



Land management at a time of great challenges

The EU Green Deal and its forthcoming strategies

The ELO is the umbrella organisation for national rural organisations of businesses managing agricultural, forestry and environmental land all over Europe.

Landowners and managers have a critical role in managing rural resources: water, soils, biodiversity and the ecosystems and cultural landscapes they support. These land management businesses are typically multi-generational, family enterprises engaged in agriculture, horticulture and forestry which have diversified into food and forest product processing, recreation, hospitality, rural tourism and a wide variety of craft, creative and service activities. Responsibility, resilience, succession and sustainability are key concepts for such businesses.

Land managers fully recognise the threats to their businesses and livelihoods of the current rate of climate change and degradation of natural resources: biodiversity, soils, and water. That the EU should give top priority to the restoration of climate stability and ecosystem functioning therefore gains full ELO support.

This paper is offered as a constructive commentary on the developing strategies, which the Commission is launching to follow-up the Green Deal.

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Executive Summary

The ELO welcomes the European Commission's Green Deal. Even before the Covid-19 pandemic, EU debate was in full flow on the future for food, farming and land use. The debate has centred around four challenges: climate change, biodiversity loss, impacts of inappropriate diets on human health and on the structure and functioning of the food system.

These debates have raged over many years and two 'world views' have become clear. One says the current food system, both consumption and production, are environmentally unsustainable and a transition to a new system based around less intensive agriculture is required. The other emphasises the economic marginality of current farming systems and identifies that rising global food demand can only be met by sustainable intensification of production. Neither of these views has grasped the details of the full implications of these challenges for land use, agriculture and the food system.

The Green Deal implicitly supports the first of these two views. It outlines a series of changes it considers necessary to move towards a more environmentally sustainable food system. The work to elaborate the broad ideas of the Green Deal into strategies for Farm to Fork (i.e. the food system) and biodiversity is underway and these are expected to be published in May 2020, with a Forest Strategy coming at a later date.

The ELO is emphatically **NOT** rejecting the conclusion that our current food system is environmentally unsustainable, nor that some of the changes suggested in the Green Deal may be necessary. The ELO **IS** arguing that there is not yet in place a robust analysis which sufficiently takes account of all four challenges to support the specific measures indicated by the Green Deal and being fleshed-out in the strategies. European policy making is supposed always to be accompanied by convincing impact analyses showing how the policy changes are justified. These are not yet in the public domain, they should be. But in any case, the ELO suggests that it is inappropriate to produce quantified policy targets for specific items such as pesticide and fertiliser use and organic farming until three large holes in the analysis have been thoroughly debated and filled. These holes are summarised as follows.

- **The impacts of de-intensification on food security, prices and trade.**

Those arguing for EU de-intensification of agriculture are honest in explaining that it should be accompanied by curtailing food waste and reducing food consumption for health and environmental reasons. They must be equally honest and open in explaining that this is likely to be a higher food price policy and it will require commensurate changes in social welfare and trade policy. Quantifying these effects, is difficult but evidence about the farm income, food price, production and consumption and international trade impacts must be an integral part of making the case for such strategies.

- **Does Net Zero emissions by 2050 require land to be released from agriculture?**

Given that agricultural emissions cannot be eliminated by 2050, then some remaining emissions will have to be offset by land use changes which promote carbon removals. This cannot be achieved by changing farming system within the existing agricultural area alone. It will, in most countries, involve some change of use of agricultural land. Strategies for the food system (F2F), biodiversity and forestry

must be considered together with the European Climate Law that enshrines the 2050 climate-neutrality target into legislation. To reach societal acceptance of the nature and scale of the food system and land use changes necessary these issues must be fully exposed. There is a strong interaction between a strategy to de-intensify agricultural production and the land use changes which may be necessary for climate stabilisation. Is it feasible and credible both to reduce intensity of agricultural production and to reduce the agricultural area whilst maintaining the EU's contribution to its own and global food security? This analysis should be conducted for each Member State using consistent analysis before we can be ready to conclude the correct strategies for the food system and for land use.

- **What is the credible policy mix to bring about the suggested changes?**

The mechanisms envisaged to drive the changes in the farming system and land use outlined in the Green Deal must be exposed. Contributions from many policy frameworks will be necessary. Which tasks and will be encapsulated in the CAP reform, how this is to be done and how it will be paid for from an appropriate CAP budget, other public and private sources and from consumers has to be explained. A range of policies in addition to the CAP will have to be brought to bear.

In short, ELO members want sustainable businesses supported by society and are broadly supportive of the Green Deal direction of travel. However, the strategies will not be fulfilled if it cannot be shown that they command societal support in full recognition of their implications for food production, prices, land use and trade. Without this, in turn, political support will not be secured.

Land managers are prepared to contemplate a new vision for the food system and land use including one with higher food prices, a different trade regime, and a shift towards more forestry. However, they need reassurance that the conditions for them to have viable businesses are respected.

1 The European Green Deal

The European Landowners Organisation welcomes the new European Commission's Green Deal launched in December 2019.

The Green Deal communication ¹has quickly been followed-up by a series of consultations and papers elaborating strategies for key sectors and activities which impact on the climate and natural environment. Naturally, this includes the major land management sectors of food, farming and forestry. Three strategies are in preparation for 'Farm to Fork', 'Biodiversity' and Forestry². The Green Deal spells out both general and a small number of quite specific objectives and policy directions for the food and land management sectors. Even though none of the sectoral papers have been published, debates are already underway about the most appropriate response to these challenges.

Unfortunately, focus on two or three of the specific measures is endangering the debate by polarising rather than bringing together the important stakeholders³.

Meanwhile, not unnaturally, the concerns of many stakeholders have been intensified by the stresses caused by the Coronavirus pandemic and the consequential economic shutdown in practically all sectors except the health and food systems and public utilities.

The ELO is concerned that ***there is a danger that the strategies for the food and land management systems are rapidly descending into unconstructive and divisive debates about specific quantified and dated measures***, especially regarding fertilisers, pesticides, organic farming and environmentally favoured and protected areas, long before there is sufficient general understanding and acceptance of the integrated nature of four challenges being faced.

The response to these challenges demands coherent and coordinated policies appropriately resourced and not a patchwork of adaptation of current policy.

This paper offers the ELO view of the challenges to the Food, Health, Farming, Forestry and Environment and the suite of policy interventions, which will be necessary to rise to them. More detailed ELO reactions to the separate strategies will of course follow their publication.

2 The Covid-19 pandemic: an additional complication to the debate

The Commission's declaration that the "emergencies" of global climate change and biodiversity depletion justified a new European Green Deal¹ as a political priority was made before the outbreak of the Covid-19 pandemic.

In mid-May 2020 the pandemic was far from over: predictions of its duration ranged from a few months to two or more years. The disease itself touches all regions and sectors of society. The lockdowns to contain disease transmission are causing economic disruption whose scale could

¹ European Commission, "[The European Green Deal](#)", 11 December 2019.

² Draft of the "[A Farm to Fork Strategy](#)" leaked by Politico on 28 February 2020 and the draft of the "[Biodiversity Strategy](#)" leaked by arc2020 on 7 May 2020.

³ Letter from Copa-Cogeca calling for "[Postponing the Communication on the Farm to Fork Strategy](#)", 02 April 2020.

exceed that of the Great Depression in the early 1930s. The worst hit sectors are travel, tourism, hospitality, personal services and entertainment including sport. The impacts have been felt across all manufacturing. There has been an explosion in public debt to try and avoid mass unemployment. Commentators are divided whether deflation (witness the collapse in oil prices) or inflation is the biggest concern once the pandemic is over.

The food and drink systems have been disrupted by the shutting down of the non-institutional food service sector. After some initial disruption in supplies caused by the response of consumers to increase household stocks as they were instructed to stay at home and shop less frequently, the food distribution system adjusted quite quickly to new social distancing procedures. Continuity of supplies has been largely achieved. On-line shopping has increased, and food manufacturers have reduced lines to ensure faster replenishing of stocks and distribution. There has been particular disruption and price falls for some agricultural products especially those dependent on café and restaurant sales (e.g. best cuts of beef and lamb) and for highly perishable milk for which on-farm storage is not available. Businesses which have specialised on food service outlets are suffering. There are concerns about the continuation of international trade, although this has largely held up. The provision of seasonal and casual labour for harvesting and processing of spring and summer crops has been disrupted by travel restrictions. However, in principle there is considerable under-employed domestic labour in most countries. There are skills and administrative issues to be overcome to enable this pool of labour to be utilised to ensure crops are not wasted. As ever, the poorest in society – whose numbers have increased as many small businesses have lost their income – suffer the greatest in a crisis. Food banks are under strain, social welfare safety nets are being tested.

It is too soon to judge the long-term resilience of the food system under challenge from pandemics.

Covid-19 is not over. It is far from certain that there will not be a second or subsequent waves of disease with all the economic consequences this would bring. The evidence of the origins and responsibilities for the spread of Covid-19 has still to be assembled and thoroughly analysed. *After four months of the current pandemic the food system has been shown to be remarkable resilient.* Whether this continues if the infection and death rates surge again, remains to be seen. Large questions are being raised about the security of relying on international trade for food supplies and food input supplies – including labour, although no major disruption has yet been demonstrated due to this cause. Likewise, many are pointing to the intense strain human activity, especially intensive agriculture, is placing on natural resources and ecosystems as factors in the origin and spread of viral disease.

This takes us to the central issues raised for the EU's food system and rural land use which are core elements in the Commission's Green Deal.

3 Four challenges facing the food system and land management

There are four major challenges affecting the food and land sectors which are themselves interrelated.

- ❖ ***Climate change.*** The ELO is in no doubt that this is the most important challenge. If global heating cannot be contained then significant parts of European farm and forest production may be impossible before the end of this century because of rises in temperature, prolonged droughts,

fires and megafires, more erratic precipitation, and more extreme events of storms, floods, frosts, pests and disease and their effects on ecosystems, natural processes and cycles. The availability of water, its management and storage and its quality are already of deep concern to agriculture in many parts of the EU. Uncontrolled climate change intensifies these challenges.

- ❖ ***Biodiversity loss and the consequential loss of ecosystem functioning in soils, pollinators and amongst and adjacent to agricultural crops.*** Population and economic growth pressures have meant that Europe's natural resources of soil, water, clean air and habitats have been misused over a long period. Europe's natural capital has consequently been degraded. This should be restored. Climate change heightens this challenge.
- ❖ ***Impacts of inappropriate diets on human health and well-being and the environment.*** EU citizens in general have insufficient intake of fibre, fruit and vegetables and excessive consumption compared to dietary guidelines of animal protein, some fats and sugar. This has led to widespread overweight and obesity, leading to a range of non-communicable disease such as type-2 diabetes and coronary heart disease with significant societal health costs. Widespread food waste along the food chain including food service and in the home compounds the sheer destructiveness and resource waste in the food system.
- ❖ ***The structure and functioning of the food system.*** This currently results in low margins in the primary production sector which is systematically squeezed between the much more concentrated upstream suppliers and downstream processors and distributors. This indicates a need for more horizontal and vertical cooperation and integration in the food chain and better regulation of contractual relations in the chain. The structural challenge has also induced a mix of potentially over-scaled enterprises, some with questionable environmental or animal welfare performance. At the other end of the scale it has led to rural poverty, outmigration and land abandonment. These issues have not been sufficiently or coherently grasped.

The key point is that these four challenges cannot be met in isolation. They must be tackled together in an integrated way. These involve economic, social, health, ecological and environmental considerations and are therefore unavoidably political, requiring difficult societal trade-offs. The remedies also have work at the local, regional, national and international levels.

Of course, to manage these four challenges together is difficult because change is required of all participants in the food system, from input suppliers to farmers, to food processors, distributors and food service and of course the whole population as consumers and citizens. The EU food system also plays an important part in international trade. The EU is the world's largest importer of agrifood products and a very large exporter especially of higher value processed food and drink. Because of these strong trading links the EU regulatory approach on a wide variety of matters has international influence this applies for example to animal health and welfare, crop protection products, technology in agriculture, food safety and traceability. None of these issues is new, all have been under debate for many years.

- ***First, there seems to be a growing consensus, that the current workings of the food – health – environment nexus is unsustainable.***

The system is undermining its own indefinite continuation. However, the loose definition of sustainability allows all parties to agree the system is unsustainable but to disagree how and why. It is customarily stated that system sustainability requires balanced attention to economic, environmental, and social considerations. These aspects are not in competition. They are mutually interdependent and each must be met. Yet protagonists invariably focus on one or other of these

aspects. Environmentalists say that the food system impacts on climate, biodiversity loss and pollution are the greatest threat to long run food security. Farmers say that marginal and unprofitable farming leading to dependence on public subsidy contributes to the disinterest of future generations in farming and to economic unsustainability.

➤ **Second, there is general acceptance that there is no single or simple correction which can put things right quickly.**

Instead it is fashionable to suggest that the system must undergo a transition which may take two or three decades to work out and stabilise.

Unfortunately, whilst there is sufficient evidence to satisfy most that the current food system is unsustainable there are strong disagreements about the main elements and directions of the required transition.

Naturally, the language surrounding the failings of the current food system is entirely negative and can be deeply dispiriting to those struggling to make a living from land – which is generally a risky, low margin business. The data collection and analysis systems for the EU are well developed, coordinated and publicly available and so the failings are well publicised. Some key references are listed in the footnote concerning: the greenhouse gas emissions of agriculture and land use, impacts on soil, water and biodiversity, the connections between diet and health, the scale of food waste, and the economic marginality and structural problems of much EU farming⁴. These references originate from respected organisations and the findings are generally not disputed. However, emphatically, they do not tell the whole story.

The EU is not the only region to manifest negative environmental impacts from its food system, and it has been taking action on this for many years. The EU can point to ways in which it is ahead of other major agricultural exporting regions in reducing some negative impacts and damaging practices. The Green Deal signals that there is more to do. All regions will, sooner or later, also have to adjust.

A recent paper⁵ shows how changes in EU agriculture since 1990 are far less extreme than in the other major food producers (United States, China, India, Brazil and Africa). In this period of thirty years global population has grown 40%. In the EU there has been much lower decrease in agricultural area per capita of population, lower cereal yield growth, lower growth in nitrogen use, and lower growth in total meat production. The EU is the only one of these regions whose cattle numbers, beef production and GHG emissions have fallen (by 20%) and whose use of phosphates and potash have fallen. The EU, along with the US and Brazil, has increased its food surplus, Asia and Africa have

⁴ The GHG emissions of EU agriculture are analysed in <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/16817.pdf>. A review of the evidence of biodiversity impacts of EU agricultural practices focussing especially on the impacts of Plant Protection Products is contained in Buckwell et al (2020) Crop Protection and the EU Food System. Where are they going? RISE Foundation, Brussels. Also the European Commission's State of Nature Reports document all aspects of natural systems in the EU, <https://ec.europa.eu/environment/nature/pdf/State%20of%20Nature%20flyer.pdf>. On health and diet see. Westhoek, H., et al. 2015. Nitrogen on the Table: The influence of food choices on nitrogen emissions and the European environment. (European Nitrogen Assessment Special Report on Nitrogen and Food). Centre, for Ecology & Hydrology, Edinburgh, UK and Willett, W., et al. 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. The Lancet 393, 447–492. On the marginal economics of some farming systems, and in some Member States see for example the income figures in Tables 10 and 11 of the DG Agri document on Agricultural and farm incomes, https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/agricultural-farm-income_en.pdf. Concerning the need for greater fairness in the food chain, see the review and recommendations of the Agricultural Markets Task Force which reported in 2016 under its chairman Prof C Veermans, https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/market-measures/agri-food-supply-chain/agricultural-markets-task-force_en:

⁵ Haniotis, Anastassios (2020) "[Food security and climate change in the times of covid-19](#)", 21 April 2020.

increased their dependence on imports. It is important to retain this perspective on the role the EU plays in global agriculture. In opening the Green Deal the EU is showing its willingness to debate the system changes required to find a sustainable development path.

4 In which direction to turn? Are we ready to prescribe policies?

- *For those who are mostly **not** involved in making their living from the food system the most frequently suggested route for the food system transition requires a de-intensification of farming⁶.*

Their analysis, with much supporting evidence, points to the principal cause of especially the environmental problems which is the ‘industrialisation’ of agriculture. Agricultural intensification has occurred by increased inputs of all kinds per hectare of farmed land and has resulted in increased output (crop and livestock yields) per hectare. In addition to the changed input mix substituting capital for labour, there have also been structural changes. This shows up as a strong simplification, specialisation and enlargement of farm businesses and field sizes. Together these changes have led to increased productivity (as conventionally measured by marketed outputs) but equally surely, they have contributed to environmental damage. In addition, some argue that the fact that many of the inputs into farming (the genetics, plant and animal health products, fertilisers and mechanisation) which embody much of the post-WWII technical change in agriculture are supplied by a relatively small number of multi-national corporations is, of itself, an added part of the problem. From this environment-centred viewpoint the solution is to move away from intensive, nature-damaging production systems, towards systems which work with, rather than against, nature.

There are a great number of self-styled (environmentally) sustainable agricultural systems. These are characterised as organic/bio, regenerative, biodynamic, ecological, agroecological, nature friendly, high nature value, environmentally friendly, and conservation⁷. Although there are many differences in philosophy and specific favoured practices amongst these farming systems, they have some key features in common. There are certain practices not to be used and other practices to be followed.

Their most frequent ‘do not’s’ are the use of mineral fertilisers, synthetic Plant Protection Products, and preventative antibiotics in livestock production. The most frequent things to do are longer rotations including grass and legumes, hence mixed farming, catch and cover crops to ensure soil cover especially in the south of Europe, and more attention to management of landscape features such as hedges, woods, ponds, ditches, banks. Stress is also made to move where possible to circular economy principles to redefine, recover and reuse wastes. In some approaches to sustainable food systems, these technical agricultural practices are often combined with wider community and social prescriptions with an emphasis on locality with

⁶ There is, of course, a minority of agricultural producers in all EU Member States who support these prescriptions. The most common of these are organic farmers, who farm about 7.6% of EU agricultural area, although this proportion ranges widely from 24.7% in Austria, 21.6% in Estonia and 19% in Sweden to 0.5% in Malta, 2.4% in Ireland and 2.7% in the UK. There are no reliable statistics of the extent of all the other so-called sustainable farming systems.

⁷ The International Union for the Conservation of Nature IUCN has helpfully analysed these multiple forms of sustainable farming systems documenting their origins, similarities and differences. See Oberc B and Arroyo Schnell A et al (2020) Approaches to Sustainable Agriculture, forthcoming IUCN, Brussels, Belgium, 76pp.

shorter food chains. There is a tendency in this thinking towards national self-sufficiency and indeed explicit antagonism towards international trade (especially for proteins such as soya). This analysis focusses on environmental sustainability with scant attention given to farm level economic and national and international market impacts.

- *The conventional view of most conventional farmers and their organisations is to acknowledge the inadequate environmental performance and to pledge (and in many cases to actively work hard) to reduce pollution and biodiversity degradation, but to emphasise that without profitable farming businesses cannot survive.*

Many refer to sustainable intensification, making use of new technologies including new breeding techniques, big data, informatics, robotics, to significantly improve the precision of breeding, rearing, feeding, and protection of plant and animal health. Such precision farming is intended both to improve productivity and to reduce unintended environmental spill-overs. For some high value crops, there is a move to entirely enclosed, hydroponic systems with controlled atmosphere, light and temperature, biocontrol of pests, recycled water and nutrients. These can truly be called factory farming systems. They can be in glasshouses or entirely indoor vertical systems. The livestock product equivalents may turn out to be cultured, synthetic 'meat' or one of a variety of substitute proteins – insects, algal and fungal, again farmed in contained buildings.

The driving logic of this combination of ideas is first that world population and food consumption is continuing to rise therefore more food must be produced, and that the best way to do this is to maximise productivity in order to occupy the least area of agricultural land leaving more land for other purposes – nature areas, wilderness, and for carbon sequestration in forests and peat. Such analysis focusses hard on the economics of production and markets including the disciplines imposed by open international trade, and implicitly rejects the case that these systems are already environmentally unsustainable.

The above paragraphs simplify the complex range of views on these multi-dimensional issues and indeed the remarkably diverse farming systems and structures found in the EU. ***But they do characterise two quite different and distinct world views and stances.***

The key proposals in the Green Deal from the Commission for the food system indicate that the environment is the priority and the first vision for the EU food system described above is emerging as indicating the direction of travel. The evidence for this is that the strategies are going beyond suggesting general directions but are moving towards quantified targets to reduce the use of mineral fertilisers and synthetic PPPs, to devote specific percentages of agricultural arable land for non-productive environmental features, to aim for targeted increased share of organic farming, and concerning the area and management of protected areas. This approach can be characterised as indicating a general de-intensification of EU agriculture.

The ELO is emphatically NOT rejecting the conclusion that our current food system is environmentally unsustainable, nor that the kinds of changes suggested may be necessary. We are arguing that there is not yet in place a robust analysis which sufficiently takes account of all four challenges to support some specific measures indicated by the Green Deal.

European policy making is supposed always to be accompanied by convincing impact analyses showing how the policy changes are justified. These are not yet in the public domain, they should be.

But in any case, the ELO suggests that it is inappropriate to produce quantified policy targets for specific items until three large holes in the analysis have been thoroughly debated and filled.

This means explaining:

- ***the impacts of de-intensification on production, prices and trade.***
- ***The mix of actions in the food system and land allocation to meet the Eu target of Net Zero emissions by 2050. Specifically, does climate policy require land to be released from agriculture? Can the EU both de-intensify agricultural production and release agricultural land?***
- ***A credible policy mix to bring about the suggested changes.***

4.1 The impacts of de-intensification on food security, prices and trade

Focussing initially on the food system, the transition direction indicated by the Green Deal and to be progressed through the Farm to Fork strategy is to reduce intensity, i.e. crop yields per hectare, by reducing mineral fertiliser inputs and the use of synthetic crop protection products⁸. This is not spelled out using the word de-intensification, but the belief is clear. Environmental damage has been done by intensification, therefore de-intensifying should help undo the damage. The development of fertilisers and pesticides through the 20th Century, and the corresponding crop breeding, crop mechanisation and management were all explicitly motivated by the desire to increase yields per unit of the factor of production most inelastic in supply, i.e. agricultural land.

- *Reversing this strategy must necessarily reduce yields, and indeed the evidence is clearly that the favoured organic farming systems have yields which are between 25% and 40% lower than conventionally farmed crop yields⁹.*

Following this strategy if it was also felt important to maintain (or even increase) current production levels then the agricultural production area would have to be correspondingly increased. Maybe it would have to be increased by proportionately more than the yield reduction as the most fertile land is already in cultivation.

- The general consensus is that, in most cases, converting non-agricultural land into agricultural land and especially grassland into arable land would be highly damaging both to climate and biodiversity. The only ways to square this circle are therefore either to import more food and feed, or to reduce EU food consumption and waste. *These societal choices are not spelled out in the Green Deal. They must be explained upfront in plain language in the follow-up strategies to ensure a mature and fruitful debate.*
- A recent large-scale analysis of the strategy of de-intensification of the food system was conducted by a French Institute IDDRI. It is entitled “Ten Years For Agroecology (abbreviated to TYFA)¹⁰”. This is an analysis of the technical feasibility of converting EU agriculture to

⁸ Key sentences from the Green Deal which are under elaboration in the Farm to Fork Strategy indicating the direction of travel are: “These plans should lead to the use of sustainable practices, such as precision agriculture, organic farming, agro-ecology, agro-forestry and stricter animal welfare standards”. The [CAP] strategic plans will need to reflect an increased level of ambition to reduce significantly the use and risk of chemical pesticides, as well as the use of fertilisers and antibiotics. The Commission will identify the measures, including legislative, needed to bring about these reductions based on a stakeholder dialogue. The area under organic farming will also need to increase in Europe.

⁹ Seufert, V., Ramankutty, N., Foley, J.A., 2012. Comparing the yields of organic and conventional agriculture. *Nature* 485, 229–232.

¹⁰ IDDRI (2018) Ten Tears for Agroecology, <https://www.iddri.org/en/publications-and-events/study/agroecological-europe-2050-multifunctional-agriculture-healthy-eating>

agroecological principles. The analysis was empirically based on statistics from organic farming as the only certified system of sustainable agriculture in widespread operation. It was made admirably clear in this study that the strategy was **both** to improve human health and well-being by substantial dietary change as well as to reduce water and air pollution and biodiversity loss by farm system change towards mixed farming following agroecological principles.

The conclusion of the TYFA analysis was that such system change is technically feasible in the sense that the EU could still feed itself, and indeed maintain agri-food exports and thus not be a drain on resources outside the EU. Their conclusions were therefore that neither EU nor global food security would be imperilled, indeed they argue it would be improved as the EU system would be no longer running down natural capital.

Opponents of de-intensification must get beyond the over-simplified argument that global population and economic growth necessitates increased EU food production. This is, or according to the Sustainable Development goals should be, a debate about both sustainable consumption and production.

The IDDRI analysis takes a materials balance approach carefully measuring flows of inputs and outputs of the food system to satisfy the nutrient needs of plants, animals and people and balances this with the available land areas and other necessary resources. However, it was not clear if the TYFA is sufficient to reach the goals of Net Zero GHG emissions by 2050. Within their frame of analysis there is no obvious reason to doubt the broad validity of the IDDRI calculations and conclusion. However, the IDDRI analysis pays no attention at all to costs, prices and thus the economics of the system, neither at the producer (farmer) level nor at the market level. The focus is entirely the environmental sustainability of the food system, the economic sustainability of the proposed system was not tested.

- *The current economics of organic farm production work because this niche market receives an organic premium for the lower-yielding, higher unit cost, production.* EU organic producers also may receive financial help in the conversion period (whilst yields fall but the organic premium cannot be received), and additional help from the CAP (as greening actions are assumed to be already undertaken). There seems to be an underlying presumption that food prices in the new sustainable food system will be higher than current prices. It is commonly argued by environmentalists that food prices are artificially (and undesirably) low because they do not include the environmental costs and the costs of ill-health inflicted on society. It is therefore quite consistent that a sustainable food system would be expected to have higher food prices if it internalises externalities. Indeed, higher prices is one of the mechanisms through which over-consumption of calories, protein and food waste might be reduced. However, such changes have to be practically and politically realisable if they are to be considered credible policy.

However, even supposing farm-gate food prices for sustainably produced products were higher and provided satisfactory farm incomes for most farmers, **there are still two further essential elements to make this strategy practicably realisable:**

- *First it would require adaptation to social welfare safety-nets* to avoid the higher EU food prices harming the poorest in society (people on low incomes, with large families and the elderly) who spend a far higher proportion of their income on food.

This is an aspect of what is customarily referred to as the ‘just transition’ and ‘leaving no groups behind’. It is easy to assert but difficult to deal with for the EU. Sectoral policy for food and environmental policy are EU competences for sound reasons of maintaining the single market

and dealing with cross-border issues, but social welfare policy is the responsibility of the Member States.

- The second challenge for the EU pursuing a higher food price regime is that *trade policy would have to adjust to accommodate such an EU food strategy.*

The choice by the EU to operate a high food price policy to protect human and environmental health is sure to outrun corresponding policies in some other parts of the world. This is especially so for countries with major exports of agricultural raw materials who strategically position themselves as competitive low-cost producers. The EU had a long experience of operating domestic prices way above the world market prices from the 1960s until the mid-1990s. The end to this strategy was the Agreement on Agriculture concluded in the Uruguay Round of the multi-lateral negotiations under the GATT, followed by the emergence of the WTO. The EU may decide to return to the position of maintaining higher domestic prices albeit based on much sounder justifications of environmental and climate protection (see next section). But trade negotiations to achieve this will not be simple and will carry a price.

In short, those arguing for de-intensification of EU agriculture (including the Green Deal) are honest in explaining that it must be accompanied by curtailing food waste and excessive food consumption for health and environmental reasons, but they must also be honest and open in explaining that this strategic approach is likely to be a higher food price policy and it will require commensurate changes in welfare, the operation of the food chain and trade policy. Quantifying these effects, is difficult but evidence about these impacts must be included in making the case for such policy.

4.2 Does climate policy require land to be released from agriculture?

Although climate change has been on the political agenda for several decades, the seriousness of the challenge has only really ramped up following the declaration of a 'climate emergency' in 2019. Whilst the Coronavirus crisis knocked climate policy down the political agenda during 2020 the climate threat has not gone away. It will return as soon as lockdowns are lifted and economic recovery gets underway.

It has long been recognised that agriculture is a serious emitter especially of non-CO₂ Green House Gases (GHG) and that these emissions are difficult to reduce and maybe impossible to eliminate. It has also been long recognised that Land Use, Land Use Change and Forestry (LULUCF) – i.e. wider rural land management – can make a serious contribution to carbon sequestration. Agricultural policy in the EU has made some attempts to tailor policy support measures towards helping farmers reduce their emissions. Examples are by retaining permanent grassland, encouraging crop rotation and nitrogen use efficiency, funding afforestation, forest restoration and agroforestry, protecting peatlands and wetlands, and investments to improve manure management.

However, the contribution of these actions is not large. Under current proposals perhaps 40% of the CAP budget may, if agreed, be allocated to contribute to environment and climate action, however much of this does not involve new additional actions by farmers and much will depend on the reactions of individual Member States. Under current reform proposals for the CAP responsibility to make it so is now being devolved to Member State administrations through their CAP Strategic plans for the period 2021-2027. Meanwhile even less progress has been made in envisaging and explaining the role for LULUCF.

Climate policy for agriculture and land use is now being invigorated by the political decision to aim for net-zero GHG emissions by 2050 across the EU.

Land managers are in favour of containing climate change and it is not unreasonable for them to ask for clear analysis of what Net Zero 2050 means for the food and land use sectors.

The reference to these issues in the Green Deal points to the November 2018 Commission communication on “A clean Planet for all”¹¹. However, this analysis of the possible pathways to climate neutrality is very general and qualitative rather than quantified.

There is an acceptance that in the three-decade time frame to 2050 agriculture cannot reduce its emissions to zero. Therefore the best that the food and land use sectors can contribute is to make efforts to reduce emissions in agriculture and at the same time to increase carbon removals or sequestration through a mixture of Land Use, Land Use Change and Forestry (LULUCF) plus new carbon removal technologies – essentially Carbon Capture and Storage (CCS). The LULUCF changes include:

- First, increasing carbon stocks in soils for example by zero tillage and sustainable farming methods.
- Second, by restoring peatlands mostly by rewetting and restoring wetlands.
- Third, by increasing the quantity and quality of forest cover through afforestation, forest restoration, improving the management of existing forest to store more carbon, and by increasing agroforestry.
- The fourth route exploiting Land Use Change is by creating more woody biomass on abandoned and other land for bioenergy with CCS. The latter is still very much at the experimental pilot stage it does not exist in commercial operation at scale anywhere in Europe. In addition to supporting energy substitution by the production of renewable bioenergy, it is also important to encourage material substitution in which biomass-based products substitute for manufactured materials in a variety of uses. Prime examples are in construction to utilise biomass materials in preference to materials like steel and concrete which are energy intensive in their manufacture^{12, 13}.

These broad directions of change are clear.

What is not at all clear is the scale of change required and how it fits with the developments of agriculture and the food system, nor how this is to be achieved Member State by Member State.

There are *very large differences in land allocation between agriculture and forestry around the regions of the EU and in the mix and intensity of the agricultural and forest systems and their emissions.*

- Clearly the Member States with the lowest extent of forest cover are likely to have greatest possibility for further forest cover.
- The composition and feeding of the livestock sector will also have an important determining effect on the capacity for land use change.

¹¹ COM (2018) 773 Communication to the European Council and Parliament on Climate Neutrality, A Clean Planet for all.

¹² For example, it has been calculated that replacing one cubic metre of red brick with sawn timber saves 4,000 kg CO₂, or in the case of heavy concrete 2,900 kg CO₂. Similar figures exist for steel and other materials. See R. Tipper et al, ‘The UK’s forest: a neglected resource for the low carbon economy?’, *Scottish Forestry*, 58 (2004).

¹³ In climate accounting it is noted that not all these climate actions will result in improved figures for the net emissions of agriculture and land use. To the extent that they permit energy or material substitution in other sectors it is those sectors which will get the ‘credit’ for the changes.

How this fits together for a consistent policy approach to the four challenges is not yet at all clear.

What is clear is that there must be a close integration of strategies for agricultural production and the food system and the second biggest user of rural land in the EU, forestry.

Forestry offers a large potential to sequester and store more carbon, but it offers considerably more than this. As well as providing timber and other biomass to enable material and energy substitution, it can offer biodiversity and its supporting and regulating services, water holding and filtration, and the cultural services of recreation and the benefits of solitude. The chief question is how these services are to be remunerated and, related to carbon, how can a system of credits be further developed.

To date the ELO is aware that reasonably detailed calculations of the scale of changes in agricultural emissions and land use changes to achieve net zero 2050 are only widely available and discussed in the UK and Sweden¹⁴. The newness and preliminary nature of these analyses shows up in the different concepts and terminology used. The Swedish approach is to list the ways to reduce agricultural emissions and then speaks of 'supplementary' measures to remove or sequester carbon to offset remaining agricultural (and other) emissions. These supplementary actions are those listed above on LULUCF plus CCS which in the Swedish case refers especially to capturing the CO₂ from pulp and paper industries as much as from bioenergy plants. The Swedish target is to achieve Net Zero by 2045 and to maintain and increase supplementary actions thereafter. It refers to land reallocations from agriculture amounting to 14% of the current agricultural area (1% of their forest area) by 2030.

The UK analysis by their Committee on Climate Change¹⁵ suggests three broad categories of actions: (i) reduce agricultural emissions, (ii) release agricultural land by increasing agricultural productivity, reducing food consumption especially livestock products and reducing food waste (iii) increase C sequestration in soils and biomass. The analysis indicates orders of magnitude of these changes by 2050 compared to the current situation: a 60% reduction in agricultural emissions, 22% of agricultural land released, 20% cut in red meat and dairy consumption, and a 25% rise in the area of forests increasing its share of total land area from 15 to 19%.

In slightly more detail, the first task of reducing agricultural emissions means that farmers should be encouraged to adopt climate-smart carbon farming to reduce emissions of nitrous oxide N₂O, methane CH₄ and carbon dioxide CO₂.

This will focus on¹⁶ nutrient use efficiency, methane inhibition in ruminants, manure management, soil management to increase organic content and C storage, and decarbonising heating, cooling and transport on farms (as all sectors have to do). How far it is necessary to release land from agriculture for carbon sequestration and biodiversity restoration is much less clear and this is likely to be very different around the EU Member States. How to release agricultural land will also differ greatly around the EU. Some may have scope to do it by increasing productivity of agriculture – although this is likely to clash with the de-intensification arguments discussed above.

These issues are complex. There is little experience with the policies needed to bring about significant behavioural and land use change envisaged in the relatively short time scale needed.

The Swedish and UK analyses stress that they can only indicate broad directions and rough scales of change and we will discover by trial and error which inducements to change work and which ones do

¹⁵ Committee on Climate Change (2020) Land Use; Policies for a Net Zero UK, London.

¹⁶ This is a much-abbreviated summary of the large number of possible actions through which farmers can reduce emissions per unit of production.

not. But the sooner this process starts the better. There are long lags between the actions to change land use and the results showing up in reduced emissions and increased C removals. The current patterns of land use, agricultural production and consumption, and the associated emissions and carbon sequestration are widely different around the Member States and regions of the EU. Therefore, the scale and combination of the measures will also be different around the EU.

Crucial for the success of initiatives to bring about land use change, especially the increase of trees in Europe, is to involve forest owners and managers when defining what constitutes afforestation, improved forest management for carbon sequestration, and restoration and how to best support it.

It has been argued for some time now that LULUCF policy should move from being an accounting exercise to the development of a European-wide carbon credit market that includes forests and forest products. While we understand the complexity in accounting for additionality and permanence in these biological processes, land-based sectors must integrate carbon markets, even if revisions and adjustments in the accounting methodologies may be necessary as experience develops.

Two conclusions are offered:

- *First, it is not credible to formulate separate strategies for the food system (F2F), biodiversity and forestry until these climate considerations for agricultural production, consumption and wider rural land use have been thoroughly analysed, quantified and debated.*

Only this way can we reach societal acceptance of the nature and scale of the food system and land use changes necessary.

- *Second it is clear that there is a strong interaction between the strategy to de-intensify agricultural production and the land use changes which may be necessary for climate stabilisation.*

Is it feasible and credible both to reduce intensity of agricultural production and to reduce the agricultural area? This analysis has to be conducted on a much more thorough Member State by Member State basis before we can be ready to conclude the correct strategies for the food system and for land use.

4.3 What is a credible policy mix to bring about the suggested changes?

The changes in farming systems, dietary habits and food consumption and in rural land use under discussion are large and they are interrelated. It is extraordinary that in reported European intentions and debates around the Farm to Fork and Biodiversity strategies there are suggestions of quite specific targets and policy measures for some variables in this mix before the whole strategy is coherent and complete. These targets refer to percentage changes by specified dates for fertiliser and pesticide use, the share of organic farming, environmentally favoured areas on farms, and the extent and management of protected areas. The definitions of the variables to be changed, and how these targets are to be met and paid for are generally unclear. This is premature. There is no reference or quantification of other key variables such as food prices, production and consumption, agricultural and forest land area, and trade. This is not credible, and it hinders the acceptance of these measures by some stakeholders.

It is unfortunately the case that there is also a disconnect between the Green Deal and the on-going reform of the CAP. It is acknowledged by all that the CAP and the funds which underpin it provides

the basis for implementing many of the policy measures which will be necessary to set EU agriculture and rural land use down the transition path to meet the four challenges identified. The CAP cannot do everything, many other areas of policy and sources of transition support will have to be brought to bear.

The CAP reform debate was launched in 2017, it therefore preceded the development of the Farm to Fork and the revision of the Biodiversity and Forestry strategies. The CAP reform proposals have at their heart a new delivery model in which each Member State draws up a CAP Strategic Plan for a 7-year period based on a thorough needs assessment and SWOT analysis. The Strategic plans are intended to prioritise from amongst the four general and nine specific objectives listed in the proposed regulation. These Strategic Plans have to be approved by the Commission. Member States then define the mix of mostly pre-existing measure to implement their plans.

➤ *The general and specific objectives of the CAP are written in such broad language¹⁷ that they can embrace a very wide range of priorities and thus strategies. There is no mention of contributing towards net zero emissions, nor of de-intensifying agriculture by setting targets for the reduction of fertiliser and pesticide use, specific ecological areas on farms and for increasing the contribution of organic farming.*

The subsequent arrival of strategies which have at their heart proposals for such highly specific actions and which are not part of the CAP regulations is at minimum a confusing way to build policy. Meanwhile, the Commission's work plans have had to be revised given the Covid-19 pandemic. The publication of the Farm to Fork and Biodiversity Strategies have been postponed until late May 2020 and the Forest Strategy is to be published at a later date.

➤ *It seems quite incoherent that the forest strategy which would be expected to be an integral part of the agricultural and land use adaptation to the new Net Zero target will not be part of this package but come separately.*

Meanwhile and especially in the light of the Green Deal and the emerging strategies, the CAP reform proposals will have to be further developed. If EU agriculture, land use and food consumption are really to shift onto a new transition path towards less intensified systems with some significant land use change motivated towards carbon sequestration and biodiversity restoration then the market circumstances and inducements to help change in these directions would be expected to be a core part of the new CAP. Instead the proposals which are at an advanced stage of debate are based on relatively small adjustments to the two-pillar CAP structure. The main change is in devolving more responsibility to Member State level which will make it more difficult for Strategies agreed at the EU level to be achieved. This suggests that to optimally utilise the resources and measures possible under CAP regulations the CAP reform therefore may have to be significantly reshaped.

The ELO ideas on these matters will be discussed at greater length in follow-up papers once the Strategies are published. As the policy inducements to redirect the food system in the Green Deal proposed directions are not yet on the table we can only pose the following questions.

- What will be the mechanisms for bringing about reductions in fertiliser and meaningful adoption of integrated pest management to achieve a sustainable use of pesticides?

¹⁷ The three specific environment and climate objectives are: (i) Climate action. Contribute to climate change mitigation and adaptation as well as sustainable energy. (ii) Natural resources. Foster sustainable development and efficient management of natural resources such as water soil and air. (iii) Biodiversity and landscapes. Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes.

- Will it be through regulated application rates, input taxes, or other mechanisms?
- What corresponding help will be given to farmers finding alternative ways to protect crops from pests, disease and weeds? What encouragements will be given to adoption of new farming systems aiming at the sustainable use of pesticides? These could be through the use of biocontrol, precision farming, and development of new varieties with in-built resistance to pests utilising the best science available.
- How will farmers be helped to restore ecosystem functioning through farming system change?
- If this is to be done by schemes like organic conversion, how will this be coordinated with developing the demand side of the organic market to avoid a collapse in the organic premium?
- Can the proponents of sustainable farming systems reach an accommodation on the deployment of new technologies in digital agriculture and new breeding techniques. Are these necessarily mutually exclusive?
- What will be the mechanisms for inducing land use change?
- Will soil and carbon sequestration by land managers be rewarded through private carbon trading schemes, or publicly paid, or a mix. How will the non-carbon benefits of forestry, e.g. biodiversity and recreation, services from agroforestry, and new and existing forest management be paid?
- What schemes will be created to encourage rewetting of peat soils to switch them from being net emitters to storing carbon?
- How will the much-enlarged area of perennial bioenergy crops be incentivised and linked to developing technologies for carbon capture and storage?
- Which of these policy measures could or should be funded through Rural Development, and which, for example, through a fund for Forest development?

These issues are scarcely visible in the current CAP reform debate.

Whilst there are initiatives underway to reduce food waste, there is an absence of suggestions about how the changes in food consumption behaviour are to be motivated.

Reduction of some components of food consumption is, or should be, a key element of both the strategy to de-intensify agricultural production and to move towards Net Zero 2050.

Yet this is a new policy area for which few measures have been tried or tested anywhere in the EU. Policy measures to change food consumption go well beyond the reach of the CAP which is a land management policy.

They can include soft measures such as education, public information and advice, more directed measures on public procurement.

Consideration of the farm-level economics, domestic market and international market aspects of policies to influence consumption levels must be an integral part of credible policy proposals.

The downstream actors in the food chain potentially can play a significant role. Through their sourcing decisions and working with producer groups and coops they can encourage adoption of sustainable methods by farmers. Through their recipes and processed food products the food manufacturers and retailers could positively help improve dietary health. They and the food service sector can also work on portion sizes to help reduce over consumption. However, these actions may necessitate some top-down pressure. Stronger measures such as taxes are a Member State

competence, and so too are any necessary adjustments in social welfare systems. If the production system is changed in the ways discussed and land is also incentivised to move out of agriculture to focus on carbon sequestration then unless commensurate reductions in consumption have been achieved the fears of the farming industry that EU production will simply be displaced by imports could be realised. This can only be resolved by a willingness to apply environmentally defined e.g. carbon based, border adjustment to protect the domestic market. Is Europe ready for this?

In short, the fundamental issue is who is to pay for the move to sustainable food consumption and production and sustainable land management?

What should be the mix of *consumers* paying through their food prices, *taxpayers* through the funding of agricultural policy and other measures to help land managers onto a path of sustainable, low-emission production and *remaining emitters* (like aviation) through carbon credit schemes to pay for afforestation, forest restoration and bioenergy, and *developers* through schemes for environmental net gain (e.g. biodiversity offsetting). This kind of question is not capable of being settled once and for all, but it must be an explicit part of the formulation and presentation of the overall food system and land use strategy. Only when there is agreement at the broad level can we then usefully consider how to scale and deploy EU funds, including from the Common Agricultural Policy.

4 Conclusions

The Green Deal is an important step in the evolution of the European Union. The ELO supports its broad objectives. Landowners and managers are already offering much to rural resource management and they recognise that more is required of them. To date the Green Deal has raised the right issues. It clearly flags three of the four challenges identified above (climate, biodiversity and health) but it shows insufficient recognition of the marginal economics of much primary production and its weak position in the food chain.

There is a danger that following the Green Deal there is an unhelpful rush towards proposing specific agricultural production measures and targets for pesticides, fertilisers, antibiotics, organic farming environmentally favoured area per farm, and protected areas before there is agreement on the overall strategies for food, farming and rural land use to meet the four challenges.

The Green Deal strategy for the food system is to de-intensify agriculture. But there is no analysis of the economics and market effects of this strategy. Nor is it spelled out that it should be a high food price regime, indeed this is part of the mechanism to secure changes in food consumption. Consequential changes in social welfare and trade policy to ensure affordability and that environmental externalities are not exported are also missing. It is very difficult for the land based business sector to assimilate and ready itself for a radical new direction in production systems without knowing that the overall price, trade and support framework has been thought through and will be in place to ensure that there really will be a 'just transition'.

The Green Deal was proposed in order to send the political signal that the EU has recognised the climate emergency. Yet there is little recognition that the contribution of agriculture and the land based sector to the Net Zero GHG emission target by 2050 will require some reallocation of

agricultural land to forestry and other ways of removing carbon. It would therefore seem necessary to dovetail food, agricultural, biodiversity and forest strategies, yet these are not appearing together as an integrated package.

Finally, the CAP reform was launched before the declaration of the climate and biodiversity emergencies, and the Forest strategy is to be launched after the Farm to Fork and Biodiversity strategies. This does not give a picture of coherence. The CAP reform might therefore have to be reformulated to embrace the new strategies.

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For more information contact:

European Landowners' Organization – ELO

Rue de Treves 67; B – 1040 Brussels

T: +32 (0) 2 234 30 00

E: ana.rocha@elo.org

www.europeanlandowners.org