of Axis 1 payments going to programmes in Romania, Bulgaria, Poland, Latvia and Lithuania). It seems that member states have little interest to expand this measure in the future.
Allocative effectiveness	Poor. It is difficult to measure the financing need to support subsistence farming. However, this does neither capture whether the farms are indeed owned by poor households nor whether these farms need any support to restructure their farming activity (or whether they are intended as part-time occupations).
Dynamic incentives	Poor.
Fairness	Poor.
Alternative indicators	Economic size of farms (counting for example the number of farms with less than one Economic Standard Unit).
Recommendation	**EXCLUDE**

Appendix 6: Data sources for selected indicators

Table 48: Data sources for selected indicators

Indicator	Data sources	Original sources
Utilised Agricultural Area (UAA)	Rural Development in the European Union - Statistical and Economic Information - Report 2009	Eurostat (FSS); 2007.
Permanent grassland area	Rural Development in the European Union - Statistical and Economic Information - Report 2009	Eurostat (FSS); 2007.
Farm Woodland Area	Eurostat (FSS)	Eurostat (FSS/land use-other farmland: wooded area), 2007; UK country level data is from Forestry Statistics 2009 - Woodland Areas and Planting Area of Farm Woodland.
Natura 2000	Natura 2000 Barometer (May 2010)	Natura 2000 Barometer (Special Protection Areas (SPAs)+ Sites of Community Importance (SCIs))
Agricultural Labour (AWU)	Rural Development in the European Union - Statistical and Economic Information - Report 2009	Eurostat (LFS); 2007
LFA (new proxy)*	Rural Development in the European Union - Statistical and Economic Information - Report 2009;	DG AGRI - Member States specific communications or CAP-IDIM and Eurostat FSS. Data for BG is year 2007; other Member States are year 2005 data.
Extensive agriculture**	Rural Development in the European Union - Statistical and Economic Information - Report 2009;	Eurostat (FSS/land use; FSS/crop production). Area data is from year 2007 and yield data is the average of 2005-2007.
Organic Farming	Rural Development in the European Union - Statistical and Economic Information - Report 2009	Eurostat (FSS); 2007

* LFA (new proxy) is the total of LFA Mountain and intermediated LFA under current definitions;

** Extensive agriculture here is the total of extensive arable and extensive arable grazing. Extensive arable is where cereals yield is less than 60% of EU27-average (area data used is year 2007 and yield data is the average of year 2005-2007) and extensive arable grazing is where livestock density is less than 1LU/ha of forage area.
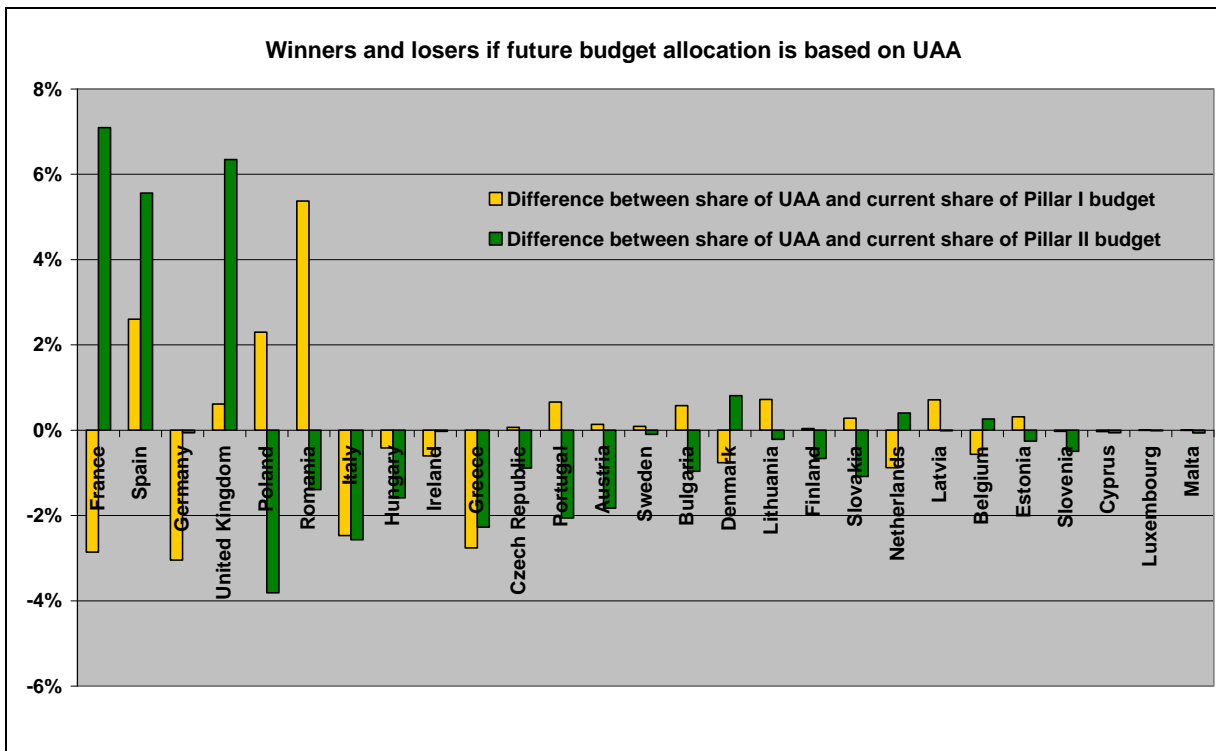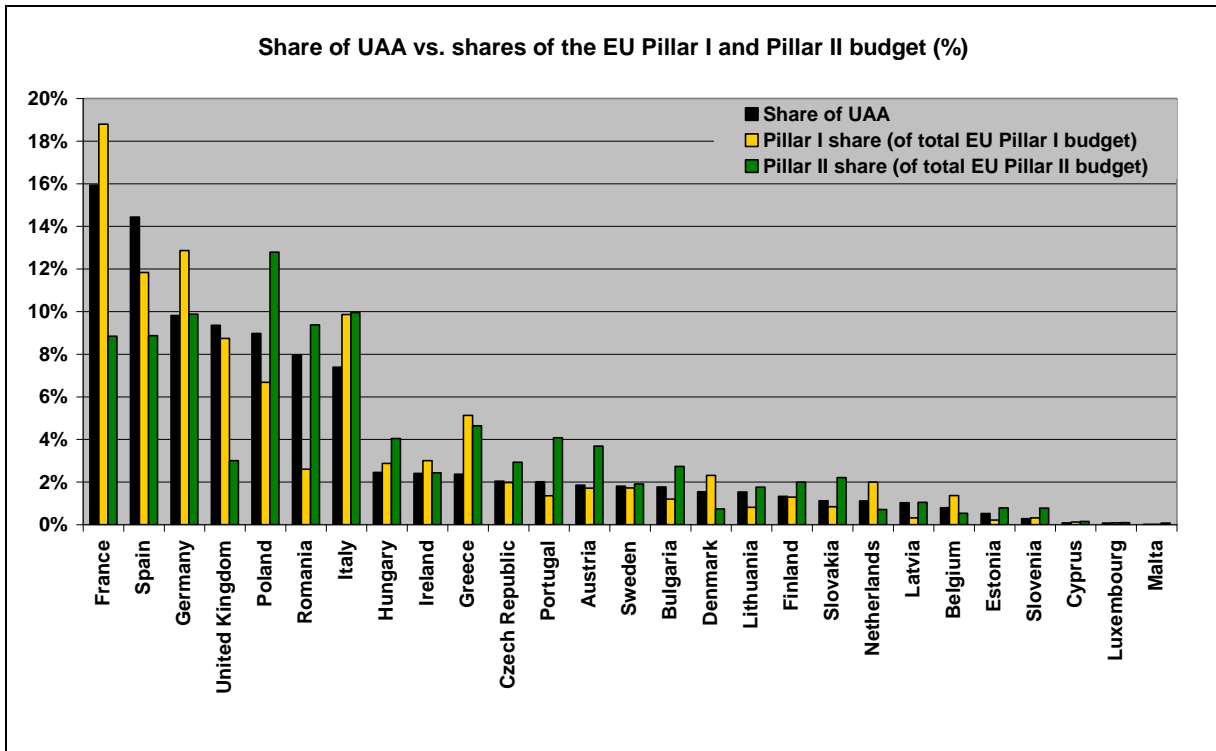
Appendix 7: Scaling factors are used in the modelling

Member States	Scaling factor favouring high income countries	Scaling factor favouring low income countries
Austria	1.10	0.92
Belgium	1.09	0.95
Bulgaria	0.80*	1.20*
Cyprus	0.94	1.02
Czech Republic	0.82	1.07
Denmark	1.20*	0.93
Estonia	0.81	1.10
Finland	1.11	0.94
France	1.07	0.97
Germany	1.06	0.95
Greece	0.93	1.02
Hungary	0.80	1.12
Ireland	1.20*	0.84
Italy	1.02	0.99
Latvia	0.80*	1.15
Lithuania	0.80*	1.14
Luxembourg	1.20*	0.42
Malta	0.84	1.08
Netherlands	1.13	0.89
Poland	0.80*	1.15
Portugal	0.88	1.07
Romania	0.80*	1.19
Slovakia	0.80*	1.11
Slovenia	0.89	1.04
Spain	0.98	0.98
Sweden	1.16	0.92
United Kingdom	1.12	0.94

* Changes are capped at +/-20%

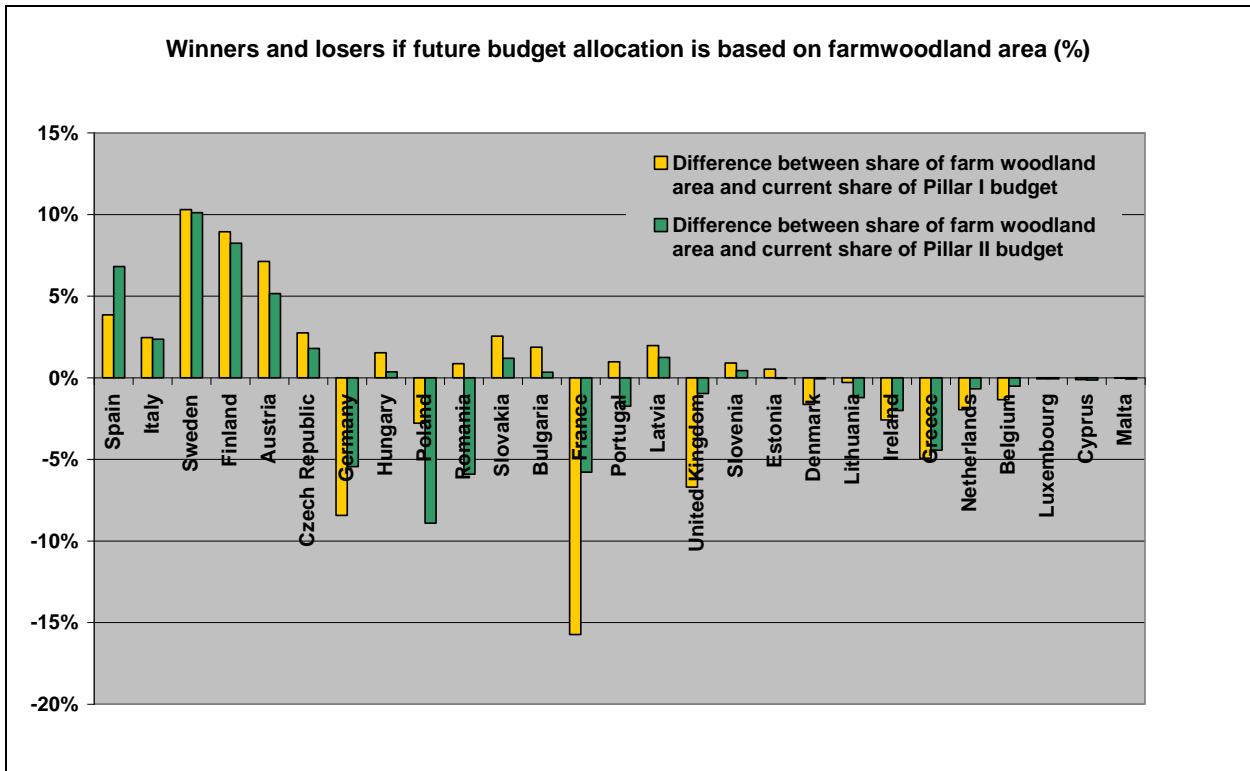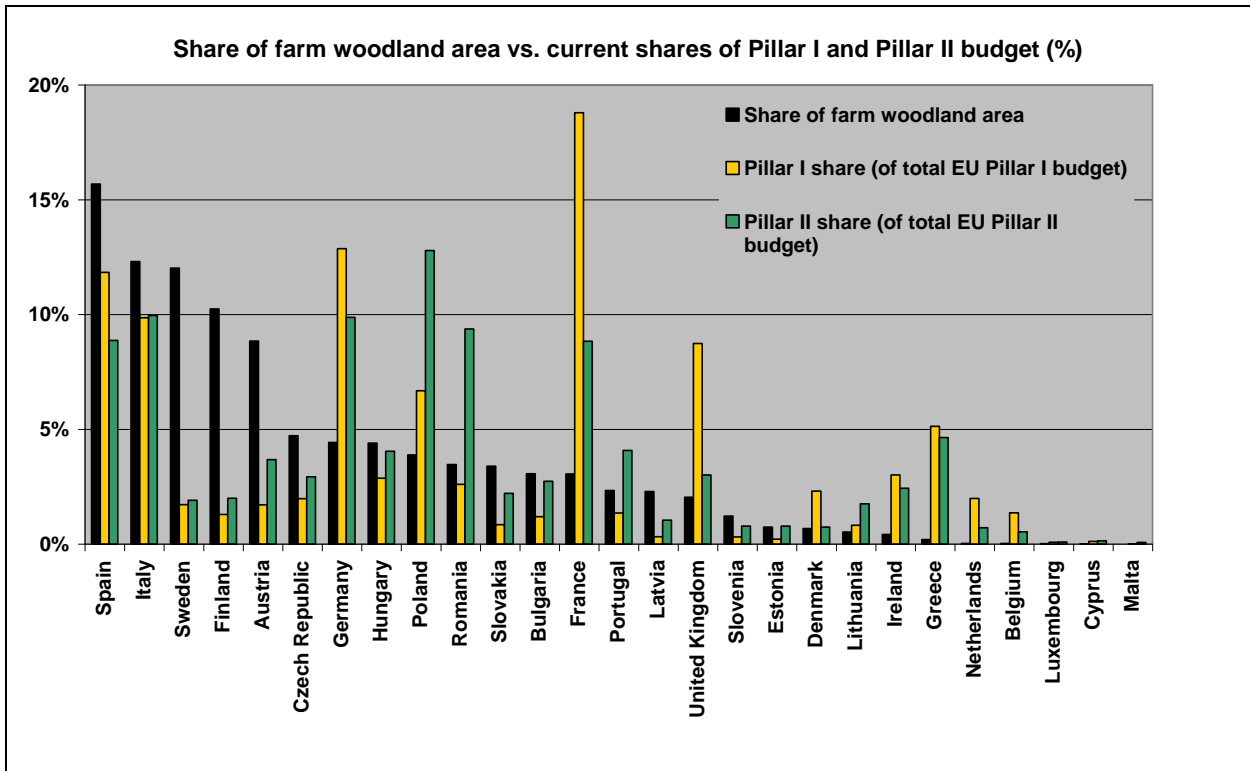## Appendix 8: Distribution of CAP budget and winner and loser positions

Figure 12 : Distribution of funding based on Utilisable Agricultural Area (UAA)

Share of UAA vs. shares of the EU Pillar I and Pillar II budget (%)

- Share of UAA
- Pillar I share (of total EU Pillar I budget)
- Pillar II share (of total EU Pillar II budget)

Winners and losers if future budget allocation is based on UAA

- Difference between share of UAA and current share of Pillar I budget
- Difference between share of UAA and current share of Pillar II budget

Share of UAA		PILLAR I BUDGET	
		Winners	Losers
PILLAR II BUDGET	Winners	ES, **UK**,SE, LV	FR, DE, IE, DK, NL, BE,
	Losers	PL, RO, CZ, PT, AT, BG, LT, FI, SK, EE	IT, HU, EL, SI, CY, LU, MT

Spain, **UK**, Sweden and Latvia will gain for both pillars if UAA is used as the basis for funding allocation; whereas Italy, Hungary, Greece, Slovenia, Cyprus, Luxembourg and Malta will lose in both pillars. Other Member States will lose in one pillar but will gain in the other. Generally, EU-15 countries will lose in the Pillar I budget allocation but will gain in Pillar II while EU-12 countries will gain in Pillar I but lose in Pillar II.
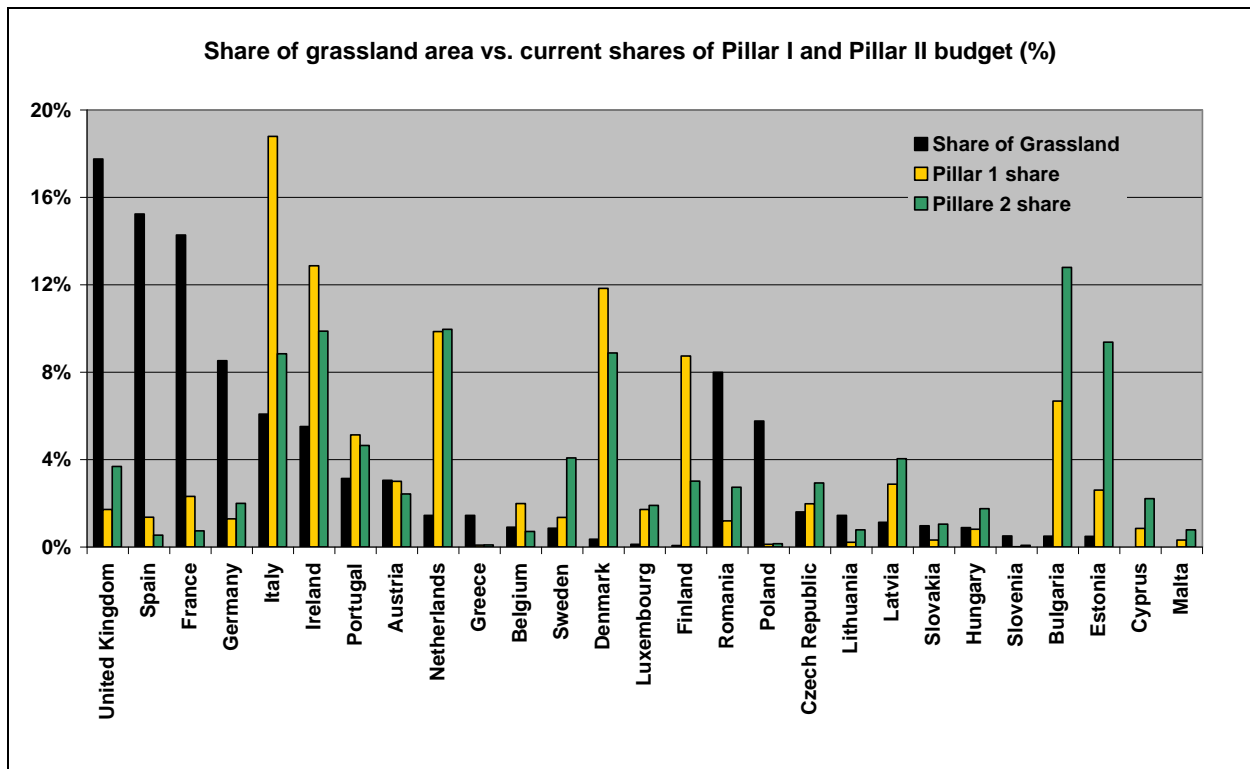
Figure 13: Distribution of funding based on Farmland Woodland Area

Share of farm woodland area vs. current shares of Pillar I and Pillar II budget (%)

Winners and losers if future budget allocation is based on farmwoodland area (%)

Share of		PILLAR I BUDGET	
Farm Woodland Area		Winners	Losers
PILLAR II BUDGET	Winners	ES, IT, SE, FI, AU, CZ, HU, SK, LV, SI	-
	Losers	RO, PT, EE	DE, PL, FR, **UK**, DK, LT, IE, EL, NL, BG, LU, CY, MT

Spain, IT, Sweden, Finland, Austria, Czech Republic, Hungary, Slovakia, Latvia and Slovenia will gain in both pillars if farm woodland area is used as the basis for funding allocation; whereas Germany, Portland, France, **UK**, Demark, Lithuania, Ireland, Greece, Netherlands, Bulgaria, Luxembourg, Cyprus and Malta will lose in both pillars. Other Member States (Romania, Portugal and Estonia) will gain in Pillar I but lose in Pillar II.
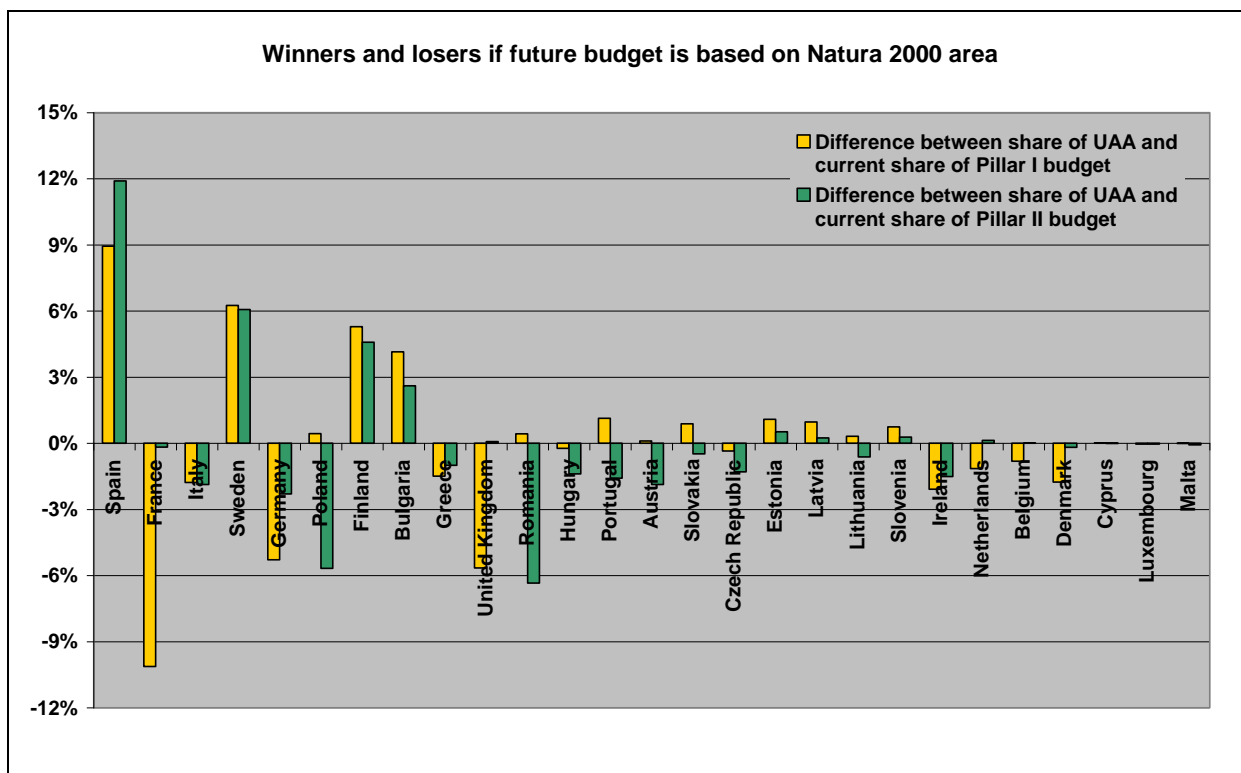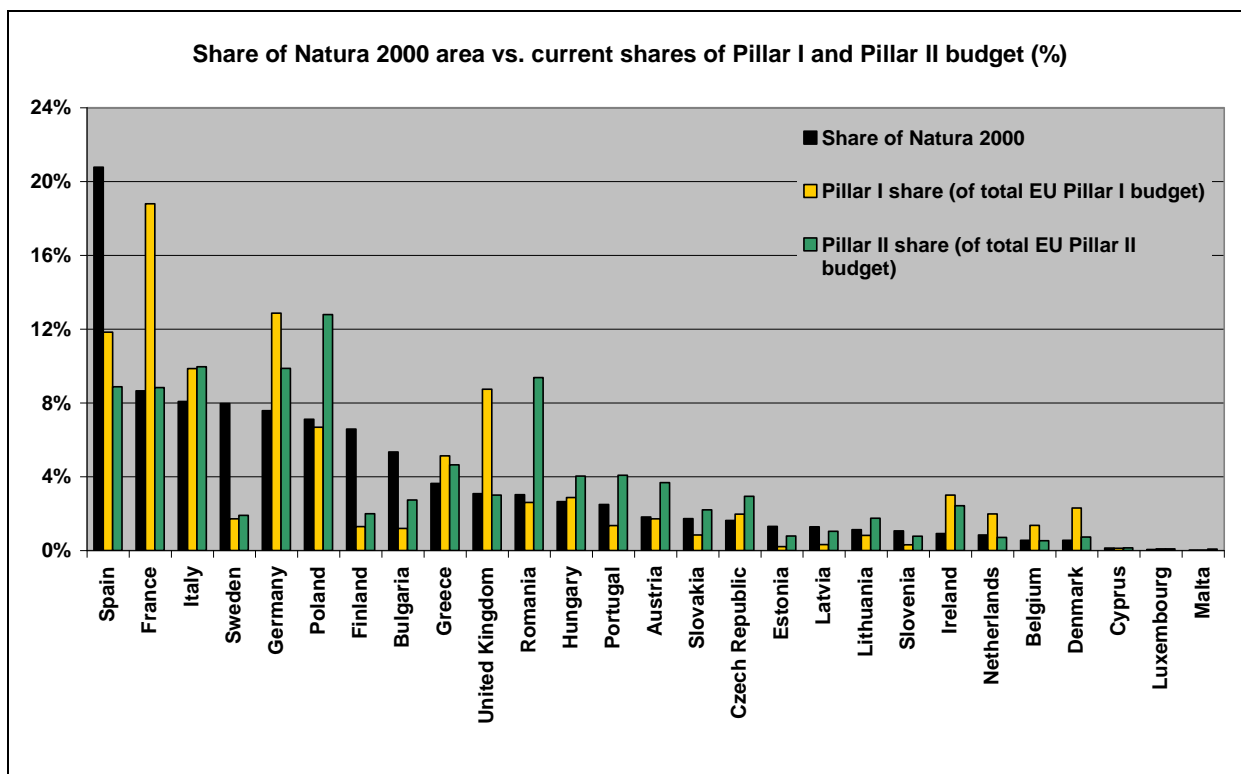
Figure 14: Distribution of funding based on Permanent Grassland Area

Share of grassland area vs. current shares of Pillar I and Pillar II budget (%)

Winners and losers if future Pillar I budget is based on grassland area

Share of	PILLAR I BUDGET		
Permanent Grassland Area		Winners	Losers
PILLAR II BUDGET	Winners	**UK,** ES, IE, LV, LU	FR, NL, BE
	Losers	RO, PT, AT, LT, SI, EE, SK	DE, IT, PL, CZ, EL, HU, SE, BG, DK, FI, CY, MT

UK, Spain, Ireland, Finland, Latvia and Luxembourg will gain in both pillars if permanent grassland area is used as the basis for funding allocation; whereas Germany, Italy, Poland, Czech Republic, Greece, Hungary, Sweden, Bulgaria, Demark, Finland, Cyprus and Malta will lose in both pillars. Other Member States will lose in one pillar but will gain in the other (France, Netherlands and Belgium will lose in Pillar I budget allocation but will gain in Pillar II while Romania, Portugal, Austria, Slovenia, Estonia and Slovakia will gain in Pillar I but lose in Pillar II).
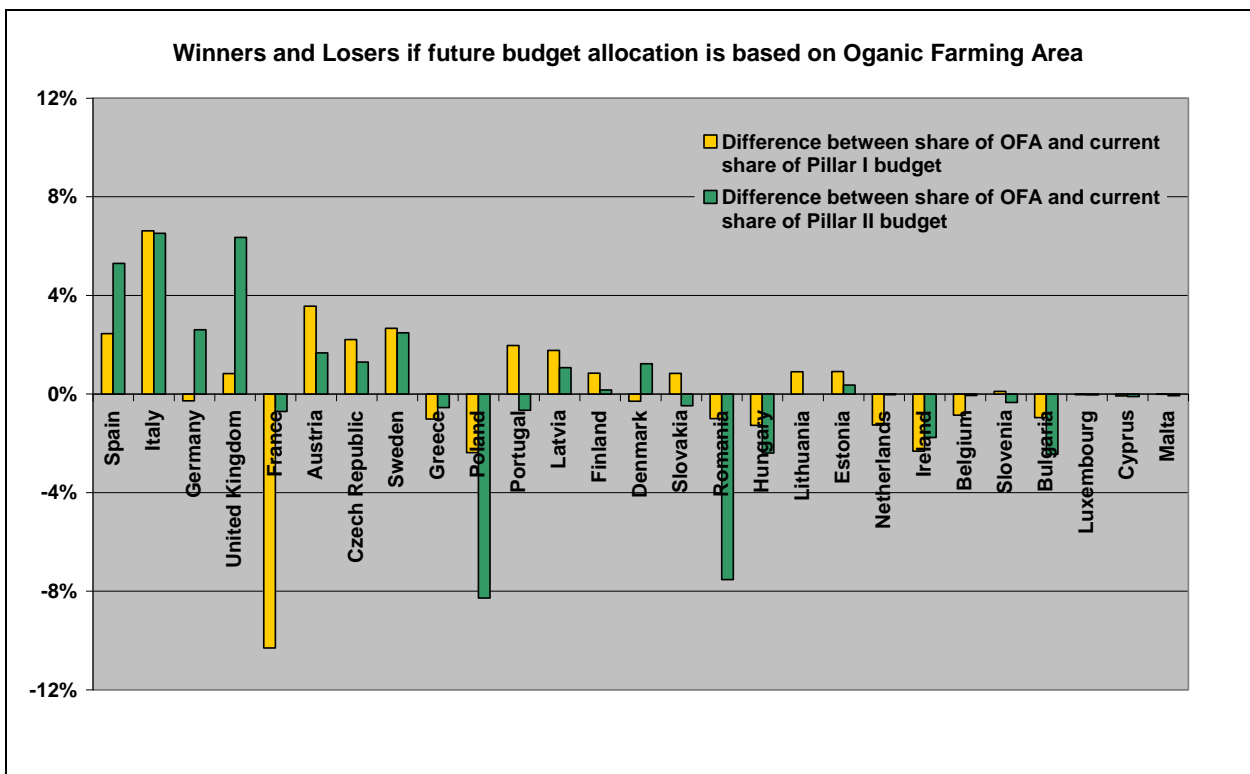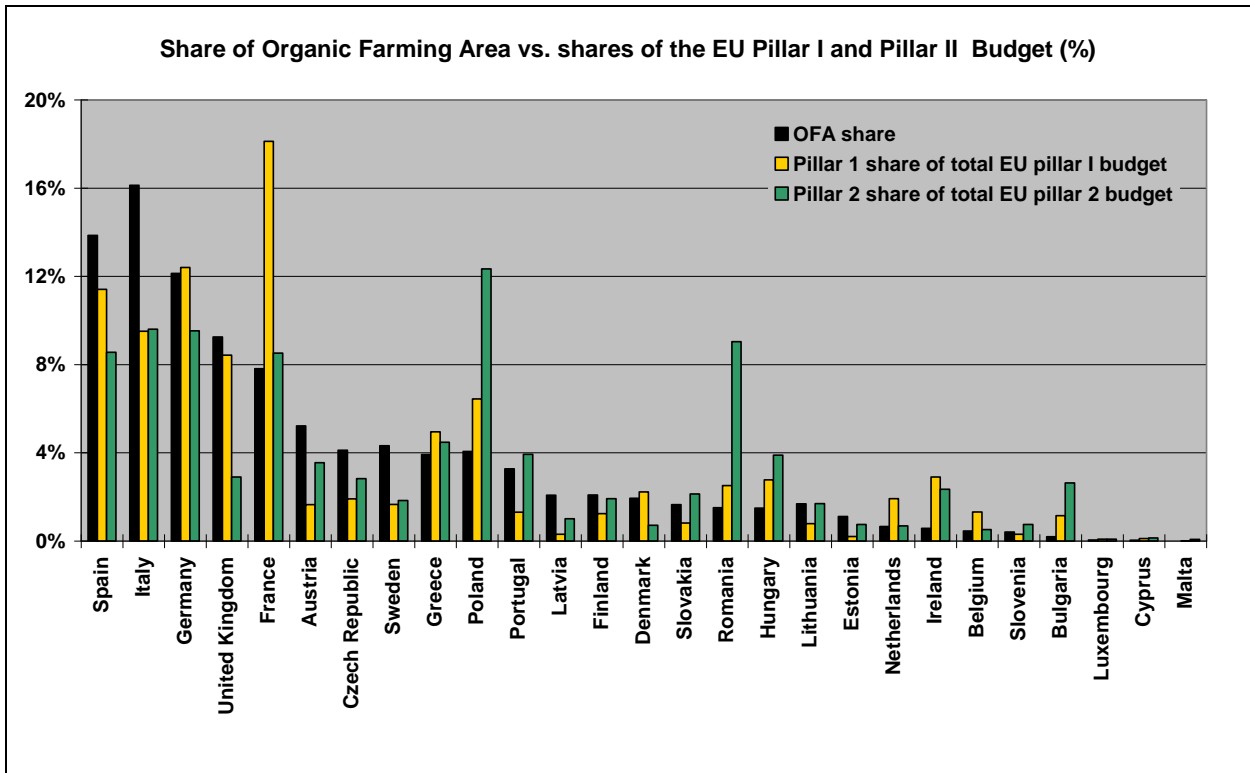
Figure 15: Distribution of funding based on Natura 2000 Area

Share of		PILLAR I BUDGET	
Natura 2000		Winners	Losers
PILLAR II BUDGET	Winners	ES, SE, FI, BG, EE, LV, SI	**UK**, NL, BE
	Losers	PL, RO, PT, AT, SK, LT	FR, IT, DE, EL, HU, CZ, IE, DK, CY, LU, MT

Spain, Sweden, Finland, Bulgaria, Estonia, Latvia and Slovenia will gain in both pillars if Natura 2000 area is used as the basis for funding allocation; whereas France, Italy, Germany, Greece, Hungary, Czech Republic, Ireland, Demark, Cyprus, Luxembourg and Malta will lose in both pillars. Other Member States will lose in one pillar but will gain in the other (**UK**, Netherlands and Belgium will lose in Pillar I budget allocation but will gain in Pillar II while Poland, Romania, Portugal, Austria, Slovakia and Lithuania will gain in Pillar I but lose in Pillar II).
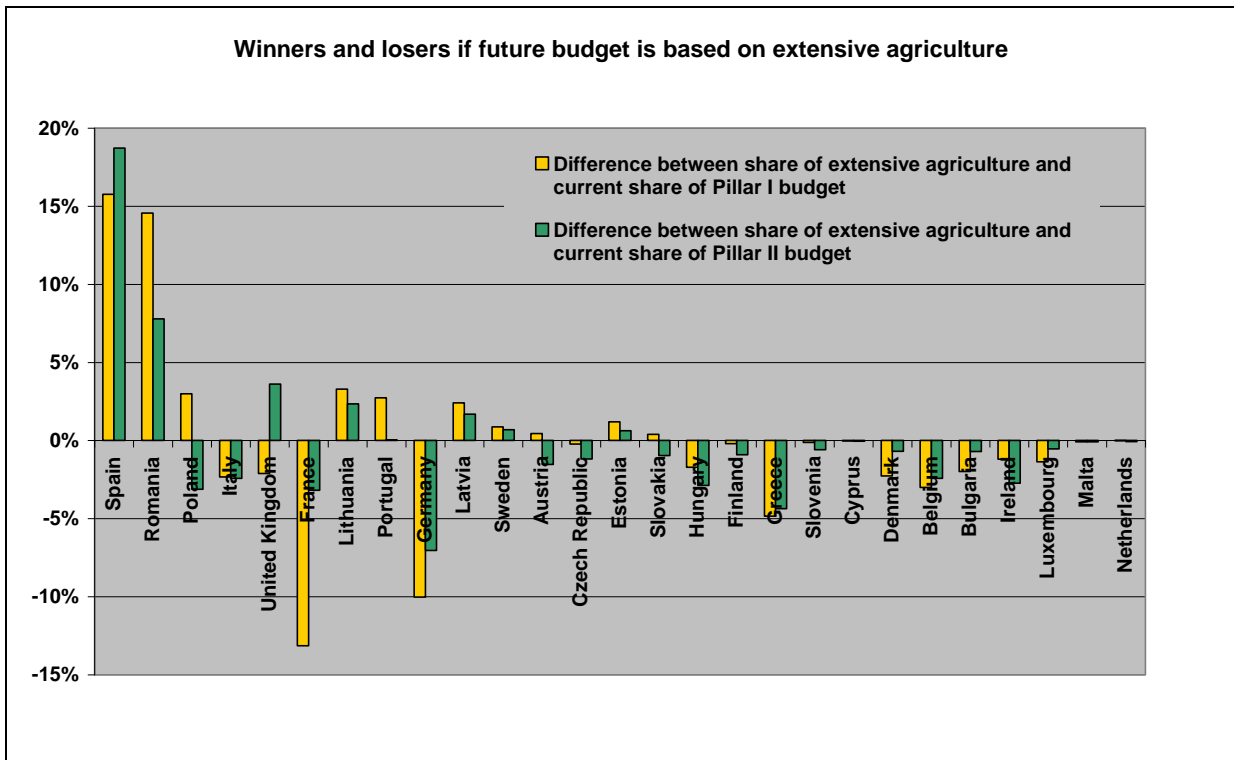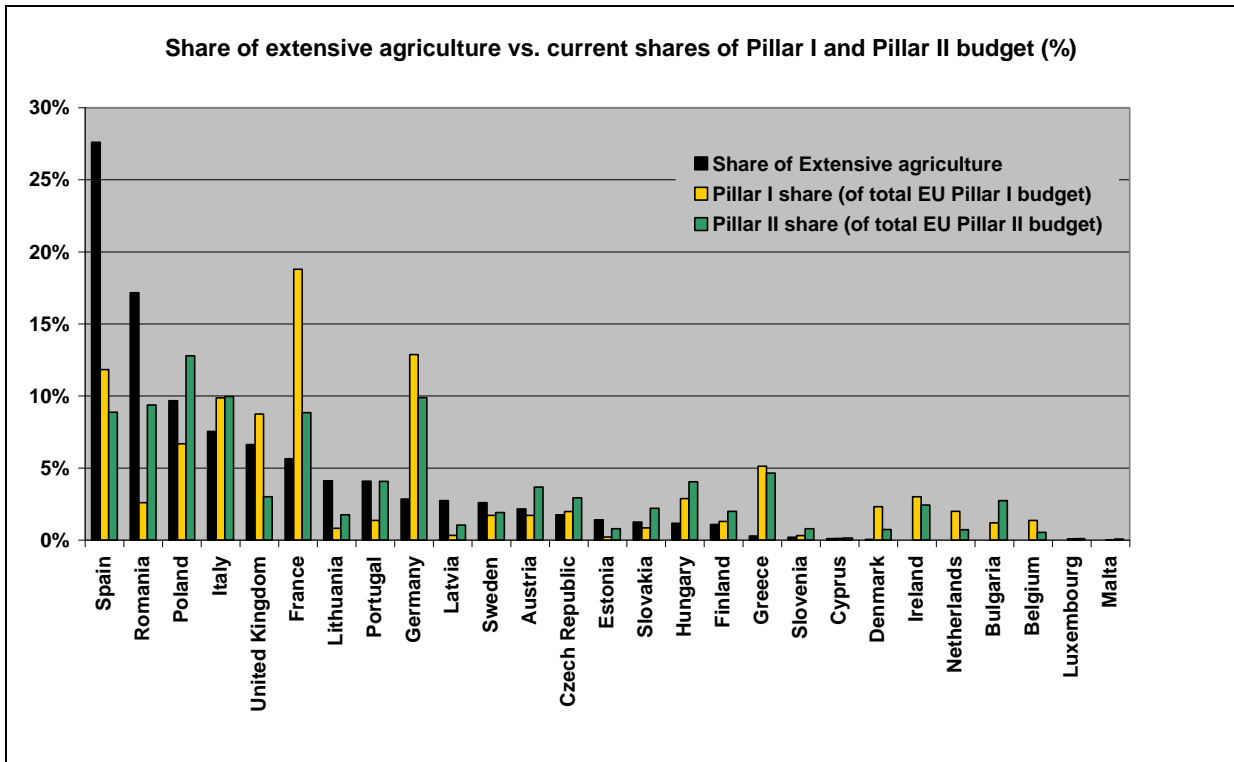
Figure 16: Distribution of funding based on Organic Farming Area

Share of		PILLAR I BUDGET	
Organic Farming Area		Winners	Losers
PILLAR II BUDGET	Winners	ES, IT, **UK,** AT, CZ, SE, LV, FI, EE	DE, DK
	Losers	PT, SI, LT, SK	FR, EL, PL, RO, HU, IE, NL, BG, BE, LU, CY, MT

Spain, Italy, **UK**, Austria, Czech Republic, Sweden, Latvia, Finland and Estonia will gain in both pillars if Organic Farming area is used as the basis for funding allocations; whereas France, Greece Poland, Romania, Hungary, Ireland, Bulgaria, Belgium, Luxembourg, Cyprus and Malta will lose in both pillars. Other Member States will lose in one pillar but will gain in the other (Germany and Demark will lose in Pillar I budget allocation but will gain in Pillar II while Portugal, Slovenia, Lithuania and Slovakia will gain in Pillar I but lose in Pillar II).
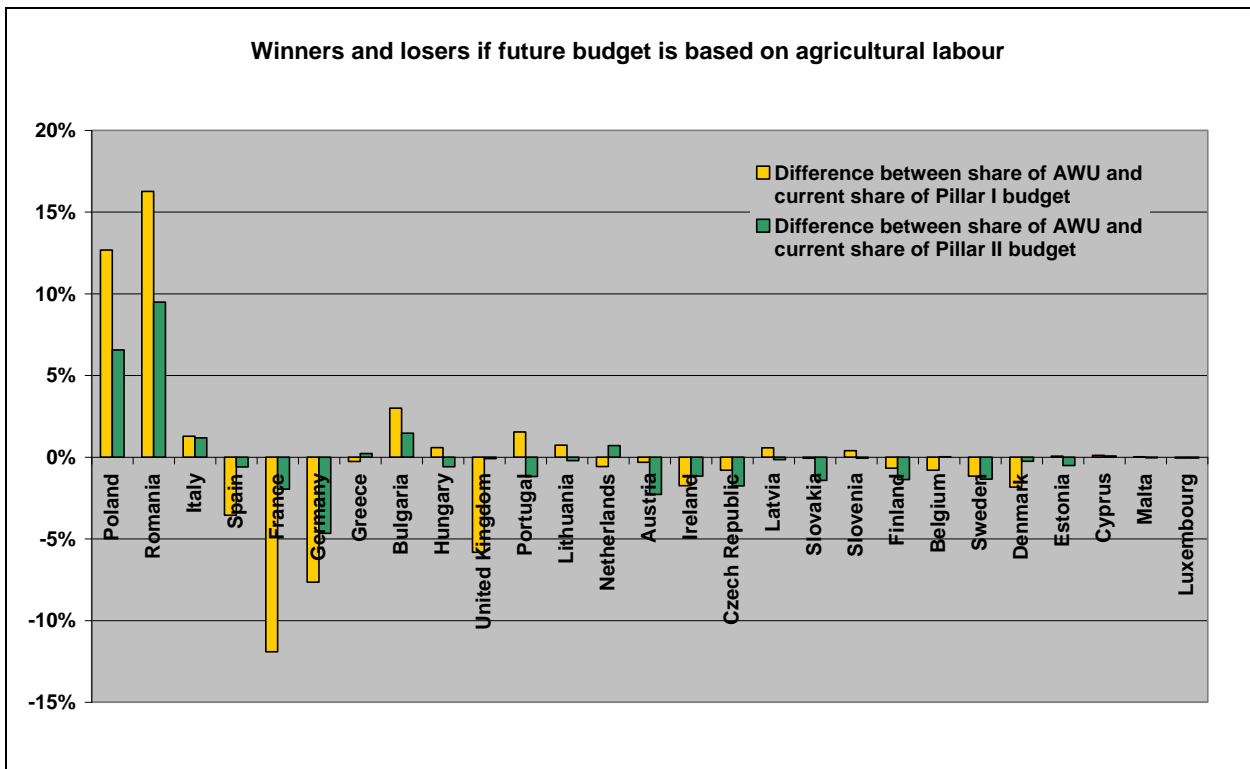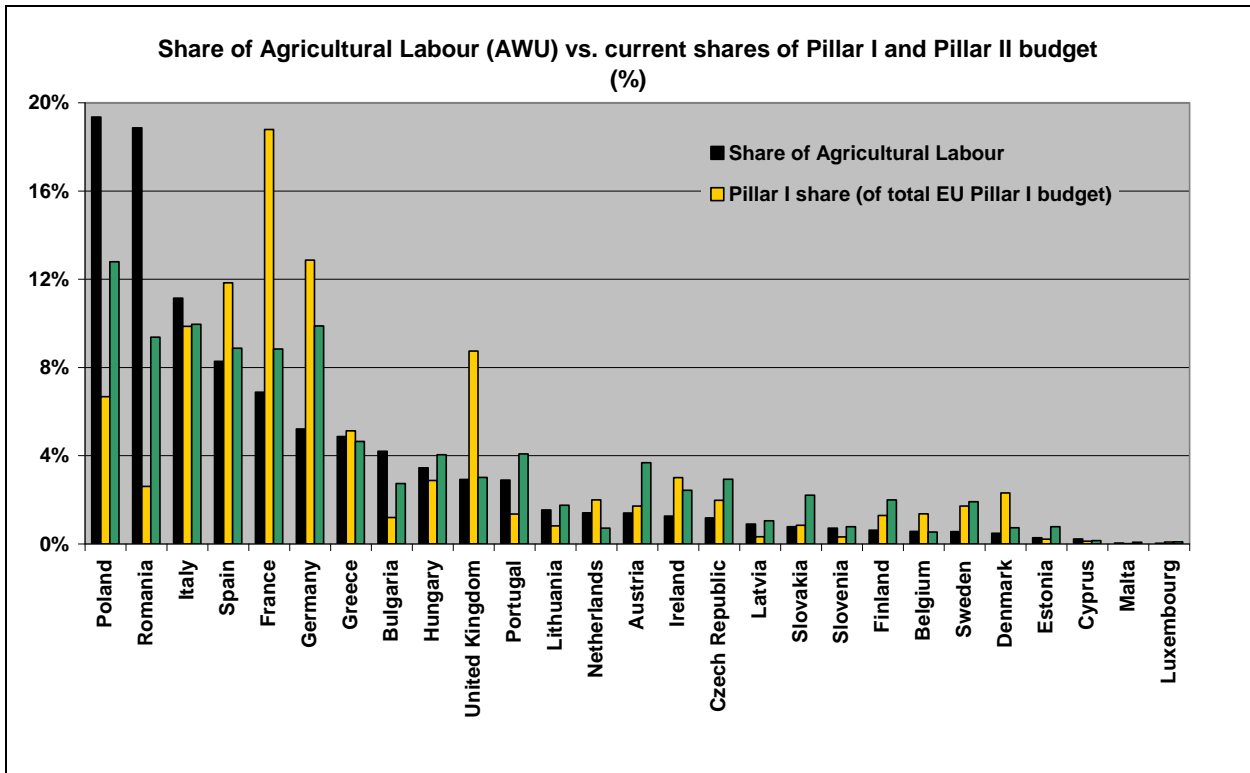
Figure 17: Distribution of funding based on Extensive Agriculture

Share of		PILLAR I BUDGET	
Extensive Agriculture		Winners	Losers
PILLAR II BUDGET	Winners	ES, RO, LT, SE, LV, PT, EE	**UK**
	Losers	PL, AU, SK	FR, DE, EL, BE, IT, DK, BG, HU, IE, NL, LU, CY, CZ, MT, SI, FI

Spain, Romania, Lithuania, Sweden, Latvia, Portugal and Estonia will gain in both pillars if extensive agriculture area is used as the basis for funding allocations; whereas France, Germany, Greece, Belgium, Italy, Demark, Bulgaria, Hungary, Ireland, Netherlands, Luxembourg, Cyprus, Czech Republic, Malta, Slovenia and Finland will lose in both pillars. Other Member States will lose in one pillar but will gain in the other (**UK** will lose in Pillar I budget allocation but will gain in Pillar II while Portugal, Austria and Slovakia will gain in Pillar I but lose in Pillar II).
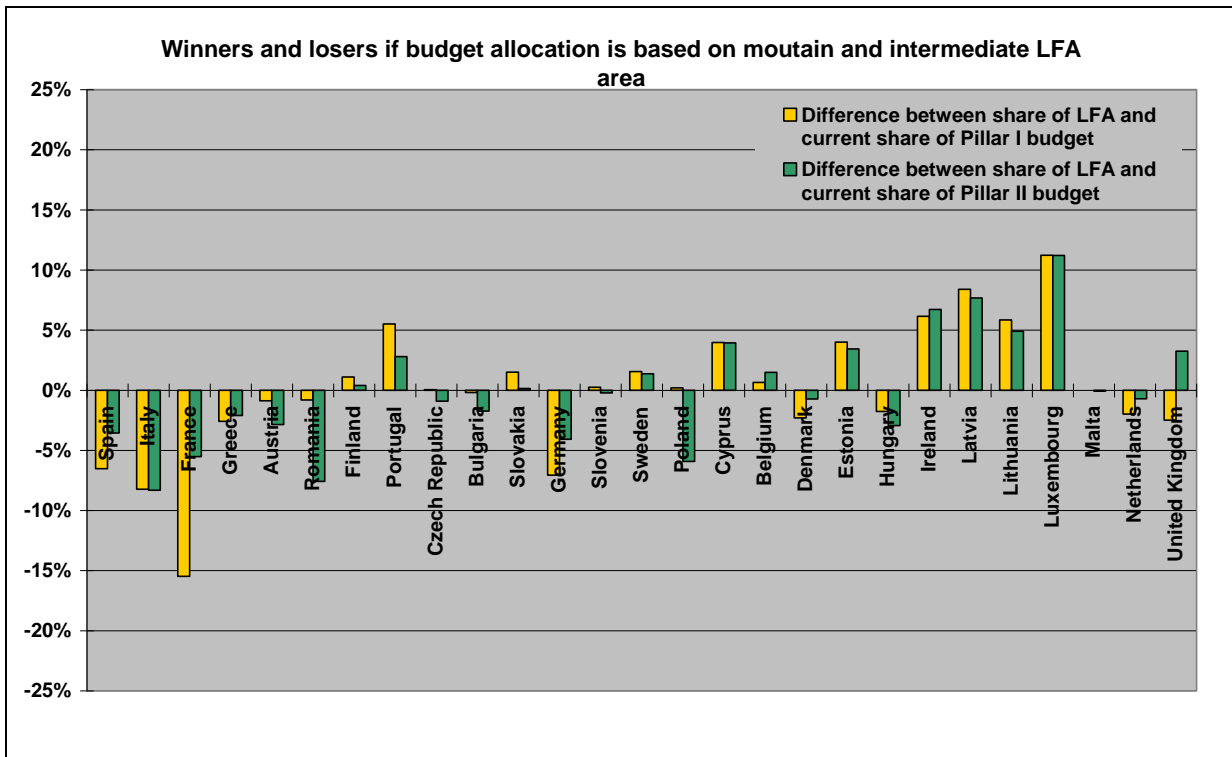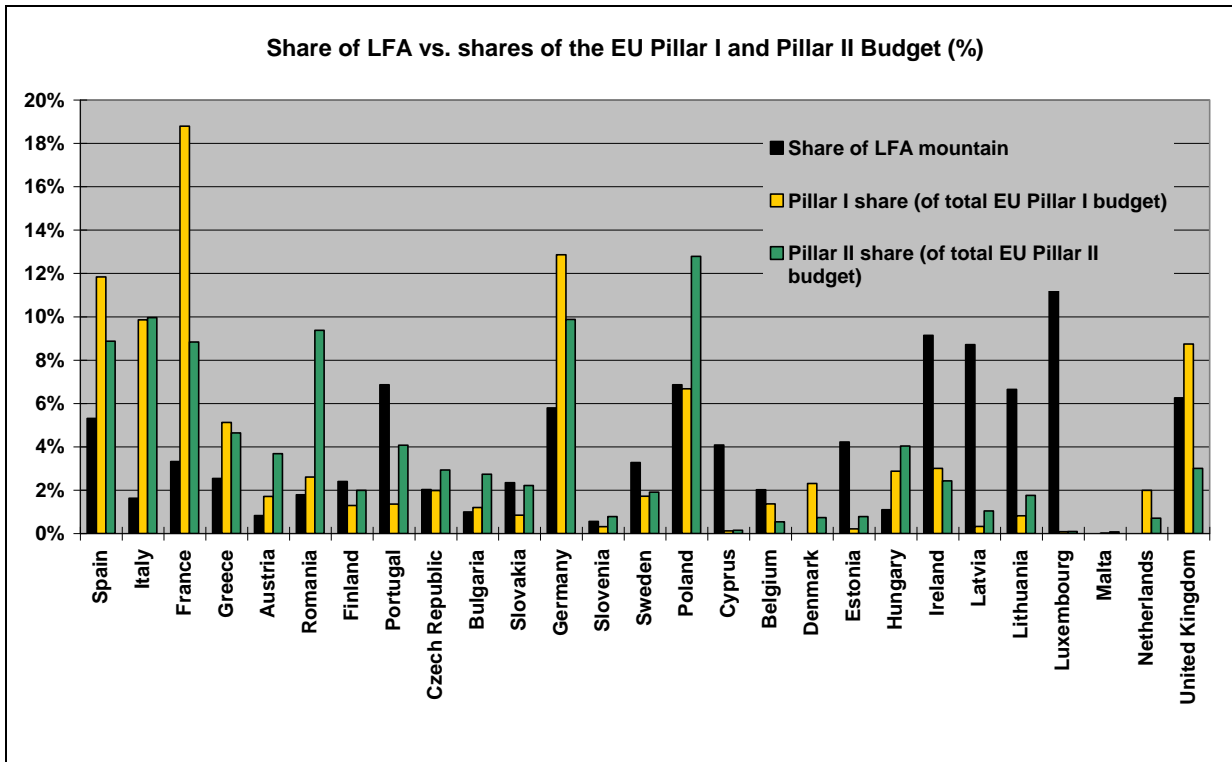
Figure 18: Distribution of funding based on Agricultural Labour (AWU)

Share of Agricultural Labour (AWU) vs. current shares of Pillar I and Pillar II budget (%)

Winners and losers if future budget is based on agricultural labour

Share of		PILLAR I BUDGET	
Agricultural labour		Winners	Losers
PILLAR II BUDGET	Winners	PL,RO, IT , BG, CY	EL, NL, MT
	Losers	HU, PT, LT, SI, LV	ES, FR, DE, **UK,** AT, IE, CZ, SK, FI, BE, SE, DK, EE, LU

Poland, Romania, Italy, Cyprus and Bulgaria will gain in both pillars if agricultural labour is used as the basis for funding allocation; whereas most of the EU-15 countries including Spain, France, Germany, **UK,** Austria, Ireland, Finland, Belgium, Sweden, Luxembourg and Demark and some EU-12 countries including Czech Republic, Slovakia and Estonia will lose in both pillars. Other Member States will lose in one pillar but will gain in the other (Malta, Netherlands and Greece will lose in Pillar I budget allocations but will gain in Pillar II while Hungary, Portugal, Latvia, Slovenia and Lithuania will gain in Pillar I but lose in Pillar II).

Figure 19: Distribution of funding based on Less Favoured Area

Share of LFA vs. shares of the EU Pillar I and Pillar II Budget (%)

Winners and losers if budget allocation is based on moutain and intermediate LFA area

Share of		PILLAR I BUDGET	
LFA		Winners	Losers
PILLAR II BUDGET	Winners	FI, CZ, SE, EE, CY, MT, SK, IE, LV, LU, LT	**UK**
	Losers	PT, SI	ES, IT, FR, EL, AT, RO, BG, DE, PL, HU, BE, DK, NL

Finland, Czech Republic, Sweden, Estonia, Cyprus, Malta, Slovakia, Ireland, Latvia, Luxembourg and Lithuania will gain in both pillars if mountain and intermediate LFA area (current mountain LFA plus intermediate LFA) is used as the basis for funding allocations; whereas Spain, Italy, France, Greece, Romania, Bulgaria, Germany, Poland, Hungary, Denmark and Netherlands will lose in both pillars. **UK** will gain shares in Pillar II but lose shares in Pillar I. Portugal and Slovenia will gain in Pillar I funding but lose in Pillar II.

Appendix 9: Impact of Changes to Axes Minimum Percentage Spend

Currently the minimum spends are 10%, 25%, 10% and 5% respectively for Axes 1, 2, 3 and 4; Axis 4 represents a delivery approach for the other axes measures and is not considered further in this analysis. In the UK, the actual (baseline) expenditure profile respects these minimums but is dominated by spending on Axis 2 in all four of the constituent countries – approximately 80%, 70%, 73% and 76% in England, Scotland, Wales and Northern Ireland respectively.

Error! Reference source not found. reports the sensitivity of budget allocations to axis 2 to changes in the thresholds for the other axes, using selected illustrative examples, to highlight the maximum headroom available for Axis 2. For example, if the baseline budget allocations are considered, raising the minimum spend thresholds on Axes 1 and 3 to 25% is sufficient to crowd-out discretionary expenditure on Axis 3 and force all parts of the UK to reduce in this area whilst increasing in the other two. Conversely, lowering the minimum spend thresholds on Axes 1 and 3 would allow for greater discretionary spend on Axis 2.

The analysis also considers the impact of a nominal change in overall budget (relative to the base) of +/- 30% to illustrate the interaction with threshold changes. Thus a 30% higher overall budget is sufficient to maintain absolute Axis 2 expenditure against raised Axis 1 and 3 thresholds, but the lower Axis 1 and 3 thresholds are insufficient to maintain Axis 2 expenditure under a 30% lower budget.

Table 49: Illustrative examples of minimum expenditure profiles (€m) under different minimum percentage spend thresholds per Pillar II Axes and overall Pillar II budget, together with implied maximum Axis 2 expenditure.

	Axis	Base thresholds				Higher thresholds				Lower thresholds			
		A1 Min	A2 Min	A3 Min	A2 Max	A1	A2	A3	A2 Max	A1	A2	A3	A2 Max
	Axis share	10%	15%	10%	80%	25%	35%	25%	50%	5%	10%	5%	90%
Base budget	UK	1150	6779	1019	7158	2237	3132	2237	4474	447	895	447	8053
	England	558	4183	444	4148	1297	1815	1297	2593	259	519	259	4667
	Scotland	360	1469	302	1705	533	746	533	1066	107	213	107	1918
	Wales	146	722	118	788	246	345	246	493	49	99	49	887
	N.I.	87	404	156	518	162	226	162	324	32	65	32	582
30% Higher budget	UK	1495	8813	1325	9305	2908	4072	2908	5816	581	1164	581	10469
	England	725	5438	577	5392	1686	2360	1686	3371	337	675	337	6067
	Scotland	468	1910	393	2217	693	970	693	1386	139	277	139	2493
	Wales	190	939	153	1024	320	449	320	641	64	129	64	1153
	N.I.	113	525	203	673	211	294	211	421	42	85	42	757
30% Lower budget	UK	805	4745	713	5011	1566	2192	1566	3132	313	627	313	5637
	England	391	2928	311	2904	908	1271	908	1815	181	363	181	3267
	Scotland	252	1028	211	1194	373	522	373	746	75	149	75	1343
	Wales	102	505	83	552	172	242	172	345	34	69	34	621
	N.I.	61	283	109	363	113	158	113	227	22	46	22	407

Note: Apparent inconsistencies in reporting across Axes in terms of precise funding sources and/or how Axis 4 funds sit within Axes 1 to 3 mean that the baseline figures are comparable approximations rather than definitive values, but nevertheless sufficiently accurate for the current illustrative purpose.