SUSTAINABLE SOILS ALLIANCE

Workshop: Soil in Environmental Land Management (ELM)
Opportunities, Challenges and Recommendations, Friday 27 November 2020

Meeting Report

The workshop aimed to hear the views of a range of organisations (science, farming, policy-making, NGO) about how the government's proposed Environmental Land Management (ELM) scheme, and how broader agri-environment policy might best be designed to deliver healthier soil. It reflected the fact that, while the Agriculture Bill has been adopted – and with it the commitment to pay farmers through ELM to improve or protect their soils – there is a great deal to play for before the scheme is rolled out in 2024, including the critical balance of regulation, education and incentivisation.

The following is a summary of the (unattributed) comments made during the workshop and the general consensus that emerged.

1. Context: Policy and Economics

ELM Objectives

- We are at a turning point for soils, which run through all 6 Public Goods and will feature far more in ELM than in previous schemes. Soil is central to achieving ELM objectives but lessons need to be learnt from the Countryside Stewardship which could be too prescriptive/bureaucratic. To deliver value for money and motivate land managers, greater flexibility is required - hence the tiered approach and targeted actions.
- In the absence of a clear government or regulatory framework for soil, it is not clear what the Treasury will be prepared to pay for. To reassure them that soil is good value for money, ELM must demonstrate that it delivers multiple benefits – biodiversity etc.

Systems failure

- ELM has the potential to integrate a rewards system into the market and enable farmers to consider environmental products (biodiversity, carbon) alongside food production.
- There needs to be acknowledgement of the need to pay for the legacy causes of damaged soils - poor advice and destructive economics leading to short-term gains.
- We don't pay enough for the products of farming – and this is the justification for ELM. Some farmers have been improving their soils for generations (and delivering public goods) without being paid. These efforts need to be recognised. Price variations and low margins have forced other farmers into damaging practices – ELM is about putting enough money into farming to make it sustainable.

Economic forces

- Lots of farmers are doing the right thing, largely because they know soil is good for business, however, it is not always in the economic interest of the farmers to maintain soil health in the short term. For example, in the West Country, farmers choose certain fields for out-wintering which causes compaction and erosion. These 'sacrifice fields' are the fields that cause the most problems.
- Put another way, permanent pasture is some of our most productive soil for farming and the environment. Without intervention, there will be a strong economic impetus to plough it up.
- Awareness of the benefits of good soil management for public goods and productivity need to be increased through the delivery of ELMs to bring all farmers up to an enhanced standard.
- In general, soil is robust and – if left alone – overall trends in e.g. carbon or acidity, don't fluctuate rapidly. It is a land manager's actions that have the largest and swiftest impact on soil.

2. Engagement vs Regulation

Farmer engagement

- The majority of farmers are well-versed in the benefits that good soil health management brings but there may be a terminology barrier when it comes to farmers linking those benefits to the objectives of ELM. Before going into the mechanics of the system, all farmers need to understand what ELM is trying to achieve for them and their soil. If this is done right, the regulations and incentives that follow will make sense – and not feel like something imposed upon them.
- Farmers tend to be faced with punitive models (e.g. regulatory requirements/tenancy agreements). ELM needs to be designed in a manner that incentivises good soil management, otherwise there will be a lack of uptake. That doesn't mean no regulations, baselines or punitive potential, but the fundamental structure needs to be about incentivisation - either carbon or practices based.

Regulations

- There is a role for a regulatory baseline when it comes to soils that are causing negative externalities. This should act as a clear demarcation before ELM support can be considered. If the soil is already degraded/below a certain standard of functionality, it needs restoration before enhancement can be considered.
- Low levels of awareness and enforcement mean that regulations are currently toothless. The new scheme can't pay for things that are a requirement, but this is a challenge if the regulations aren't working. The new regulatory system (post-Stacey Review) needs to provide a clear demarcation of what can/can't be incentivised.
- Regulations are needed because while most farmers do the right thing, some do not. Farmers who receive public money shouldn't be destroying soil, but similarly paying farmers 'not to do bad' is wrong. There is also the issue of fairness - people want to know that those around them are doing the right thing.
- Currently, regulations are mainly about good agricultural practices with very little about carbon – is there scope for a minimum standard on carbon addition (through regulation), or actions in ELM to build carbon?
- Regulations need increased resources to enforce them, and to have an impact; they need to target the landowner (asset-holder) as well as the farmer.

Monitoring

- Encouraging soil measurement and monitoring is the critical entry-point for engaging farmers with their soil. It provides a positive feedback mechanism that enables farmers to see that their soils are changing and that their practices are having an effect. Its aim should not be to quantify an entire field, but, using dip tests in a few GPS-fixed representative areas, to understand overall if it is going in the right trajectory.
- An overemphasis on costly, third-party laboratory tests has generated an unhelpful 'all or nothing' approach to soil monitoring. What is needed is a mixed model that combines simple self-evaluation measures (where immediate results and on-the-spot interpretation are possible/needed) and professional testing where more accurate results are required.
- If soil monitoring can be successfully embedded, payment by results over the lifespan of an agreement can be achieved – however, this will take time, and the element pertaining to payment by results should not be introduced at the start.

Standards/thresholds

- Among the scientific community there is a consensus around the critical soil metrics and their connection with public goods, but until now we haven't had the regulatory push to embed them. They need finessing – to better understand which are appropriate for individual circumstances, how to apply them and how to optimise them without degrading certain functions. They need to emphasise the multifunctionality of soils.
- Farmers need these indicators to be able to establish the condition of their soils, their function and what can be lost/achieved and therefore the payments they are eligible for. This requires a) a baseline assessment and b) thresholds – for particular soils, locations and land use which farmers can use for farm-level benchmarking.
- Farmers are already used to carrying out tests – e.g. milk protein, grain quality etc. but some training might be required on how to sample in a robust and repeatable way. AHDB guidance on sampling is in common usage.

Monitoring techniques

- Figures vary on the number of farmers who routinely measure soil carbon/SOM (recent studies include rates of 5 and 38%). One barrier to more widespread measurement is the challenge of how to interpret results. To kickstart nationwide soil measurement, ELM should commit to paying for SOM testing. This should be part of the national pilot.
- There is an important challenge in quantifying the different soil measurement methods. Visual soil assessment can be very helpful as a simple metric of progress, e.g. visual scorecards for clover cover. It would be very straightforward to implement, however, methods need to be simple and where necessary, accredited.
- Some physical properties which a farmer can see can be quantifiably linked to public goods – e.g. soil structure has direct links to water storage and flood mitigation. However, the measurement techniques (VESS, visual soil assessment) don't generate precise values. They are indicators and helpful scores, not direct, accurate measures.

Test and Trial/ Nationwide Monitoring

- An examination of soil monitoring techniques is badly needed to understand farmer barriers to soil measurement and inform what the nationwide monitoring programme should look like. This should link metrics with long-term resilience/sustainability test systems and establish their relevance/applicability to land managers. This might take the form of an ELM Test and Trial if it can be tied into ELM delivery.
- There are currently 60 tests and trials running (based on July reporting) which cover land management plans, advice, payments collaboration etc. – but none currently address soils directly.
- Defra envisages interaction between ELM results and the national soils monitoring system. There is a lot of value in collective data and benchmarking. Monitoring might be funded to feed into a separate, national database.
- This approach will need refining. For example, farmer-led visual soil assessment is too crude to feed into the national monitoring framework.

3. What should ELM Pay for?

Payments by Practices vs Results

- ELM currently envisages a hybrid of payments by actions and by outcomes, and this approach is being trialled.
- Whatever incentivisation system is chosen, it must be kept as simple as possible and 'take farmers on the journey'. There is a difference between paying for a system that delivers outcomes and paying directly for outcomes.
- When it comes to soil, there are concerns about payments by results since many outcomes are out of a farmer's control (affected by weather patterns etc.) and there will be variability across fields/farms and even by laboratory test results.
- Some farmers would be more comfortable with a practice/action-based approach. However, chosen actions should be those that are scientifically proven to deliver results at a local level – e.g., cover crops over 3-5 months improve nutrient capacity, prevent leaching, improve soil carbon and above-ground biodiversity. A system of validation would then guarantee that a practice has happened (photography, satellites).
- The practices chosen should also reflect regional variations (predominant soil type, agricultural systems and weather), since these determine what will deliver results where, or where a combination of practices is needed.
- Payments should reward public good delivery. The payment calculation needs to change from income foregone to allow payment for the goods delivered.

Priorities

- Understanding optimum land capability will be critical for determining what we pay for. For example, where soils aren't damaged, what is the justification - the scope for improvement, mapping optimum land use for soils to be able to deliver public goods etc?
- A soil may deliver one service but there will be an optimum level – and scope for improving in other areas. For example, agricultural soils can't have too high a water infiltration rate, if soil carbon is excessive, soil starts to release NO2.
- Farmers need a management plan that enables them to identify the parts of their farm that may be better/worse at delivering particular services.

Carbon

- If carbon additions (and not outcomes) are incentivised, this would circumvent the problem of measuring absolute levels of soil carbon change and variabilities between different types of soil. This approach would be more robust, more straight-forward and easier to implement and so reassuring to farmers.

- The Climate Change Committee says that without soils becoming part of the solution, we won't meet CC targets. The ELM scheme needs to deliver this.
- The government should consider the carbon storage potential of all soils. Carbon-rich, grade 1 grassland, horticulture and lowland soils are the biggest carbon emitters, but upland soils retain a lot of carbon and are often overlooked. Farmers understand the restorative and exploitative phases of the rotation (fixing nitrogen) – can this be re-incentivised for carbon?
- Without cover crops, there is not enough organic matter to go round. SOM can come from lay, cover crop and under-sowing. Carbon is critical for soil biology as it provides a source of energy. As long as new photosynthetic material is being captured, organisms will be fed, and soil problems solved/services provided.
- However, we need to consider all gaseous emissions from soils e.g. zero-till emits more NO2 in consolidated soils.

No-till
- Trends are changing. In the 1990s, 90% of the soil was ploughed, now it is more like 40%.
- Reducing tillage is good for fauna (e.g. skylarks on zero-till, earthworms) while air space within the soil provides buffering against drought and flooding.
- Both farmers and policy-makers have trouble coming to terms with compaction because we can't see it. Fertiliser is used to compensate for the harm it does. Tramlines are a significant problem. Should ELM cover low compression tyres?
- Subsoil. A lot of subsoil problems are drainage. No-till practices do not resolve existing compaction in the subsoil. In the Southwest, for example, subsoil compaction is a problem because rainfall is significantly heavier than in the Southeast and topsoil over compacted subsoils cannot store enough water to prevent serious runoff events.

Practices vs systems
- In the past, we have focused too simplistically on the link between a single action and an externality. We need to think in terms of systems - series of linked interventions that are compatible and deliver a benefit in the right circumstances, e.g. cover crops/no-till does not work if combined with late harvesting and extreme cultivation.
- If practices are too prescriptive, they limit innovation. ELM needs to develop a framework of practices with built-in adaptability to reflect local circumstances. This would give some flexibility to farmers to implement according to their business, local circumstances and weather events as long as they can demonstrate results e.g. a cover crop/ground cover proven by photography, satellite imagery.

Scale
- The new scheme needs to reflect national variations. For example, The West of England (dairy and vegetables) is sloped and wet - soil problems are generally water problems. In the East (Fens, Midlands), more soil-related and less water. The Thames valley suffers from water erosion in winter and wind erosion in summer.
- Soils have local, regional and global benefits, and this scale should determine how/where the benefits flow. To engage farmers, it is important to show local benefits – links between healthy soils, healthy crops and farmer benefits. Biodiversity is a very local outcome (worms etc.), pollutant reduction and flood risk management are regional benefits while carbon has local and global benefits.
- Scale also raises the question of beneficiaries as contributors e.g. water companies/food producers.
- Measurement is also important because it enables a focus on a single outcome and therefore the beneficiary, thus making it easier to get them to contribute to other businesses (carbon credits).

4. Guidance and advice

Advisory services
- There is huge variability in soils knowledge across the advice community caused by a lack of adequate training and moving goalposts. Many advisors - like farmers - are very detached from the Public Goods soil actions deliver. They have been educated to minimise productivity risks, protect crops and maximise yield without consideration of the disbenefits/public goods.
- Across all four countries of the UK, there is a shared need for independent (no conflict of interest), accredited advice. It is a particular problem where advisers are trained to sell one product – they need to be upskilled to deliver a broad spectrum of quality, all-farm advice. It is equally wrong to generalise - some large agri-firms are better than independents.

- It will be challenging to develop an 'independent' advisory network before ELM is up and running. Instead, we should look at CPD requirements for current advisors. This might borrow from existing curricula e.g., BASIS (soil and water and FACTS).

Different forms of 'Advice'

- There is clearly a role for advice but careful thought needs to be given to who is best placed to make the transition. Farmers want to maintain control of the advice process and of choosing who they use if they use anyone.
- There are also different ways of interpreting 'advice' - which should embrace peer-to-peer learning and guidance.
- There is opposition to embedding complex advice into ELM, which needs to be simple, easy to engage with and encourage straight-forward actions – not necessarily a dependence on advisors. If farmers need to seek advice to implement the scheme, they may be put off it. There is also not enough public money for everyone to have an advisor.

Peer-to-peer learning

- Economic barriers (fear of loss, lack of market incentive) are a critical barrier to farmers changing behaviours but equally important is a lack of confidence that any practice change will work for them – these attitudes are sometimes entrenched by advisors and previous generations.
- Peer to peer learning is crucial for overcoming this, for instilling confidence and driving behaviour change. There has been a growing focus on soil health in recent years with many examples of best practice. Discussion groups have been particularly effective, and ELM should facilitate and support these.
- In the EU for example, demonstration farms are supported and used to embed the results of research. So-called "Lighthouses", where previous good practice has been done and are used as a major outreach component to promote trans-disciplinary approaches – local community, businesses etc. Living laboratories are showcased as novel and boundary-pushing – but with real land managers to demonstrate believable and relatable innovative approaches.

Guidance

- To deliver the results promised, practices need to be accompanied by guidance over their application, in particular, to reflect weather variations. For example, sewing a cover crop too late (in the wet) causes compaction and runoff.
- Every farm needs to be encouraged through ELM to establish a baseline, one you measure, you pay attention to what is changing. Critical for the ELM pilot and transition.
- Natural England is in the process of drafting guidance for ELM, including soil. A network of independent advisors exists through catchment sensitive farming. Assessment needs to be made about how effective this is and how regionally based. This network could be developed further.

Knowledge economy

- The issues with the advice industry reflect a system-wide problem with soils knowledge. There is no extension service or coordinated research to optimise services at either national or regional level. College courses are business focused with very little about soils management reflecting low levels of knowledge among the lecturers. Funded research meanwhile is academic, not about farmer application.
- Wherever public money is available, it should be incumbent on the recipient to demonstrate a certain level of knowledge – e.g. a certificate in basic soils management or get assistance from a qualified adviser.
- Nature reserves and woodlands also have their own soil problems – advice needs to be broader/extended to them. Without attention to soil health, they are not able to deliver on biodiversity.
- CPD should go hand-in-hand with minimum requirements and they should be developed in parallel.
- Farmers need to understand the three pillars of soil health: biology (which depends on feeding – carbon), structure/compaction and chemical balance. This knowledge should be embedded into ELM.

Certification schemes

- Certification schemes (e.g. LEAF whose integrated farm management includes soil management planning) that are evidencing soil management shouldn't be overlooked – in fact they are an opportunity for ELM to demonstrate good practice and evidence of improvement – as well as showing the benefits for farmers that are already doing the right thing. These systems are also recognised by supply chains and so might be valuable for correcting market failures.

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